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AIRPORTS COMPANY SOUTH AFRICA

UPINGTON INTERNATIONAL AIRPORT

RFQ NO.: 7268

**REPAIR AND MINOR REHABILITATION OF PAVEMENTS AT UPINGTON
INTERNATIONAL AIRPORT**

PART C3: SCOPE OF WORK

- | | |
|------|----------------------|
| C3.1 | Description of Works |
| C3.2 | Engineering |
| C3.3 | Construction |
| C3.4 | Management |

C3.1: DESCRIPTION OF THE WORKS

C3.1.1 EMPLOYER'S OBJECTIVES

The objective of the Employer is to appoint an experienced Contractor for the execution of the Repair and minor rehabilitation of pavements at Upington International Airport. The works are aimed at maintaining the integrity of the identified pavements across the airport precinct. The employer endeavour to complete the works within a period of 2 months.

C3.1.2 OVERVIEW OF THE WORKS

The works for this project are located at the Upington International Airport, the works consists of selected repairs of flexible and rigid pavements on the Airside and Land side areas of the airport. The works to be executed are located in the following areas: Runways, Taxiways, Taxi lanes, Aprons , Service roads, Access roads, General Aviation Areas and Parking. The works earmarked for this contract will include but not limited to the following:

1. Crack filling and Crack injection identified cracks on selected flexible pavements
2. Patching of selected flexible pavements
3. Repair of corner breaks, cracks, re-sealing of joints and repair of impact damage on selected concrete pavements
4. Repair, demolition and or reconstruction of selected concrete rigid pavements
5. Repairs of segmental block pavements.

It should be specially noted that these works will take place in a live Airport environment and therefore availability of work areas will need to be negotiated with Airport Operations representatives.

NOTE: It is the responsibility of the contractor to familiarise himself with the site in order to accurately assess the site conditions and fully comprehend the nature and scope of work required.

C3.1.3 EXTENT OF THE WORKS

a) General

The description of the work contained in the scope of Work is merely an outline of the work to be executed in terms of the contract and shall not limit the work to be carried out by the Contractor. Estimated quantities of each type of work to be carried out are listed in the Bill of Quantities. The works will take place in the areas indicated on the table below. Notwithstanding the provisions of the conditions of contract other areas of work requiring similar works can be added to list below in the duration of the contract.

DESCRIPTION	LOCATION	WORK TYPE	SCOPE FROM LIST ABOVE
ALPHA APRON	AIRSIDE	REPAIR.	3
BRAVO APRON	AIRSIDE	REPAIR.	3
SERVICE ROAD BETWEEN BRAVO & ALPHA	AIRSIDE	REPAIR.	1 & 2
BRAVO TAXIWAY	AIRSIDE	REPAIR.	1 & 2
HOTEL 2 TAXIWAY	AIRSIDE	REPAIR.	1 & 2
STOPWAY 17 & 35	AIRSIDE	REPAIR.	1 & 2
FIRE STATION WASHBAY	AIRSIDE	REPAIR.	2,3 & 5
PARKING	LANDSIDE	REPAIR.	1 & 2

b) Preparation & Ancillary Works

- The establishment on site.
- The supply of plant, labour, tools, equipment and materials necessary to complete the work.
- Setting out of the Works.
- Accommodation of traffic while the works are executed.
- Compilation and submission for approval of a detailed site safety plan and work method statements, all in compliance with the Manual for Working Airside – Volume 5.
- Attendance by all site staff of a safety training course and obtaining ACSA permits. This includes the necessary vehicle and equipment driving permits for any driver having to drive airside, as indicated in the Manual for Working Airside – Volume 5.
- Compile and submit a quality management plan for approval by the Employer's Agent.
- Compliance with local and national Occupational Health and Safety regulations (OHS Act No. 85 of 1993) and ACSA Health and Safety regulations.
- Full compliance with the ACSA Environmental Specifications.
- Establishment on site of the camp, asphalt plant and construction equipment on the area allocated for this project.
- Locating, relocating (where required) and protection of all services in the work areas.
- Undertaking of asphalt mix designs and trials to prove compliance with specifications.
- Structured and detailed interaction with various role players at the airport to ensure timeous completion of the works for each shift. These role players include the staff of the Airport Management (AM) and the Air Traffic Control (ATC). Management of the project planning and operational procedures for working airside.
- Cleaning of the construction area after each work shift to the satisfaction of AM staff.

c) Alpha Apron

The Alpha apron is a concrete apron with an approximate size of 210m x 75m, the concrete hardstand is jointed with frequent shrinkage/expansion joints. The works required on this area is mainly the replacement of the existing joint sealant and patching of localised corner breaks, furthermore, filling of the expansion gap between the Asphalt and the Concrete pavement is required, this gap shall be filled with a suitable compressible material and then sealed to prevent water ingress.

d) Bravo Apron

The Bravo apron is a concrete apron with an approximate size of 100m x 40m, the concrete hardstand is jointed with frequent shrinkage/expansion joints. The works required on this area is mainly the replacement of the existing joint sealant and patching of localised corner breaks, furthermore, filling of the expansion gap between the Asphalt and the Concrete pavement is required, this gap shall be filled with a suitable compressible material and then sealed to prevent water ingress.

e) Fire station wash-bay

The fire station wash-bay pavement consists of a concrete hardstand with frequent shrinkage/expansion joints. The works required on this area is mainly the replacement of the existing joint sealant and patching of localised corner breaks, furthermore, filling of the expansion gap between the Asphalt and the Concrete pavement is required, this gap shall be filled with a suitable compressible material and then sealed to prevent water ingress.

f) Service Road Between Alpha and Bravo Taxiways

The service road between Alpha and Bravo apron is an Asphalt pavement road approximately 500m long and 3,5m wide, the works required on this section of road can be characterised as crack sealing, repair of edge breaks with installation of concrete edge beams and localised Asphalt patching.

g) Bravo Taxiway, Hotel 2

Bravo Taxiway and Hotel 2 Taxiways are 23m wide Asphalt paved taxiways. The works required in this area can be characterised as crack sealing of longitudinal and horizontal cracks and rejuvenator application

h) Parking area

The parking area is paved with Asphalt, the works required in the Parking area can be characterised as crack sealing localised Asphalt patching, the Parking area repairs will include all repairs that are located on the Airport entrance road and exit roads.

C3.1.4 LOCATION OF THE WORKS

The various portions of work to be undertaken as part of this project are located at the Uppington International airport. The works have been divided into areas classified as either "Airside" for which special applications and security procedures have to be undertaken in order to gain permission to access and work on this land, or "Landside" which can be treated as publicly accessible, or access controlled but which is not bound by the special airside access and security conditions.

The works will be carried out in a "live" airport condition as such some of the works will be carried out outside airport operations hours where occupation cannot be given during working hours. The normal airport operational hours are:

- Mon to Thu 06H00 to 19H00
- Fri 06H00 to 20H00
- Sat 08H00 to 15H00
- Sun 08H00 to 19H30

Access to airside will only be granted to individuals, plant, vehicles and machinery that has been granted permits to access the site, furthermore the contractor will require escort services to access all manoeuvring areas. Escorts will be offered by the airport's fire and rescue department to the service provide, the service provider will not be allowed to enter or operate on the airside facilities unless being escorted. The service provider is responsible for the cost of the escorts, these costs are to be payed to the fire and rescue department.

C3.1.5 TEMPORARY WORKS

The Contractor must obtain written permission from the Project Manager before construction of any temporary works may commence. Temporary works will include the following:

- a) Placing and removal of barricades
- b) Diversions of existing storm water courses
- c) Contractors Camp:
 - Airside: Alterations of facilities within the existing Contractor's construction camp
 - Landside (*if deemed necessary by the contractor*): All facilities within the Contractor's construction camp. The position of the camp site is to be negotiated with ACSA and shall be fenced off using 2m high diamond mesh fencing material. The design shall comply with the specifications where provided in these documents and all statutory requirements such as the Occupational Health and Safety Act and Regulations. The area is to be reinstated upon completion.

C3.2: Engineering

C3.2.1 DESIGN SERVICES

- (a) The **Employer** is responsible for the design of the permanent Works, as this will be a repair project work, all designs will be based on as-built drawings.
- (b) The **Contractor** is responsible for the design of the temporary Works and their compatibility with the permanent Works.
- (c) The **Contractor** shall supply all details necessary to assist the Employer's Agent in the compilation of the as-built drawings.

C3.2.2 EMPLOYER'S DESIGN

The extent of the Employer's design is shown on the construction drawings, but includes

- (a) Detail description of Works
- (b) General Works
- (c) Construction Board
- (d) Permanent Works
- (e) Signs, road markings, etc.

C3.2.3 CONTRACTOR'S DESIGN BRIEF

Where contractor is to supply the design of designated parts of the permanent Works or temporary Works he shall supply full working drawings supported by a professional Project Manager's design certificate.

C3.2.4 DRAWINGS

There are no design drawing issued for this works .

C3.3: CONSTRUCTION

C3.3.1 WORKS SPECIFICATIONS

a) Applicable Standard Specifications

COLTO Standardized Specification for Road and Bridge Works for State Road Authorities

The Standard Specifications forming part of this contract have been written to cover all phases of work usually encountered on engineering contracts and may therefore cover items of work not encountered in this particular contract.

The Contractor is responsible for ensuring that he is thoroughly familiar with all the amendments and corrections before submitting his tender.

b) Applicable National and International Standards

The Works must comply with certain National and International Standards. These include:

- COLTO (1998 Ed.), namely;

Series 1000	General
Series 1300	Contractor's Establishment on site
Series 1500	Accommodation of Traffic
Series 1800	Dayworks
Series 3000	Earthworks and Pavement Layers of Gravel or Crushed Stone
Series 4000	Asphalt Pavements and Seals
Series 7100	Concrete Pavements
Series 9100	Sundries
- CIDB: Standard for Uniformity in Construction Procurement
- Occupational Health and Safety Act 183 (1993), Construction Regulations (2003)
- Latest **Sabita Manual**, Manual 25 entitled "Quality Management in the Handling and Transport of Bituminous Binders".

c) Particular (Project) Specifications

In certain clauses the Standard Specifications allow a choice to be specified in the Particular (Project) Specifications (C3.6) between alternative materials or methods of construction and for additional requirements to be specified to suit a particular Contract. Details of such alternatives or additional requirements applicable to this Contract are contained in the Particular (Project) Specifications (C3.6). It also contains some additional specifications required for this particular Contract.

d) Certification by Recognized Bodies

Where required, Standards South Africa (SABS) must undertake the certification of items for inclusion in the Works.

C3.3.2 PROJECT SPECIFICATIONS RELATING TO STANDARD SPECIFICATIONS

(a) General Conditions of Contract Referred to in the Standard Specifications

The references to the General Conditions of Contract appearing in the COLTO Standard Specifications refer to the COLTO General Conditions of Contract which is superseded in this contract by the General Conditions of Contract for Construction Works 2015. The corresponding clause in the latter document pertaining to the reference in the COLTO Standard Specifications is listed in the table below.

Clause No. in the Standard Specifications	Clause No. in COLTO General Conditions	Equivalent Clause No. in General Conditions of Contract 2015
1202	15	5.6.1
1206	14	Deleted
1209	52	6.10.2
1210	54	51.1 (5.14.2)
1212(1)	49	6.10.1 (6.8)
1215	45	5.12.1
1217	35	8.2.1
1303	49	6.8 (6.10)
1303	53	6.11
1303	12	5.6 (5.3)
1303	45	5.12.1
1403	40(1)	6.4.1
1505	40	6.4
31.03	40	6.4
3204(b)	40	6.4
3303(b)	2	3
5803(c)	40	6.4
5805(d)	40	6.4
6103(c)	40	6.4
Item 83.03	22	5.15
ALL SECTIONS	48	6.6

(b) C3.3.2.2 Amendments to the Standard Specifications

There are no amendments to the Standard Specifications as issued by the Committee of Land Transport Officials (COLTO).

There are no amendments to the General Conditions of Contract for Construction Works (2015 as issued by the South African Institution of Civil engineering.

C3.4.1 PLANT AND MATERIALS

a) Materials, Samples and Shop Drawings

Where required, requirements for proof of compliance with materials specifications, submission of samples of materials and finishes, requirements for shop drawings, are stated in the standard or project specifications. This will also apply to the subcontracts.

C3.4.2 CONSTRUCTION EQUIPMENT

a) Requirements for Equipment

Where applicable, minimum requirements for equipment are specified in the Standard and Project specifications.

C3.4.3 WATER FOR CONSTRUCTION PURPOSES

The Contractor must make all arrangements for the transport, storage and distribution of water required for construction purposes and his own use.

C3.5: MANAGEMENT

C3.5.1 PLANNING AND PROGRAMMING

C3.5.1.1 Planning

The Contractor shall ensure that he:

- a) is well informed with regard to the Employer's overall implementation programme for construction and investigative projects and make available resources as required to efficiently complete required services; and
- b) compile designs, procurement documentation, tender evaluation reports timeously as not to unnecessarily delay the implementation of the construction or investigative projects.

C3.5.1.2 Programming

The programme referred to in the General Conditions of Contract shall be a network-based programme in accordance with the precedence method; a detailed cash flow graph indicating projected monthly invoice amounts shall also be provided. The critical path of the programme of work shall be clearly indicated and the programme monitored continually and updated monthly by the Contractor in accordance with his progress.

1. In compiling the programme of work, the contractor shall incorporate the following important specific requirements and constraints:
 - (a) The identification and marking of affected services prior to commencing construction works.
 - (b) The requirements of the Environmental Management Plan (EMP) as specified in the relevant sections of the Particular Specifications and the requirements in respect of inspections and community liaison.
 - (c) The requirements of the Occupational Health Safety (OHS) Act of 1993 and the Construction Regulations, 2003.
 - (d) The relocation of services.
 - (e) An allowance to accommodate "normal" rain days.
 - (f) The programme shall take into account the employer's requirement that all works should be completed within two months and that working on "live" manoeuvring areas will be limited during the day or deferred to night works where access cannot be given during the day
2. Programming shall be scheduled for a continuous presence for the contract period as stated in Volume 1, Part1: Contract Data Completed by the Employer, of Part C1 Agreement and Contract Data, and should be based on 52 weeks per year.
3. The sequence for completion of the Works required to acknowledge the constraints imposed by operating existing facilities either un-interrupted until additional processing capacity is provided by the completion of portion of the new work included in this contract, or partially interrupted in consultation with the Employer.

4. The programme submitted shall include at least the following details:
 - (a) A work breakdown structure identifying the major activity groups.
 - (b) For each activity group further details shall be provided with regard to the scheduled start and end dates of the separate work sites.
 - (c) The critical path shall be indicated and floats on non-critical activities shall be shown.
 - (d) The working hours per day, week and month allowed for in the programme with details of resource allocations per activity.
 - (e) Production rates for key activities, e.g. Engineering, fabrication, delivery, installation, commissioning, etc.

C3.5.2 PROJECT REPORTING

The Contractor shall submit to the Employer at monthly intervals, via the Project Manager, a progress report indicating the following details:

- (a) Work completed in previous month and total progress to date, per activity.
- (b) Activities behind programme, for which the Contractor shall detail all reasons for such delays as well as the measures to be implemented to make up delays.
- (c) A GANTT chart showing the original programme, the latest approved version of the programme, actual progress achieved and revised completion states, if and when applicable.
- (d) Full details of all personnel being used.

Failure to comply with all of the foregoing requirements shall entitle the Project Manager to use a programme based on his own assumptions to evaluate claims for extension of time for completion of the works, or for additional compensation.

C3.5.3 GENERAL MANAGEMENT

C3.5.3.1 Software Application for Programming

Only latest Windows Microsoft Project programming software package will be accepted.

C3.5.3.2 Format of Communications

All Contract communication shall be in English and in writing (letters, faxes and electronic mail).

C3.5.3.3 Key Personnel

The Contractor shall be required to allocate sufficiently experienced personnel to execute the Contract successfully. The following shall be the minimum key personnel required for the duration of the Contract the Period of Performance:

- a) 1 x Contract Manager.
- b) 1 x Safety officer;

C3.5.3.4 Management Meetings

The Contractor and such other persons as may be nominated by the Project manager shall be required to attend periodic site meetings, the date and place for which will be set by the Project Manager in consultation with the Employer and Contractor.

A main purpose of the site meetings will be to review and discuss progress and programme, and all persons attending the site meetings must be empowered to act on behalf of the firms they represent.

C3.5.3.5 Forms for Contract Administration

The Contractor shall maintain a file (hard copy and electronically) per Contract project, which shall contain:

- c) the details of the sub-contractors, if any;
- d) project programme, with commencement and completion date;
- e) procurement information;
- f) progress reports, minutes, letters, faxes, emails of all project or project related correspondence;
- g) record documentation, reports, designs, and drawings;
- h) a copy of the Health and Safety Plan and the Environmental Management Plan;
- i) record of cost implications, variations, claims and disputes; and
- j) empowerment records.

At the end of this Period of Performance the Contractor shall hand-over such hard copy files to the Employer, including all electronic records, documentation, reports, designs, and drawings.

C3.5.3.6 Daily records

The Contractor is to provide a site diary, which is to be kept on site, for the purpose of keeping daily records in respect of work performed on the site.

C3.5.3.6 Payment certificates

The Contractor shall be required to complete a progress report before he will be allowed to complete the standard payment certificate required to be submitted with his tax invoice. To this end the Contractor shall make himself available for a progress reporting training session to be facilitated by the Employer.

C3.5.3.7 Use of documents by the employer

All information (communications, designs, drawings, documents or reports) provided to the Employer by the Contractor, in the course of performing the service required for this Contract, are intended to ensure that the projects are implemented successfully.

C3.5.3.8 Proof of compliance with the law

The Service Provider shall ensure that he complies to all prevailing legislation that applies to the provision of his services as part of this Contract and indemnifies the Employer where he deliberately neglects compliance with such legislation.

C3.5.3.9 Recording of weather

The Contractor shall be permitted to take his own rainfall measurements on site subject to the Project Manager's approval, but access to the measuring gauge(s) shall be under the Project Manager's control. The Contractor is to provide and install all the necessary equipment for accurately measuring the rainfall as well as to provide, erect and maintain a security fence plus gate, padlock and keys at each measuring station, all at his own cost.

C3.5.3.10 Bonds and guarantees

If the Tenderer, when notified of the acceptance of his tender, fails to provide a guarantee within the period stipulated in the Contract Data and the Employer elects to cancel the contract on that ground, the Employer may demand a sum of R1500,00 per day, or the Employer may take other action whether by way of a claim for loss or damage suffered by the Employer arising out of such breach.

C3.5.3.11 Methods and Procedures

The methods and procedures that must be complied with include but are not limited to:

- Methods and Procedures in the Standards Specifications (SANS 1200)
- Methods and Procedures in the Particular Specifications
- Occupational Health and Safety Specifications
- Environmental Work Instructions
- Procedures for working airside (only service roads)

C3.5.4 QUALITY MANAGEMENT

C3.5.4.1 General

The Contractor's Quality Management System shall include quality management objectives, policies, organization, procedures and work instruction that comply with the requirements of ISO 9001/2000.

C3.5.4.2 Quality Plan

The Contractor shall within 20 days from the commencement date submit a Project Quality Plan for the Contract. The Plan shall indicate how the Quality System shall apply to the specific requirements of the Contract to ensure compliance of the works with the requirements of the scope of works. The Project Quality Plan shall be subject to the approval of the Project Manager.

C3.5.4.3 Quality Control Plans

Quality Control Plans shall be prepared by the Contractor and/or his subcontractors for each group of activities. Where applicable, approved plant, equipment or services required to realize the specific component shall be included.

Quality Control Plans shall be submitted to the Project Manager for approval and for the inclusion of his construction monitoring activities before any construction of the permanent works may commence.

The following surveillance requirements shall be included for affirmation by the Project Manager or his representative.

Record (R)	Documentary evidence of the activity and statistical analysis of the data to be retained and copied to the Project Manager.
Verification (V)	The Project Manager or his representative will not necessarily be present during the activity but documentary evidence to permit verification of compliance with the requirements is generated, retained and copied to the Project Manager.
Witness (W & S)	The Project Manager or his representative requires notification to permit witnessing of the activity. The notice period shall be agreed to depending on the nature of the activity and shall be reviewed from time to time. Documentary evidence shall be retained and copied to the Project Manager.
Hold (H)	The Contractor may not proceed to the following activity until the Project Manager or his representative has approved the proceeding activity. Documentary evidence shall be retained and copied to the Project Manager.
Random (R)	Construction monitoring by random inspection. Random construction monitoring may be carried out at any stage of the activity or preparation for the activity. Documentary evidence shall be retained and copied to the Project Manager.

The following categories shall apply in determining the requirement for a Quality Control Plan:

Category	Clarification	Quality Control Plan
Critical	A component, group of components, structure, the failure of which to comply with the specifications may affect the performance of the works of which it is a part and /or will cause a detrimental environmental impact, and /or may result in hazardous or unsafe conditions.	Required for all components.
Major	A component, group of components, structure, element of a structure or facility, other than categorized as critical, the failure of which to comply with the specifications may compromise the performance of the works of which it is a part, result in increased , maintenance and/or impact negatively on the quality of the works.	As determined by the Contractor and to the approval of the Project Manager.
Minor	All items other than those categorized as Critical or Major and which are visible and capable of rectification during routine inspections.	As determined by the Contractor

C3.5.4.5 Quality Management Audit

The Contractor shall carry out periodic assessments of the adherence to the Quality Plan and Quality Control Plans by senior qualified staff who are not normally employed on the Site. The Project Manager and/or his representative shall be invited to attend at the periodic assessments meeting and be afforded the opportunity to report on the implementation of the Quality System at the Site. The assessment reports shall be copied to the Project Manager.

C3.6: ANNEX A: PARTICULAR (PROJECT) SPECIFICATIONS (CIVIL)

The Standard Specifications provide, in certain clauses, for a choice to be specified in the Construction Specifications between alternative materials or methods of construction and for additional requirements to be specified to suit a particular contract. Details of such alternatives or additional requirements applicable to this Contract are contained in this part of the Specifications. It also contains some additional specifications required for this particular contract.

The number of each clause and each payment item in Annex A - Particular (Project) Specifications consists of the prefix B followed by a number corresponding to the number of the relevant clause or payment item in the Standard Specifications. The number of a new clause or a new payment item, which does not form part of a clause or a payment item in the standard specifications and is included here, is also prefixed by B followed by a new number. The new numbers follow on the last clause or item number used in the relevant section of the standard specifications

C3.6.1 SECTION 1100: DEFINITIONS AND TERMS

B1107 CARRIAGEWAY AND FREEWAY

The carriageway or freeway shall also mean the asphalt surface areas of the runways, taxiways and the concrete aprons.

Add the following definitions and terms to Section 1100 of the Standard Specifications

B1156 AIRPORT ROADS

Airport roads are defined by a network of public and non-public roads within the airport boundary providing access to the various airport buildings or areas.

B1157 AIR TRAFFIC

Means all aircraft in flight or operating on the manoeuvring areas of an aerodrome.

B1158 CONTROL TOWER

Means an air traffic control unit established to provide an air traffic control service.

B1159 INSTRUMENT LANDING SYSTEM CATEGORY I (ILS CAT I)

Means an approach and landing aid designed to identify an approach path for exact alignment and descent of an aircraft making a landing with a runway visual range of 800m and a decision height of 60m.

B1160 INSTRUMENT LANDING SYSTEM CATEGORY II (ILS CAT II)

Means an approach and landing aid designed to identify an approach path for exact alignment and descent of an aircraft making a landing with a runway visual range of 400m and a decision height of 30m.

B1161 INTERNATIONAL CIVIL AVIATION ORGANISATION (ICAO)

Means a specialised agency of the United Nations with a membership of 183 Contracting States as of August 1994.

B1162 LANDING AREA

Means that part of a movement area intended for the landing or taking off of aircraft.

B1163 THRESHOLD

The threshold is the beginning of that portion of the runway used for the take-off and landing of aircraft and thresholds may temporally be displaced. The clearway is the area beyond thresholds.

B1164 PARTY, PARTIES AND THIRD PARTY

'Party' and 'Parties' means the Client and the Consultant and 'Third Party' means any other person or entity as the contract require

B1215 EXTENSION OF TIME RESULTING FROM INCLEMENT WEATHER AND DELAYS CAUSED BY ACTIONS OF AIRPORT AUTHORITIES

Delete the entire clause and replace with the following:

Change the existing heading of clause 1215 to read as above and wherever the expression 'abnormal rainfall' is encountered replace it with '*inclement weather*' and make the following changes to *Method (ii) (Critical-path method)* which will apply to this Contract:

Add the following as new paragraphs:

- "a) Extension of time resulting from abnormal rainfall or other forms of inclement weather shall be calculated according to the requirements of Method (ii) (Critical-path method). The value of "n" working days per calendar month as specified in this clause and as being expected which the contractor must make allowance for in his programme, shall be as given in Table B1215/1 below,

Table B1215/1: Average delay days due to inclement weather and airport related delays ('n')

Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Tot
Inclement weather delays	4(3)*	5	4	3	2	1	1	1	1	2	2	3(2)*	29 (27)*
Airport related delays	5 (4)	2	2	3	3	3	3	2	2	2	3	5 (4)	35 (33)*
TOTAL													64

* If the contractor programmes to close during the traditional Christmas / New Year break, the days for December and January shall be reduced as shown in brackets.

The inclement weather delays are the average number of days on which it is expected that there will be inclement weather Upington

The Project manager or his representative will certify a shift loss due to abnormal rain or adverse weather conditions based on the following criteria:

- i) No work was possible during the relevant shift on any item which is on the critical path according to the latest approved construction programme, given that sufficient temporary drainage of work areas was provided.
- b) Extension of time resulting from delays during shifts caused by operations of the Airport shall be allowed for in the contractor's programme. The number of working days to be allowed for in the Contractors programme is shown in Table 1215/1. The criteria listed in (i) above will also apply to this extension of time.
- c) Actual extensions of time due to inclement weather and airport related delays shall be agreed between the Project manager's and Contractor's representatives on the site. The agreed shifts or parts thereof shall be recorded at the bi-weekly site meetings and adjustments made to the contract period on a bi-weekly basis by extending the contract period according to the number of shifts lost less the allowance 'n'.

The accumulated time lost during shifts shall be agreed between the Project manager's and Contractor's representative on site. The agreed shifts or parts thereof shall be recorded at the bi-weekly site meetings and adjustment made to the contract period on a bi-weekly basis by extending the contract period according to the number of shifts lost less the allowance. Losses for the first half-hour of delay are deemed to be covered in the rates tendered for items of work."

At the end of the contract, the Project manager shall prepare a variation order to formalise the payment of the accumulated delays in excess of the allowance due to inclement weather and airport related delays. Extension caused by inclement weather delays and airport related delays will only accrue once the agreed cumulative delays exceed sum of the delay days due to inclement weather and airport related delays ('n') for the contract period shown in **Table B1215/1** above.

1300 : CONTRACTOR'S ESTABLISHMENT ON SITE AND GENERAL OBLIGATIONS

B1302 GENERAL REQUIREMENTS

(a) Camps, constructional plant and testing facilities

Add the following:

"The contractor shall, at each area where work is being undertaken, provide on a daily basis at least one (1) portable chemical latrine unit per thirty (30) workers for use by construction workers employed on the project. The latrine units shall be serviced daily and kept in a hygienic and orderly state to the satisfaction of the Employer's Agent. No separate payment shall be made for this requirement and shall be deemed to be included in the rates tendered for the contractor's time-related obligations."

B1303 PAYMENT

ITEM	UNIT
B13.01 The contractor's general obligations	(As specified)

Add the following after the fifth paragraph:

" The combined total tendered for sub-items (a), (b) and (c) shall not exceed 15% of the total Tender value, excluding VAT.

Should the contractor be of the opinion that 15% is inadequate to cover his costs in terms of section 1300 in the Main Bill of Quantities, he shall indicate separately with his tender where such costs have been allowed for in his tender. If no such indication is given, the contractor shall not at any stage during the contract for any reason whatsoever claim additional compensation under this item."

1500 : ACCOMMODATION OF TRAFFIC

B1502 GENERAL REQUIREMENTS

Delete the word traffic ton heading (i)

(i) Safety officer

Add the following to the end of the second paragraph:

“The contractor shall submit a CV of the candidate to the Employer’s Agent for approval before the Traffic Safety Officer is appointed. The Traffic Safety Officer shall make himself available to discuss road safety and traffic accommodation matters whenever required by the Employer’s Agent.”

Replace subsubclauses (ii) and (iii) with the following:

- “(ii) Record on neat and dimensioned sketches and submit to the Employer’s Agent the position and sign reference number, where applicable, of each sign, barricade, delineator, cone, amber flicker light, guardrail and permanent or temporary painted road marking feature. The position of each shall be adequately referenced from the marker boards or other surveyed points on the site of the works.

These records shall also show the date and time at which the recorded traffic accommodation features are certified correct by the traffic safety officer, and shall be signed by the traffic safety officer before being submitted to the Employer’s Agent.

The records shall be amended whenever changes are made in the field and the revised detailed sketches shall be submitted to the Employer’s Agent. This shall include the recording of the position of flagmen and stop/go control men and their associated traffic accommodation equipment wherever they are used.

- (iii) Personally inspect the position and condition of each traffic accommodation feature on the whole site of works twice each day by 9h30 and by 16h30, to record all irregularities discovered and the remedial action taken, and to sign off as correct and submit to the Employer’s Agent such record sheets by midday of the next working day. The traffic safety officer shall keep a duplicate book for this specific purpose.

The traffic safety officer shall submit with this report the daily labour returns of flagmen, stop/go and traffic signal control men employed.”

Add the following subsubclauses:

- “(ix) The traffic safety officer shall be equipped with a cellular telephone and shall have a vehicle and sufficient labour at his disposal 24 hours a day, including all prescribed non working days, and shall not be utilised for other duties. He shall be directly answerable to the contractor’s site agent.

The traffic safety officer shall have a direct line of communication at all times with the police and traffic officers responsible for the area within limits of the contract. The provision of the road safety vehicle, driver, labourers and the cost of the cellular telephone shall be deemed to be included in the rates tendered for the contractor’s establishment on site.

- (x) Ensure that all obstructions related to the contractor’s activities be removed before end of work shift and where applicable as instructed by the Employer’s Agent and that the roads are safe for night traffic.
- (xi) The traffic safety officer shall, in addition to the duties listed in paragraph 1502(i), also be responsible for the erection and maintenance of all traffic signs necessary for the accommodation of traffic.
- (xii) In the advent of an accident the traffic officer shall record in a written report the details of the accident, record the position of all temporary road signs, barricades, delineators, flagmen and any other devices used for traffic accommodation. In addition the report shall include a neat dimensional sketch, photographs, identifiable permanent features, and any other relevant information.”

Add the following new subclauses:

“(j) Handing over the site

Since work will take place in a live airport no site shall be permanently be handed over to the contractor, all work areas shall be returned to operation before the end of a work shift

“(k) Use of explosives in close proximity of temporary deviations

No use of explosives is allowed on this project

B1503 TEMPORARY TRAFFIC CONTROL FACILITIES

Add the following after the first paragraph:

“All temporary road signs, devices, sequences, layouts and spacing shall comply with the requirements of the Road Traffic Act, 1996 (Act 93 of 1996), the National Road Traffic Regulations, 2000, the South African Road Traffic Signs Manual, the requirements of the relevant road authority and the drawings. All temporary traffic control facilities shall comply with the guidelines set in SA Road Traffic Signs Manual, Volume 2, Chapter 13: Roadworks Signing, (SARTSM, June 1999, obtainable from the Government Printer, Pretoria).”

“(b) Road signs and barricades

Add the following:

“All the temporary road signs are to be mounted on posts as specified in section 5600 of the

specifications. Provision shall be made for the supply and erection of the signs and the maintenance of the signs during the construction period. Provisions shall also be made for the removal of the temporary road signs on completion of the construction work when such signs are no longer required.

Temporary road signs and channelization devices shall be manufactured in accordance with the latest edition of the South African Road Traffic Signs Manual (June 1999) and placed as shown on the drawings and in Road Signs Note 13. Delineators shall be manufactured from a non-metal material and shall be mounted on a base section also manufactured of non-metal material. Single as well as back-to-back mounted delineators are required.

The obligation to arrange safe passage of traffic shall always be vested with the contractor regardless what is indicated on the drawings of the Employer's Agent."

(c) Channelization devices and barricades

Add the following:

"Drums shall not be used as channelization devices.

TW 401 and TW 402 delineators shall comply with the following requirements:

- a) It shall be manufactured from a flexible material and shall comply with SABS 1555. The blade portion of the delineator shall be positively affixed to a base unit which in turn shall be stable on its own or be stabilized by means of sandbags when used on the road.
- ii) The blade shall be retro-reflectorised, with class 1 yellow sheeting on the side facing oncoming traffic..
- iii) It shall nominally be 1000mm high x 250mm wide and the bottom edge of the delineator shall not be more than 200mm above the road surface.
- iv) It shall be subject to the approval of the Employer's Agent.

The maximum spacing between centres of delineators shall be as shown on the drawings or as directed by the Employer's Agent."

(e) Warning devices

Add the following:

"It is a requirement of this contract that all construction vehicles and plant used on the works will be equipped with rotating amber flashing lights and warning boards as specified in the standard specifications. Construction vehicles travelling outside the limits of construction areas shall however, not operate the warning lights.

The warning lights shall have a base diameter of at least 170mm and the amber bulb cover a height of at least 150mm high. It shall be a requirement that the contractor also provides the Employer's Agent's site personnel with warning lights for their vehicles (a maximum of two lights are required) without any payment applicable.

B1514 TEMPORARY FENCING AND GATES

Replace the contents of this clause with the following:

"Where temporary fencing is ordered by the Employer's Agent, it shall be paid for under item 55.06 of

the standard specifications. The temporary fencing shall be new fencing material, which shall subsequently be dismantled and removed and erected at an alternative position as directed by the Employer's Agent. When ordered by the Employer's Agent, temporary fences and gates shall be moved to new locations or either left in place or when no longer required be dismantled and removed from site if so directed. Allowance is made in the bill of quantities for moving existing fences and gates."

Add the following clause:

B1517 RETRO-REFLECTIVE MATERIAL

"Retro-reflective material for temporary signs shall comply with the requirements of SABS 1519-1 for weathered material. Tests shall be carried out with a field retro-reflectometer and the testing procedure and classification are described in Clause B 8118. The value of the coefficient of Retro-Reflection shall be at least 60% of the values indicated in Table B 8118/1."

B1518 MEASUREMENT AND PAYMENT

Renumber item 15.01 as B15.01 and add the following:

"The tendered rate shall also include for all measures necessary to safeguard traffic on temporary deviations during blasting operations as well as all temporary traffic-control facilities for temporary deviations."

Delete all references to half width construction under payment item 15.01. Half width construction will be measured under payment item 15.10.

Renumber item 15.03 as B15.03 and add the following

"This sections provides only for additional traffic-control facilities as and when required on instruction by the Employer's Agent and does not provide for facilities already included under payment item B15.01"

Add the following items:

"ITEM	UNIT
B15.15 Safety officer	month

The unit of measurement shall be the period in months that the approved Traffic Safety Officer is employed.

The tendered rate per month shall include full compensation for the cost of Safety Officer to conduct his duties, this duties shall include the duties of a Traffic safety officer as specified in sub-clause B1502(i).

Item	Unit
B15.18 Penalties:	

- (a) Fixed penalty per occurrencenumber (No)
- (b) Time related penalty hour (h)

In sub-item B15.18 (a) a fixed penalty of R5 000.00 per occurrence shall be deducted for each and every occurrence of non-compliance with any of the requirements of section 1500 of the standard specifications, section B1500 of the project specifications and the requirement of Airside safety departments

In addition in sub-item B15.18 (b), a time-related penalty of R500.00 per hour over and above the fixed penalty in sub-item B15.18 (a) shall be deducted for non-compliance to rectify any defects in the accommodation of traffic within reasonable time after the Employer's Agent has given an instruction to this effect. The Employer's Agent's instruction shall state the time in hours for re-instatement of the defects. Should the contractor fail to adhere to the instruction, the time-related penalty will be applied from the time the instruction was given."

1800 : DAYWORK SCHEDULE

Note: This is a new section added to the Standard Specifications.

Contents

B1801	Scope
B1802	General Requirements
B1803	Measurement and Payment

B1801 SCOPE

This section covers the listing of daywork items in accordance with the general conditions of contract, subclause 13.6, as amended by Particular Condition, for the use in determining payment for work which cannot be quantified in specific units in the Pricing Schedule, or work ordered by the Employer's Agent during the construction period which was not foreseen at tender stage and for which no applicable rate exists in the Pricing Schedule.

B1802 ORDERING OF DAYWORK

Work will be classified as daywork only if the Project Manager considers no other rate in the Bill of Quantities appropriate for payment purposes.

An instruction regarding all work to be carried out under daywork in terms of Clause 6.5 of the General Conditions of Contract will be issued at the discretion of the Project Manager. Some or all of the items priced under daywork in the Bill of Quantities may possibly not be required for this Contract.

The Contractor and the Project Manager will agree on the method of recording the working hours prior to the commencement of the work. Any long period of idling at any one time which in the opinion of the Project Manager or his representative is beyond that required for normal operating conditions will not be paid for as working time. Non-working hours for any reason shall not be measured for payment.

Before ordering any material, the Contractor shall submit quotations to the Project Manager for his approval, and shall submit such receipts or vouchers to the Project Manager as may be necessary for proving the amount claimed.

B1803 MEASUREMENT AND PAYMENT

Item	Unit
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B18.01 Personnel during normal working hours:

(a)	Unskilled labour	hour (h)
(b)	Semi-skilled labour	hour (h)
(c)	Skilled labour	hour (h)
(d)	Ganger	hour (h)

(e) Flagmen hour (h)

B18.02 Personnel outside normal working hours:

(a) Outside normal working hours on Saturdays:

(i) Unskilled labour hour (h)

(ii) Semi-skilled labour hour (h)

(iii) Skilled labour hour (h)

(iv) Ganger hour (h)

(v) Flagmen hour (h)

(b) Sundays and public holiday:

(i) Unskilled labour hour (h)

(ii) Semi-skilled labour hour (h)

(iii) Skilled labour hour (h)

(iv) Ganger hour (h)

(v) Flagmen hour (h)

Item

Unit

B18.03 Equipment:

(a) TLB tractor fitted with backactor and loader:

(i) Model Power 55 kW hour (h)

(ii) Model Power 70 kW hour (h)

(b) Vibrating roller (self propelled):

(i) Model mass 2 t width 0,9 m hour (h)

(ii) Model mass 10 t width 2,2 m hour (h)

(c) Air compressor complete with all tools,drills, jackhammers, etc (10 m³/min) hour (h)

- (d) Loaders
- (i) Rubber tired up to 60 kW and 8 ton mass hour (h)
- (e) Self-propelled vibratory roller, 9-12 tons hour (h)
- (f) Rollers / Compactors
- (i) Vibrating roller more than 80 kW and 10 ton mass hour (h)
- (g) Hand propelled vibratory roller, 0,5 ton mass hour (h)
- (h) Vibrating plate compactor minimum power 2 kW hour (h)
- F

Item	Unit
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B18.04 Materials

- (a) Procurement of materials provisional (prov) sum
- (b) Contractor's handling costs, profit and all other charges
in respect of subitem B18.03(a) percentage (%)

Item	Unit
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B18.05 Transport:

- (a) LDV kilometre (km)
- (b) Flatbed truck (8 ton)..... kilometre (km)

The unit of measurement for items B18.01 and B18.02 shall be the hour for the item of equipment or personnel. Non working hours for transport breakdown, lack of operator of any other reason shall not be measured. The time shall be taken from the time that the personnel and/or equipment depart until return.

Measurement shall only be for work instructed and directed by the Employer's Agent, where the Employer's Agent considers no other appropriate rate is applicable in the Pricing Schedule. Prior to the commencement of any work by the personnel described under item B18.01 the contractor must obtain written consent from the Employer's Agent regarding their classification in terms of "unskilled", semi-skilled" and "skilled" personnel.

The tendered rates for labour under B18.01 shall include full compensation to cover overhead charges and profit, leave pay, bonuses, subsistence, allowances, employer's contributions, additional payment for overtime where applicable, insurances, housing, site supervision, use of small hand tools and appliances, non -mechanical plant and equipment and consumable stores, for all administrative, supervisory, operative and contingent costs, relating to the supply of personnel.

The tendered rates for plant for item B18.03 shall be an all-inclusive hire charge for the use of the vehicle and driver or plant/equipment and operator and shall apply only to vehicles plant and equipment nominated in writing by the Employer's Agent, for all administrative, supervisory, operative and contingent cost, and profit relating to the running of the plant.

The unit of measurement for sub-item B18.04 (a) shall be the amounts actually paid for the procurement of materials to be purchased and shall be made in accordance with the provision of the general conditions of contract. Only the actual quantities of materials used, as verified by the Employer's Agent, shall be paid for.

The percentage tendered for sub-item B18.04 (b) shall be the percentage of the amounts actually paid for the procurement of materials as ordered under sub-item B18.04 (a) and shall be in full and final compensation in respect of the contractor's handling costs, profit and all other charges in connection with the procurement and supply of the materials to the point of usage.

The unit of measurement for item B18.05 shall be the kilometre distance that the vehicle travelled for transporting personnel and/or plant. All travelling shall be approved by the Employer's Agent.

The tendered rate for item B18.05 shall include full compensation for the cost of the vehicle including fuel, maintenance depreciation and running costs.

The above mentioned tendered rates shall be full compensation for the various items as specified and no additional compensation shall be considered."

3100 : BORROW MATERIALS

B3102 NEGOTIATIONS WITH OWNERS AND AUTHORITIES

Add the following to sub-clause 3102(a):

“Arrangements regarding to access to borrow pits and the alignment of haul roads shall be made between the contractor and the owners of the land on which borrow pits are situated. The Employer’s Agent’s representative on site shall be present at all such negotiations, which shall be confirmed in writing by the contractor. All costs involved with such negotiations as well as the requirements contained in clause 3102 and clause 1225 of the specifications shall be borne entirely by the contractor.”

B3103 OBTAINING BORROW MATERIALS

(a) General

Add the following:

“The expropriation and compensation for land from which borrow materials is obtained shall be negotiated and paid for by the employer.”

(b) Use of borrow materials

Add the following to the second paragraph of this subclause:

“Compensation to owners and arrangements with owners for taking material from alternative borrow pits proposed by the contractor shall be the contractor’s responsibility and entirely at his own expenses.”

B3104 OPENING AND WORKING BORROW PITS AND HAUL ROADS

(c) Excess overburden

Add the following:

“All excess overburden removed at borrow pits shall be replaced over the entire area of the borrow pit after initial shaping has been undertaken in an even layer. Payment for this requirement shall be deemed to be included in pay item 31.01

(f) Protecting borrow pits

Add the following:

"It is a requirement of the contract that each borrow pit or pits shall be provided with fencing around the perimeters, including a access gate, of the borrow areas, including the supply of danger warning signage fixed to the fencing, visible at all sides approaching the borrow pit area. The fencing shall be erected prior to entering the land for borrowing purposes and shall on final finishing of the borrow areas as specified by the employer, be dismantled and removed or left in-place as instructed by the employer. Payment for fencing around borrow pits shall be made in accordance with the stipulations of section 5500 in these specifications."

In addition to fencing, Security Guards shall be supply on a 24 hour, 7 days a week basis, with full time communication to the Site Manager or site camp for the duration of the contract and activities at the

borrow pits."

Add the following new subclause:

“(h) Haul roads

Haul roads to designated borrow pits along the road shall be constructed along alignments as instructed by the Employer’s Agent and shall be maintained at the contractor’s own cost to the satisfaction of the Employer’s Agent."

B3105 FINISHING-OFF BORROW AREAS AND HAUL ROADS

Add the following to this clause:

"Should the employer, Employer’s Agent or any other authority approved by the Employer’s Agent, require a higher standard of shaping and finishing off of borrow pits than specified in the standard specifications, measurement and payment for such extra work shall be made using daywork items as scheduled under this section."

3200 : SELECTION, STOCKPILING AND BREAKING-DOWN THE MATERIAL FROM BORROW PITS, CUTTINGS AND EXISTING PAVEMENT LAYERS, AND PLACING AND COMPACTING THE GRAVEL LAYERS

B3204 BREAKING-DOWN THE MATERIAL

(a) Initial breaking-down of the material in cuttings, borrow pits and existing pavement layers

Add the following to the table in the second paragraph of this subclause:

"Pioneer layers - 500mm maximum dimension

Not more than 20% of pioneer layer material shall pass through the 2,0mm sieve."

(b) Further breaking-down of pavement material

Add the following:

"Material used for the construction of selected, and wearing course layers shall be broken down by means of normal grid-rolling or additional normal grid-rolling to such an extent that the compacted pavement layer shall contain material of which 95% of the aggregate size shall not exceed 65mm. All oversize material, after breaking-down, shall be removed".

B3209 PLACING AND COMPACTING THE MATERIALS IN LAYER THICKNESSES IN EXCESS OF 200mm AFTER COMPACTION

Add the following new subclause:

(d) Pioneer layer

"The maximum size rock used in pioneer layers shall be 500mm and the layer thickness before compaction shall not be more than one-and-a-half times the maximum actual size of the rock. Not more than 20% of pioneer layer material shall pass through the 2,0mm sieve. Pioneer layer processing and compaction shall be as specified in subclause 3307(c) of the standard specifications".

3300 : MASS EARTHWORKS**B3305 TREATING THE ROADBED****(a) Removing unsuitable material**

Add the following to the third paragraph:

"For the purpose of this contract, excavation and removal of in-situ clayey material over areas where the road is in a fill condition, shall be classified as removal of unsuitable material, irrespective of the stability or moisture condition of the in-situ material".

(c) Preparing and compacting the roadbed

Delete the last sentence of the first paragraph "If necessary, roadbed.....depth of compaction" and replace as follows:

"Where demarcated by the Employer's Agent, prior to the roadbed being scarified, the excess in situ material forming part of the present roadway, and within the limits of the roadbed, and in close proximity of the layer works, but falling within the limits of the layerworks, shall be bladed to controlled level in order to achieve the required level and necessary depth of compaction."

B3307 FILLS**(c) Constructing a pioneer layer**

Add the following to the first paragraph:

"For the purpose of this contract, pioneer layers shall be completed by means of eight-pass roller compaction using vibratory rollers as specified in subclause 3304(b) of the standard specifications."

(d) Benching

Add the following:

"Benching of fill and pavement layer material is required to be undertaken into the existing fill embankments and pavement layers. No additional payment shall be made over and above the normal pay items applicable to earthworks and pavement layers where benching is required for widening of the existing road formation. Benching shall be undertaken as shown on the drawings.

It is a requirement that benching shall always be started at the bottom of the existing fill progressing to the top of the formation. The dimensions and details of benching are shown on the drawings."

B3308 FINISHING THE SLOPES**(d) General**

Add the following:

"Where existing cut and fill slopes are excessively eroded or where slippages occurred in slopes, the slopes are to be reinstated by means of backfilling with suitable gravel material. All loose material and vegetation shall first be removed from the eroded cut and fill slopes before backfilling may commence from the bottom of the cut or fill. The backfill material shall be benched into the existing slopes and compacted to 90% of modified AASHTO density, using suitable small compaction equipment e.g. Bomag walk-behind rollers or hand-held compaction tools. Benching shall be executed to the dimensions

shown on the drawings. Upon completion of the backfilling operation the cut and fill slopes shall be neatly finished as specified.”

3400 : PAVEMENT LAYERS OF GRAVEL MATERIAL**B3402 MATERIALS****(a) General**

Replace the first paragraph with the following:

"Gravel material shall be obtained from approved commercial sources or approved sources provided by the Contractor."

Replace "and 3402/4" in the third line of the second paragraph with "3402/4 and 3402/5".

Add the following after the second paragraph:

"The wet-dry durability (table 3402/5) limits for subbase if tested according to TMH1 method A19, but using samples as prepared for the modified AASHTO method, shall be as follows:

C3: 20% maximum (modified AASHTO density briquettes)

C4: 30% maximum (modified AASHTO density briquettes)"

Add the following to the second paragraph:

"Natural gravel shoulder material shall comply with the requirements of a Type 1 material according to table 3402/4.

For chemically stabilised layers the material shall conform to the requirements in table B3402/5. Where the in situ material does not conform the Employer's Agent will instruct the Contractor on the action to be taken which may include one of the following options:

- (i) Use material as is
- (ii) Cut to spoil in situ layer and replace with material from a commercial source
- (iii) Cut to spoil partial layer material and mix remainder with commercial material.

Distinction shall be made between crushed and natural G4, G5 and G6 materials. Where the crushing and/or screening of these materials has been specified, the combined grading shall conform to the grading limits specified for G4 class material in Table 3402/1."

Replace Table 3402/5 with:

"TABLE B3402/5: REQUIREMENTS FOR CHEMICALLY STABILISED LAYERS

Classification	C1	C2	C3	C4
Material before treatment	At least G2 quality	At least G4 quality	At least G5 quality	At least G6 quality
PI after treatment	Non-plastic	Non-plastic	6 max. *(1)	6 max. *(1)
UCS (MPa) *(2)	6 min.	4 min.	1,5 min	0,75 min.
ITS (kPa) *(3)	-	-	250 min.	200 min.
WDD (% loss)	5 max.	10 max.	20 max.	30 max.

Note:

- * (1) For materials derived from the basic crystalline rock group, the Plasticity Index after stabilisation shall be non-plastic.
- * (2) Unconfined Compressive Strength @ 100% Mod. AASHTO density
- * (3) Indirect tensile Strength @ 100% Mod. AASHTO density
- * (4) Wet/Dry Durability according to Method B 8110"

(b) Compaction requirements

Add the following:

"Compaction requirements for layer-works are indicated on the drawing Nos N2-34/TCS/1 and 2."

Add the following subclause:

"(d) Material requirements

When the values listed in tables 3402/1, 3402/2, 3402/3 and 3402/4 cannot be attained with the type and quantity of stabilizing agent specified in Section 3500 in the Project Specifications and on the borrow pit plans, the Employer's Agent will authorise the Contractor to vary and/or amend the quantity and possibly the type of stabilizing agent as well in order to obtain the required values."

B3403 CONSTRUCTION

Add the following subclauses:

"(f) Treatment of in situ material or existing pavement layers as new pavement layers

Where the in situ material or existing pavement layers are classified as suitable for new pavement layers and have to be reconstructed as prescribed by the Employer's Agent, the material or layers shall be scarified, watered and compacted to a percentage of modified AASHTO density. The density and compaction depth will be prescribed by the Employer's Agent.

When additional material has to be imported to obtain the required level and layer thickness, and when the thickness of the layer of imported material would be less than the specified layer thickness after compaction, the in situ material or existing pavement layers shall be scarified, the necessary imported material placed, and this combined material mixed and compacted to the full specified depth of the layer.

The imported material will be measured and paid for under item 34.01 and the in situ material will be measured and paid for under item B34.04.

(g) Temporary stockpiling of material

The Contractor shall plan his activities so that materials excavated from borrow areas and cuttings or imported from commercial sources can be directly transported to and placed at the designated points.

The temporary stockpiling of material will not be paid for separately unless instructed by the Employer's Agent, and full compensation will be deemed to have been included in the rates tendered for the various payment items for work for which the material is to be used.

This subclause does not apply to the excavation and temporary stockpiling of existing pavement layers as instructed by the Employer's Agent, in terms of subclause B3403(h), as these will be measured and paid for separately under item 32.06.

(h) Existing asphalt base or surfacing

Existing asphalt base or surfacing which cannot be broken down effectively to be used as part of the recovered pavement material, shall be separately excavated from the existing pavement layers and disposed of at approved dumping sites provided by the Contractor.

(i) Storing recovered pavement material

Excavated pavement material intended for reprocessing but which cannot be reprocessed in place or cannot, in the opinion of the Employer's Agent, be placed in a windrow next to the excavation, nor directly placed in position anywhere else, shall be transported to approved stockpile or dumping sites with written permission from the Employer's Agent.

Stockpile sites for material to be recycled or reprocessed shall be located as approved by the Employer's Agent.

The stockpile site shall be cleaned, and all stones, vegetation and other materials which may cause contamination shall be removed. The site shall be graded smooth with an adequate slope to ensure proper drainage of water. If instructed by the Employer's Agent, the surface shall be watered and compacted to a depth of at least 150 mm and to a density of 90% of modified AASHTO density. The compacted surface shall be firm. Upon completion, the surface shall be swept clean.

Stockpile sites shall be large enough to allow the different types of material to be stockpiled without overlapping or exceeding the limits of the prepared site. Enlargement of the stockpile sites after the stockpiles have been placed will not be permitted without the Employer's Agent's approval.

Upon completion of the work, the stockpile sites shall be rehabilitated in accordance with the Employer's Agent's instructions."

B3405 CONSTRUCTION TOLERANCES**(a) Level**

Replace the table in the subsubclause with the following:

	H ₉₀	H _{max}
<i>Selected layers</i>	<i>25 mm</i>	<i>33 mm</i>
<i>Subbase layers</i>	<i>15 mm</i>	<i>20 mm</i>
<i>Base layers</i>	<i>12 mm</i>	<i>15 mm</i>

Shoulders 25 mm"

Add the following:

"Level control for the various pavement layers shall be done at the following intervals in the longitudinal direction:

Layer	Interval
Selected layer, subbase, shoulders and wearing course	20 m
Base	10 m

"

(b) Layer thicknesses

Replace the table in the subsubclause with the following:

	D ₉₀	D _{max}	D _{ave}
Selected layers	25 mm	35 mm	8 mm
Subbase layers	18 mm	24 mm	5 mm
Base layers	15 mm	22 mm	5 mm
Shoulders	30 mm	0 mm"	

(f) Surface regularity

Replace the second and third paragraphs with the following:

- "(i) the average number of irregularities per m equal to or exceeding 5 mm when taken over 300 – 600 m lengths 3
- (ii) the number of irregularities equal to or exceeding 5 mm when taken over 100 m lengths 4"

Add the following:

"The construction tolerances of clause B3405 shall apply to layers constructed from reprocessed material, but when a gravel layer is placed on top of an existing layer without the existing layer being trimmed to prescribed levels, the thickness tolerances of subclause (b) do not apply."

B3406 QUALITY OF MATERIALS AND WORKMANSHIP

Replace the second paragraph with the following:

"Test results and measurements will be assessed in accordance with the provisions of Section 8200."

B3407 MEASUREMENT AND PAYMENT

Add the following items:

"Item	Unit
B34.14 Pavement layers constructed from gravel obtained from commercial sources or approved sources provided by the Contractor, including all	
(c) Gravel subbase (chemically stabilized material) compacted to:	
(i) 95% of modified AASHTO density for a compacted layer thickness of 150 mm	cubic metre (m ³)
(ii) 97% of modified AASHTO density for a compacted layer thickness of 150 mm	cubic metre (m ³)

The unit of measurement shall be the cubic metre of compacted pavement layer, and the quantity shall be calculated from the authorized dimensions of the completed layer.

The tendered rates shall include full compensation for procuring, furnishing and transporting approved material from commercial suppliers, including the cost of transporting the material to the required location on the site, placing and compacting the material, and the protection and maintenance of the layer and the conducting of control tests, all as specified. No additional payment shall be made for the removal or disposal of oversize material, regardless of the volume of oversize material.

3500 : STABILIZATION**B3502 MATERIALS****(a) Chemical stabilising agents**

Delete sub-clauses (ii) Ordinary Portland cement and (iii) Portland blast-furnace cement and replace with the following:

"Cement shall comply with the relevant requirements of SANS 50197-1:2000. The use of strength classes greater than 32,5 shall not be permitted.

On this contract CEM II 32,5 B-L or CEM II 32,5 A-L cement shall be used for stabilisation purposes.

The nominal rate of application for tender purposes as a percentage of the mass of the material to be stabilized and compacted to the required modified AASHTO density shall be as follows:

Upper subbase : 3,5%

Lower subbase : 3,5%

The Employer's Agent may instruct the Contractor to amend the percentage and possibly the type of stabilizing agent if necessary after tests on the Site during construction."

(e) Water

Replace the entire sub-clause with the following:

"Water used in the compaction and curing of stabilized layers shall comply with the requirements of water quality code H3 as specified in table B1219."

B3503 CHEMICAL STABILIZATION**(a) Preparing the layer**

Add the following:

"The material to be stabilized shall be spread and pre-shaped, so that a true cross-fall is obtained. The upper level of the spread material shall be such that any indentations and depressions caused by construction equipment shall be above or at final cutting level. Enough extra material must be allowed

for, so that no filling whatsoever is carried out. The final operation on the base prior to final compaction will be cutting and never making up of levels."

(d) Mixing in the stabilizing agent

Add the following:

"The Contractor shall prepare a trial section for each type of material without any extra payment to demonstrate his proposed mixing process before extensive mixing commences.

After approval has been obtained, the mixing process and equipment shall remain unaltered unless otherwise instructed by the Employer's Agent.

The fact that the Employer's Agent has approved the mixing process shall not relieve the Contractor of his obligations in respect of the mixing specified elsewhere in the Specifications. It will serve only as a guideline to ensure that the specified mixing requirements can actually be met."

(h) Curing the Stabilized work

Add the following to paragraph (ii):

"The covering material shall be placed by end-tipping, and compaction of this covering layer shall be delayed until the underlaying layer has cured for 7 days."

Add the following to paragraph:

"Method (iii) and (iv) shall not be applicable."

Add the following to paragraph (iv):

"As soon as the prime has sufficiently dried out and ball penetration tests allow so, and no longer than two weeks after the application of the prime, the layer must be surfaced or covered with the subsequent layer."

(i) Construction limitations

Add the following:

"Moisture content tests shall not be undertaken more than one day in advance of in situ stabilization operations. Care shall be taken to ensure that samples are representative of the in situ material. When

wet weather occurs, checks shall be conducted between initial testing and work commencing on any section.

The surface temperature of a compacted stabilized layer shall not be allowed to fall below 1 °C during the first three (3) days after stabilization. The Contractor shall be responsible for taking the necessary measures in this connection, and especially to refrain from stabilizing when such temperatures become probable.

When a sudden unforeseen temperature drop to a level below this limit occurs, the stabilized layer shall be covered with the material required for the next layer to be constructed.

All stabilized layers damaged by frost or by the formation of ice in the layer shall be removed and replaced by the Contractor at his own expense.

The Contractor shall make allowance for these requirements in his construction programme, and no claims in this connection will be considered.

No stabilisation shall be done with falling air temperatures when the air temperature falls to below 7 °C, or during rising air temperatures, when the air temperature is below 3 °C.

In Table 3503/1, delete 8 hours for ordinary Portland cements and cement blends and replace with "6 hours".

Add the following subclause:

"(j) General

The Contractor shall at all times supply all workers exposed to chemical stabilizing or modifying agents with approved protective apparel, eyewear and masks, and no person without such apparel, eyewear and masks may be permitted to work with or be exposed to the chemical agents. Precautionary measures shall also be taken to ensure that any livestock and the public will not be exposed to the chemical agents, for instance when they are carried by the wind.

Any biscuit layers or bowls, identified by the hollow sound caused when a chain is dragged over the stabilized layer, shall be removed and repaired prior to surfacing. The repairs shall be for the account of the Contractor. Before surfacing is allowed, ball penetration tests shall be carried out."

B3505 BITUMINOUS STABILIZING

Delete subclauses (a) to (d) and replace with the following:

"(a) Plant and equipment**(i) Mixing equipment**

The addition of the stabilizing agent and mixing with gravel shall be effected by utilising a recycling machine to mill and mix the material in the road formation in a single pass to the specified depth. As a minimum the recycling machine shall have the following features:

- the capacity of milling to depths of at least 300 mm in a single pass and be fitted with an automatic sensor system to accurately maintain a preset depth of cut;
- a milling drum that rotates upwards into the direction of advance and achieves at least 2 m of cut width in a single pass; and
- a gradation control system consisting of an adjustable bar, or beam, positioned in front of the milling drum to promote fragmentation of the material being recycled.

The recycling machine shall, in addition, include the following features:

- a micro-processor control system to regulate the application of water and separately the bituminous stabilizing agent in relation to the travel speed of the machine and mass of material being mixed;
- a dual pumping system for applying the water separately from, and simultaneously to the bituminous stabilizing agent. The pumping systems shall be calibrated to deliver with a tolerance of $\pm 5\%$ by mass;
- the application nozzles shall be self-cleansing to ensure a uniform application across the full width of treatment. The application systems shall be capable of adjustment for varying widths of treatment; and
- the bituminous system shall be equipped with a test nozzle capable of producing a replicate sample of the bituminous stabilizing agent being added to the milled material.

The mixed material shall exit from the recycling machine in a manner that prevents particle segregation. Final placing and level cutting shall be undertaken by a motor grader only after initial compaction has been effected to ensure a uniform level of compaction across the full layer width.

(b) Applying the additive

The additive specified (lime, cement, etc) shall be uniformly spread on the prepared road surface prior to the recycling machine commencing with milling and mixing. The additive shall be supplied in bags and shall be spread by hand.

(c) Applying the stabilizing agent

(i) Weather limitations

Spreading of the additive on the road ahead of the recycling machine shall not be permitted when the wind velocity exceeds 30 km/h

(ii) Controlling the moisture of the material

The addition of water shall be carefully monitored to prevent any portion of the work from excessive wetting and to ensure compliance with the requirements for moisture content and compaction.

At least one sample of stabilized material shall be taken for every 100 m of lane and tested for moisture content.

(iii) Control of cut thickness

To check that the automatic sensor system is functioning correctly, the actual depth of cut shall be physically measured at both ends of the milling drum at least once every 50 m along the cut length. This shall be recorded and submitted to the Employer's Agent on a daily basis.

(iv) Control of levels

The Contractor shall ensure that the specified level of compacted stabilized layer is achieved. The Contractor shall ensure the correct depth of excavation and thickness of imported material in order to achieve the specified thickness of stabilized layer. "

B3506 TOLERANCES**(b) Uniformity of mix (chemical stabilization)**

Add the following:

"The coefficient of variation shall not exceed 0,3 (30%) for mixing in place and 0,2 (20%) for plant-mixed material, calculated as follows:

$$\frac{S_n}{X_n} \times 100$$

X_n

where:

X_n is the average, and

S_n is the standard deviation of stabilizer."

B3507 CONSTRUCTION OF TRIAL SECTION

Add the following to the last paragraph:

"The fact that the Employer's Agent has approved the mixing process shall not relieve the Contractor of his obligations in respect of the mixing specified elsewhere in the Specifications. It will serve only as a guideline to ensure that the specified mixing requirements can actually be met."

B3509 QUALITY OF MATERIALS AND WORKMANSHIP

Replace the second paragraph with the following:

"Test results and measurements will be assessed in accordance with the provisions of Section 8300."

Add the following to the fourth paragraph:

"The stabilized material sampled from the layer for the compaction of modified AASHTO briquettes, shall be prepared according to TMH1 Method A16T; ie discard material coarser than a 37,5 mm test sieve, and compacted according to TMH1 Method A7."

Add the following paragraphs:

"The Employer's Agent shall be notified in good time to enable him to conduct tests himself.

Stabilization strength shall be determined by means of the Rapid Cure Method as described in TMH1 Method A13T.

Where the stabilizing agent is to be spread by hand, pockets of the stabilizing agent shall be placed on the layer at regular intervals. However, spreading shall only commence when the Employer's Agent is satisfied that the correct quantity of stabilizing agent has been placed on the layer and has given permission that the stabilizing agent may be spread."

B3510 MEASUREMENT AND PAYMENT

B35.14 Establishment of recycling/milling machines on site Lump sum

The tendered lump sum shall include full compensation for the provision of any number of recycling/milling machines on site, moving on site and subsequent removal from site."

SECTION 3600: CRUSHED-STONE BASE

B3602 MATERIALS

(a) Requirements for crushed aggregate

After the first sentence delete the remainder of the paragraph and replace with the following:

"The aggregate shall not contain more than 0,1% by mass of unwanted material such as wood, coal or similar organic material.

Aggregates containing mica, such as granite, gneiss, mica schist, pegmatite, sandstone shall not contain more than 2% by mass of free mica, especially muscovite, when assessed by visually separating the particles, or more than 4% by volume when assessed by means of microscopic slides. Aggregate containing easily detectable quantities (more than 1%) of olivine, serpentine and sulphide minerals such as pyrites and marcasite, must be considered with caution, and may warrant additional evaluation to the satisfaction of the Employer's Agent.

Soft or weathered particles shall be controlled by the Durability Mill Index values specified in B3602(e) Durability.

Provision has been made in clause B8108(b)(iii), calculation, for the determination and calculation of the Apparent Density for aggregates with a total water absorption greater than 1,5%, when total water absorption is determined according to TMH1 methods B14 and B15."

(c) Grading requirements

Replace entire clause with the following:

"The target grading, after compaction, shall be as near as possible to the mean of the specified grading envelope listed in table 3602/1 and shall be continuous with no marked gaps or excessive quantities of any particular size. The mean grading of each lot (minimum of 4 but preferably 6 test points per lot) shall conform to the approved target grading plus or minus the tolerances specified in table 3602/4."

Add the following new subclause:

"(e) Durability

The durability property of aggregates derived from the basic crystalline group shall be assessed by means of the Ethylene Glycol Durability Index. When tested in accordance with the method prescribed in B 8105(g) the Durability Index shall not exceed four. In addition, the 10% FACT value obtained after soaking in ethylene glycol for four days shall not be less than 70% of that obtained on the unsoaked sample. Where any values are obtained that fall outside the above requirements, a detailed assessment of the quarry shall be undertaken together with a specialist mineralogical evaluation of both the coarse as well as fine fractions in order to assess the long-term durability properties of the material.

For Basic crystalline rocks, Arenaceous rocks, Argillaceous rocks and Diamictites the Durability Mill Index (DMI) shall be less than 125. For all other rock types the Durability Mill Index (DMI) shall not be more than 420, subject to the % passing the 0,425 mm sieve not increasing by more than 8 percentage points during the Durability Mill test."

B3604 CONSTRUCTION

(b) Compaction

Add the following at the end of the first paragraph:

“The specified density shall also be obtained in the upper 50 mm of the layer.”

B3605 PROTECTION AND MAINTENANCE

Replace “moisture content of the layer” in the first paragraph with “moisture content of the upper 50 mm of the layer.”

Add the following to the end of the second sentence:

“as determined according to TMH 1 method A7.”

B3607 QUALITY AND WORKMANSHIP

Delete “or 8300” in the second paragraph.

SECTION 4100 : PRIME COAT

B 4102 MATERIALS

(b) Aggregate for binding

Add the following:

“Blinding of the primed surface with aggregate shall only be permitted to facilitate vehicular access to adjoining properties.”

B4104 WEATHER AND OTHER LIMITATIONS

Replace paragraph (g) with the following:

“(g) When the moisture content of the upper 50 mm of the layer is higher than 50% of the optimum moisture content determined according to TMH 1, Method A7.”

B4106 APPLICATION OF THE PRIME COAT

Add the following to paragraph (c):

"The nominal application rate of the prime shall be 0,7 l/m². Unless directed otherwise by the Employer's Agent or indicated on the drawings, the edges of the primed surface shall be 150 mm wider than the edges of the surfacing on each side."

Add the following subclause:

"(j) Application in areas treated by reworking and construction of a new base shall be primed using a mechanical distributor complying with sub-clause 4103(a). The edges of the previously constructed or existing surfacing shall be adequately protected by approved means to ensure that an overlap of prime not exceeding 50 mm is sprayed onto the previously constructed or existing surfacing."

B4108 TOLERANCES

Replace the first paragraph with the following:

"The actual spray rates measured at spraying temperature shall not deviate by more than 8.0% from that ordered by the Employer's Agent. The Employer's Agent may, at his discretion, conditionally accept application rates falling outside this tolerance at reduced payment in accordance with Table B4108/1.

TABLE B4108/1: PAYMENT REDUCTION FACTORS FOR CONDITIONALLY ACCEPTED PRIME COAT

Deviation specified spray rate at spraying temperature. (%)	Payment reduction factor of tendered rate.
±8,0	1.00
±9,0	0.97
±10,0	0.95
±11,0	0.90
±12,0	0.85
±13,0	0.80

Any deviation outside these limits shall not be paid for, however, the Employer's Agent shall have the right to instruct the contractor to make up any deficiency, or blind excessive prime without additional payment. Where so instructed, the material for blinding shall consist of approved, but shall consist of screened 4,75mm nominal single size aggregate. The use of crusher dust for blinding shall not be permitted. If under-spraying occurs, and it is accepted by the Employer's Agent, only the actual quantities applied shall be paid for."

B4109 TESTING

Add the following:

“No payment will be made if this condition is not adhered to. The contractor shall provide, at his cost, representative samples of every batch of prime delivered onto site

SECTION 4200: ASPHALT BASE AND SURFACING**B4202 MATERIALS****(a) Bituminous binders**

Reference is drawn to Clause B1232: SANS BITUMEN SPECIFICATIONS of the project specifications with regards to SANS Bitumen Specifications that shall apply to this contract

(i) Conventional binders

Add the following:

“The binder to be used shall be:

- a) 50/70 penetration grade
- b) 30% Stable grade bitumen emulsion for tack coat.
- c) Stable grade modified with 3% SBR
- d) High modulus asphalt (EME): 10/20 penetration grade bitumen and shall comply with the relevant requirements of Table B4202/13”.

Add the following:

“The binders shall comply with SANS 4001 Latest Amendment. The Contractor shall submit the following to the Project manager for each batch of bitumen used on site:

- A copy of the SANS quality certificate, indicating the batch number and grade.
- A sample of the (base) bitumen.
- The source of the bitumen.

The Project manager may require the Contractor to submit samples of the bitumen to an approved accredited laboratory at random intervals to check compliance with the SANS 4001 criteria. The cost of these additional tests will be reimbursed through a prime cost item.

Add the following new table:

TABLE B4202/13: PROPERTIES OF 10-20 PENETRATION BINDER FOR EME

Property	Unit	Test Method	Class
Before Ageing			10-20
Softening Point	°C	EN 1427	58-78
Penetration @25°C	0.1mm	EN 1425	10-20
Viscosity @ 60°C	Pa.s	EN 12596	>700
After Ageing (RTFOT)			
Increase in Softening Point	°C	EN 1427	≤ 10
Retained penetration (% of original)	%	EN 1425	>55
Mass Change	%		< 0.5

Add the following sub-sub-clause to sub clause (iv):

All bituminous binders shall be transported and handled as recommended in SABITA manual 25: ‘Quality management in the handling and transport of bituminous binders.’”

(iii) Homogeneous modified binders

Add the following to the end of the Clause

“The binder to be used shall be:

- a) A - E2 (elastomer modified)
- b) A - P1 (plastomer modified)

Add the following:

The supplier of the A-P1 binder shall quantify the fuel resistant properties of the binder according to both the CEN standard EN 12697-43:2005 (use in Europe) and NF P 98-251-1 (French standard). The Project manager will approve the binder if sufficient evidence is provided that it is fit for purpose in terms of fuel resistance.

(b) Aggregates

Add the following:

"The fine aggregate for the asphalt wearing course and bitumen treated base shall consist of crushed stone."

- (i) Resistance to crushing

Add the following

"The minimum 10% FACT for EME base mixes shall be 160kN"

- (ii) Shape of the aggregate

Add the following

"The maximum flakiness index of the aggregates used in EME base mixes shall be 25%. In addition, the percentage of fully crushed (>5mm) coarse aggregate shall be 100%.

For EME mixes the particle index test in accordance with Sabita Manual 33 shall be a minimum of 15% (ie >15%)".

- (v) Absorption

Add the following:

"In addition, the total binder absorption of the combined coarse and fine aggregate blend shall not exceed 1,5%."

- (vi) Design requirements

Add the following:

"The designs shall be undertaken in accordance with Clause 3.2.5 and conform to the requirements of the latest version of *Interim Guidelines for the Design of Hot-Mix Asphalt in South Africa* and also specifically with the design and performance criteria as amended and specified in B4203. The grading requirements of the specifications will serve only as a guideline and on the approval by the Project Manager, where required to obtain performance, this will be relaxed."

- (viii) Grading

Add the following:

"The use of crushed stone base (run-of-the-crusher) material shall not be permitted. Any mix shall be manufactured using single size coarse aggregate fractions. The use of natural sand will not be permitted. The Project manager may request a reconsideration of a blend to achieve any grading within the given envelope to improve certain properties. The grading may fall partially outside the given envelope if approved by the Project manager."

"The grading limits for the EME base mix, shall be based on those given in table B4202/6:

TABLE B4202/6: GRADING LIMITS FOR EME BASE MIXES

Sieve Size (mm)	NMPS = 14 mm
14	90-100
10	67-90
7.1	47-66
5.0	42-62
2.0	25-38
1.0	20-30
,600	15-25
0,300	11-20
0,150	7-16
0,075	5.5-7.9
Aggregate	93%
Nominal binder content	6.0%
Active filler	1%

(c) Fillers

1.

Add the following to the first paragraph:

"For tender purposes the active filler shall be hydrated lime for conventional mixes at an active filler content of 1,0% by mass.

In no instance shall more than 2% by mass of active filler be used in the mixes, however where hydrated lime is used for in EME the quantity should be limited to 1% by mass of the total aggregate."

(h) General

Add the following after the second paragraph:

"In case where drum mixing is used, the aggregate stockpiles shall be tested every second day or whenever new material is delivered. The test results must be presented to the Project Manager.

B4203 COMPOSITION OF ASPHALT BASE AND SURFACING MIXTURES

In the fifth paragraph, delete "TRH 8" and replace with "*Interim Guidelines for the Design of Hot-Mix Asphalt in South Africa* and the design criteria specified in B4203."

Also add the following to this clause:

The asphalt used for the asphalt surfacing on taxiways sections (where instructed) shall consist of a medium, continuously graded asphalt as specified in Section 4200 and given in Table 4202/7 of the standard specifications. The binder shall consist of a suitable fuel resistant A-P1 modified binder bitumen. The nominal binder content for tender purposes shall be 4.5% (by mass) with a target Marshall voids-in-mix (VIM's) of 6.0%.

The asphalt used for the asphalt surfacing for thin base repairs (shall consist of a medium, continuously graded asphalt as specified in Section 4200 and given in Table 4202/7 of the standard specifications. The binder shall consist of a A-E2 modified binder bitumen. The nominal binder content for tender purposes shall be 5.0% (by mass) with a target Marshall voids-in-mix (VIM's) of 4.5%.

The asphalt used for thick base repairs on all taxiways shall consist of a continuously graded asphalt Hot Mix Asphalt Base as specified in Section 4200 and given in Table 4202/6 (continuously graded 26.5mm maximum). The binder shall consist of a A-P1 modified bitumen bitumen. The nominal binder content for tender purposes shall be 4.5% (by mass) with a target Marshall voids-in-mix (VIM's) of 4.5%.

The asphalt used for the asphalt surfacing the shoulders of taxiways for thin base repairs (shall consist of a medium, continuously graded warm asphalt as specified in Section 4200 and given in Table 4202/7 of the standard specifications. The binder shall consist of a A-E2 modified binder bitumen. The nominal binder content for tender purposes shall be 6.0% (by mass) with a target Marshall voids-in-mix (VIM's) of 3.0%. If instructed, the binder can be changed to A-R1 (or equivalent) and/or hot mix asphalt can be used.

The design of the asphalt surfacing mix shall be in accordance with the design criteria at 100% Marshall density (2 X 75 blows) given in Table B4203/1.

Additional joint permeability and other mix design criteria which are given below (B4203/1) will also apply and the Contractor will be required to make special provision in his tender prices for ensuring that the asphalt will comply with this criteria and also for fine-tuning of the mix based on performance testing (Model Mobile Load Simulator Tests on 150mm Gyratory compacted briquettes compacted to 95% RICE density and on Gyratory refusal density briquette) on trial mixes (plant mixed) immediately after the award of the contract. Mix design proposals and approvals shall be finalised between the Contractor and the Project Manager before commencement of paving work. The contractor shall submit proposed mixes to approved or instructed test laboratories for performance property assessment within 1 week after award or contract acceptance to enable adequate testing time.

For the EME base, the "Interim Design Manual for High Modulus Asphalt, Manual 33, July 2015" as published by Sabita should be followed. The nominal binder content for tender purposes shall be 6.0% (by mass) with a target Marshall voids-in-mix (VIM's) of 3.5%.

Property	Unit	Medium continuously graded WC mixes (A-E2 and 50/70 bitumen)		Continuously graded BTB mixes (A-P1 and 50/70 bitumen)		EME Class 2		Shoulder mixes Hot asphalt (A-E2 binders and 50-70 pen)	
Application		Surfacing of taxiways and thin base repairs		Thick base repairs		Thick base repairs		Taxiway shoulder surfacing	
		Min	Max	Min	Max	Min	Max	Min	Max
Target voids in mix	%	4.0	5.0	4.0	5.0			2.5	3.5
Filler/bitumen ratio	-	1.3	1.5	1.1	1.5			0.6	1.0
VMA	%	15	-	14	-			19	-
Indirect tensile strength @ 25°C	kPa	1100	-	1000	-			-	-
Dynamic modulus at 10 hz, @15°C	GPa					16			
Average Micron strain deformation per cycle in the Dynamic creep test in the 2000 – 3000 cycle range	Microns / cycle	-	0.45	-	0.45			-	-
Hamberg Wheel Tracking Test (HWTT) (20 000k repetitions, 95% RICE slabs, Wet, 50°C)	mm	-	5.0	-	5.0		3.0	-	-
4 Pt Beam fatigue repetitions to failure at 5°C at 200μ (100% Marshall)	μ	2400k		1200k				4000k	
4 Pt Beam fatigue repetitions to failure at 5°C at 350μ (100% Marshall) (Failure is 50% repetitions in stiffness)	μ	130k		80k				300k	
4 Pt Beam fatigue repetitions to failure at 10°C at 260μ (Failure is 50% reduction in stiffness)	Reps					1000k			
Richness Modulus K						3.4			
Binder film thickness	Micron	7	-	7	-			N/A	
Marvel Permeability on joints	Litre/h	-	3	-	3			-	3
Voids in mix @ 300 gyrations of the Superpave Gyratory Compactor	%	2.5	-	3.0	-		6.0	1	-
Modified Lottman Durability	%	80	-	80	-	80		80	-
Paving thickness – final layer	mm	50	60	NA	NA	NA	NA	45	60
Paving thickness – base repairs	mm	40	60	60	120	60	120	NA	NA

Note k = 1000 repetitions

B4204 PLANT AND EQUIPMENT**(a) General**

Add the following:

"In all cases of night work and/or other limited occupation work sections, the contractor shall ensure that a minimum of 50 tons of asphalt is available in hot bins at the plant before milling commences. The contractor is to ensure that the production shall be such that should there be a problem at the plant that sufficient asphalt is stored in hot bins to backfill the full milled areas. In cases of night time work or other limited access occupation areas requiring opening to traffic at the end of the occupation period, binned asphalt or asphalt already on site shall be equivalent / or greater than the quantity of material required to backfill any milled work.

The Contractor shall have at **least two pavers** on site working simultaneously. The details of these pavers should be listed on Forms C3 and C4 respectively.

The onus will remain with the Contractor to supply sufficient subsequent plant to match the production of the pavers."

(b) Mixing plant**(i) Conventional Binders**

For item B4204 (b) (i) replace the amended second paragraph with:

"The mixing plant shall be automatically controlled such as to ensure that a uniform mix will be produced at all times under normal operating conditions to the satisfaction of the Project manager. Special care shall be taken to ensure a continuous free flow of active filler and modifier. The mixing process will immediately be stopped if manual intervention is required to enhance the flow of aggregate, filler or modifier. The mixing process will not be allowed to continue until the Project manager has been satisfied that the mixing plant can be controlled adequately to ensure a continuous uniform mix without manual intervention. If the process cannot be rectified in time to complete the days work, the mixing and paving will be allowed to continue but the asphalt layer produced by the mixing plant will be rejected and will have to be replaced with a new approved mix. The Employer reserves the right to instruct the Contractor to use an alternative mixing plant if the problem persists. No additional payment will be made in such an event, even if the Contractor elects to change his asphalt supplier."

Add the following at the end of the third paragraph:

"Batch plants shall be provided with efficient means of sampling the aggregate in each hot bin and filler storage bin.

All mixers shall be provided with a sampling point for hot bitumen between the storage tanks and the mixer.

All thermometric equipment shall be clearly visible to the plant operator.

The manufacturer's rated capacity of the mixing plant shall be adequate to meet production requirements for the work. The rate of production shall not exceed 80% of the manufacturer's rated capacity of the plant.

All plant used by the Contractor for the preparation of asphalt base and surfacing, stone mastic asphalt and levelling and bedding layer mixtures shall be open to inspection by the Project manager at all times. Calibration at all feeders shall be done in the presence of a representative of the Project Manager."

Add the following at the end of the fifth paragraph:

"A separate cold feed bin shall be allocated for each aggregate size."

Add the following at the end of the sixth paragraph:

"If material recovered from the dust collecting equipment is to be fed into the mixer it shall first be weighed by means of a suitable weighing device. No material finer than 0,005 mm may be fed back into the mixer."

Add to the seventh paragraph:

"...or the latest revision or replacement act."

(c) Spreading equipment

(i) Paver

Replace the last paragraph with the following:

"The paving of the asphalt surfacing shall be controlled by the use of wires or similar approved methods to achieve the specified levels and thickness.

Averaging beams (levelling beams) are to be used for the asphalt surfacing. They shall be at least 9 m long and shall be assembled from rigid sections having multiple spring-load feet."

(d) Rollers

Replace the next sentence in the first paragraph with the following:

"Approved tandem-axled steel-wheel rollers with a minimum roller width of 1,5 m and a minimum length of 2,0 m must be used for initial rolling. The roller drum must be smooth without any indentations or marks that may lead to pick-up of the asphalt carpet. A 25-ton pneumatic roller must be used for the final rolling and finishing of asphalt surfacing. The use of the pneumatic roller shall be assessed in the trial section."

B4205 GENERAL LIMITATIONS AND REQUIREMENTS AND THE STOCKPILING OF MIXED MATERIAL

(a) Weather conditions

Add the following paragraph:

No paving or patching shall be carried out under unstable weather conditions. Should rain or cold weather threaten, all exposed areas shall immediately be reinstated with asphalt and milling operations shall cease."

(c) Surfacing requirements

(ii) Tack coat

Add the following paragraph:

"Hand spraying shall only be permitted on areas approved by the Project manager. The binder distributor shall be capable to apply the binder evenly over the full area. The equipment shall comply with clause 4103. Tack coat shall be applied to all transverse and longitudinal joints in the asphalt by hand utilizing a paint brush."

B4206 PRODUCING AND TRANSPORTING THE MIXTURE

(b) Transporting the mixture

Add the following:

“Segregated mixes will under no circumstances be accepted by the Project manager. Effective steps must be taken by the Contractor to prevent segregation. Trucks with segregated asphalt mixes will be rejected by the Project manager.”

"Special precautions shall be taken by the Contractor to ensure that the temperature of the total mass of asphalt does not decrease by more than 15°C from point of dispatch to the point where it is to be

B4207 SPREADING THE MIXTURE

Add the following to subclause (a):

“The following paving restrictions will strictly apply:

- No paver stops will be allowed for reversing supply trucks.
- Continuous paving operation is a requirement. Paver speed to be regulated to prevent supply related stops. Paving operations may only start if sufficient asphalt supply trucks are available to ensure a continuous paving operation.
- Levelling skid-beams (9 m length at least with free wire between ends) or wire guide system to be used on both sides – no joint matchers except if agreed or instructed by the Project manager .
- Automatic auger feed control, which can keep the asphalt mount in-front of the screed constant, are required.
- No pneumatic rolling as breakdown rolling on the final surfacing layer.
- Handwork shall not be allowed.
- No fat spots or loose stones.
- No water ponding.

In the case of non-compliance herewith the Project manager’s personnel will stop the paving operations and sections done in non-compliance can be rejected after assessment by the Project manager.”

B4208 JOINTS

Add the following to this clause:

“a) Asphalt Surfacing

All joints not paved with tandem pavers will be considered to be cold joints with reference to joint treatment preparation. All asphalt joints shall be cut back by an approved roller wheel or milling machine (minimum 70 mm in 2 x roller wheel cuts on surfacing layer) in a straight line to the satisfaction of the Project manager.

The lateral distance between joints of two (2) successive asphalt layers shall not be less than 200 mm.

Where the difference in level between the new work and the existing road surface exceeds 25 mm, joints shall be treated as follows:

Transverse steps at the end of a day’s work on operational taxiways and taxiways shall be tapered off at a slope of 1 vertical to 20 horizontal (1:20) to tie in with the existing surface. The tapered section shall be removed before surfacing is recommenced and a joint formed in accordance with clause 4208 of the specification. Longitudinal joints exposed to traffic shall be provided with a taper of compacted asphalt material over the full length of the exposed joint. The width of the taper shall be at least 5 times the difference in level between the old and new work.

All costs involved in the provision and removal of these temporary ramps shall be deemed to have been included in the rates tendered for the relevant asphalt pay item.

b) Longitudinal Joints

Longitudinal joints shall be cut back as specified in a) above.

No saw-cutting will be allowed on newly placed asphalt. All wearing course transverse joints to be cut and treated similar to the specifications for longitudinal joints.

Whenever the paver stops for more than 5 minutes on thinner wearing course layers and/or the uncompacted material already laid cools down to below compaction temperature (110°C for wearing course), a joint shall be constructed as specified and all cooled uncompacted materials removed from the pavement.”

B4210 COMPACTION

Add the following to the 4th paragraph:

“An appropriate rolling temperature range will be determined by the Contractor and will be submitted to the Project Manager for verification during the trial sections. This range will be applied as specification during the contract.”

Replace the 6th paragraph with the following:

“The sequence of rollers used in compaction is at the discretion of the Contractor (except as specified for pneumatic rolling in B4207) provided the completed layers shall have minimum and maximum density as specified in table B4210/1 below as described in TMH1, method C4 (Rice's density).

Table B4210/1: Minimum and Maximum Compaction Density Specifications

Layer	Min Density	Max Density
Wearing courses and thin base repairs (40mm to 60mm thick)	93% MTRD	97% MTRD
BTB mixes (60mm to 120 mm thick)	93% MTRD	97% MTRD
EME base mixes (60mm to 120mm thick)	94% MTRD	97% MTRD
Heavy duty A-P1 modified surfacing (70mm to 90mm)	92% MTRD	96% MTRD
Shoulder mixes (400mm thick)	93% MTRD	99% MTRD

In addition hereto the compaction immediately adjacent to joints and across the joints shall be done to ensure densities of not less than 1% of those specified (above) in the rest of the layers (including all hot and cold joints). Joint densities measured across the joint shall not have densities of less than 2% of the minimum specified layer density. A combination of asphalt cores and Marvel permeability testing will be used to access and approve joint densities before covering thereof with consecutive layers.

B4213 CONSTRUCTION TOLERANCES AND FINISH REQUIREMENTS

(a) Construction tolerances

- (iv) Cross-section

Replace the entire clause as follows:

“When tested with a 3 m straight edge laid in any direction on the taxiway (excluding areas on the crown of the taxiway), the surface shall not deviate from the bottom of the straight-edge by more than 3 mm for the taxiway.

(d) Binder content

Delete the words “clause 8206 or clause 8305” in the third line and Substitute with “clause 8305”.

(e) Air-void tolerance

Replace the content with the following:

"The actual air voids may not deviate by more than 1 percentage point from the air voids in the approved working asphalt mixes, based on a Marshall compaction of the approved working mix."

B4214 QUALITY OF MATERIALS AND WORKMANSHIP

Add the following to this clause:

(b) Coring of asphalt layers

Delete the first sentence and replace with the following:

"The Contractor shall provide suitable coring machines capable of cutting 100 mm and 150 mm cores from the completed asphalt layers."

Add the following at the end of the first paragraph:

"No laying of asphalt surfacing shall be permitted unless a suitable core cutting machine is available on site at all times when asphalt paving is taking place. Cores shall be taken as specified in Section 8100 and Section 8300 or as directed by the Project manager. Cores may only be drilled when the layer temperature is less than 20°C. Core holes must immediately after coring be filled with hot asphalt and compacted. Cores shall be taken within 48 hours of paving. The density test results on the cores will be submitted to the Project manager 24 hours after coring."

Add the following sub-clauses:

2. (d) Quality Control

The Contractor will be required to submit his detailed Quality Assurance Plan (system) to the Project manager for approval. Once approved, the Contractor shall not deviate from the system.

(e) Riding quality

"For the overlaid areas, the surface regularity, in addition to the specified requirements, shall be determined with a high speed profilometer (HSP), capable of producing a class 1 vertical measurement and class 3 longitudinal sampling distance as defined in ASTM standard E950-94, with a valid validation certificate. Record the longitudinal profile in both wheel tracks, 1,7 m apart for each paved lane. Then, from the data, determine the average IRI for the left and right wheel track for each 100 m section for each lane paved in one width (the values indicated in Table B4213/2 may be relaxed by the Project Manager on the portion of the width that does not get an infill. This will be determined and communicated once the existing IRI's have been determined). The first and last 50m of the taxiway will not be assessed for riding quality.

The IRI shall be judged in terms of the payment adjustment factors in Table B4213/2.

TABLE B4213/2: RIDING QUALITY FOR UTFC OVERLAY PAYMENT ADJUSTMENT FACTOR

Riding quality	Payment adjustment factor
100 m IRI values (mm / m)	overlay on existing surface
< 1,20	1,0
1,21 – 1,30	1,0
1,31 – 1,40	1,0
1,41 – 1,50	0,98
1,51 – 1,60	0,97
1,61 – 1,70	0,96
1,71 – 1,80	0,94
1,81 – 1,90	0,92
1,91 – 2,0	0,90

> 2,0	Not acceptable
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Sections that are found to be unacceptable in terms of regularity shall either be replaced, or remedial measures implemented that will provide the required riding quality. A method statement describing these measures shall be approved by the employer before implementation. Skimming of the areas with a milling machine shall not be allowed. Corrective work shall be done at the contractor's expense. After completion of the corrective work the specific 100 m section shall be re-evaluated as described above.

Any adjustment to the payment of asphalt surfacing shall be done by multiplying the payment adjustment factor derived as above with the full payment of the relevant asphalt pay item plus tack coat and other payable incidentals. The payment adjustment factor shall apply to the full layer width paved in one operation for that specific 100 m section.

Riding quality tests using the HSP shall be paid for under pay item B12.07.

Any acceptance of asphalt quality control will not be deemed to include for this clause until such testing has been complete and finalised with the Project manager. Acceptance at partial payment, based on obtained riding quality between 1,4 and 2,0, is at the discretion of the Project manager (based on adherence to B4207 and all other applicable COLTO workmanship specifications). In areas where the Project manager can certify adherence to the criteria, in the absence of available IRI test results, he may do so with permission of both the Employer and Contractor.

The rolling straight edge test in the Standard Specifications will not be applicable except on the transverse construction / stop joints of all paved sections. The maximum irregularity measure with the wheels of the standard apparatus removed (only outer wheels at 3m spacing in place) shall be + or - 3mm. Joints that do not satisfy these criteria shall be milled and reconstructed over a minimum "10m in length" section."

The Contractor shall arrange for the IRI testing of all sections by a Laboratory approved by the Project manager, before the end of the Contract or when instructed within 21 days of such instruction. Costs for such testing of all relevant sections shall be deemed to be included in the rates of these wearing course layers; additional IRI testing as instructed by the Project manager shall be paid under B12.07 PC Sum.

The contractor is to supply surveyed levels of each layer (including the milled interface and the original surface) to the Project manager at a frequency of at least five positions along the width of the paved layer and at 20m interval. These co-ordinated positions shall then be used for all subsequent surveyed layers."

(f) Special tests

(i) Recovery of binder for further testing

Extraction of bitumen and its recovery from samples taken from the asphalt layers shall be carried out in accordance with ASTM D1856/79 (Abson).

(ii) n-Heptane-xylene Equivalent (Spot Test) (AASHTO – T102)

If the Project manager considers that bitumen or asphalt has been overheated he may order that the bitumen or the bitumen recovered from the asphalt be subjected to the spot test.

Recovery of binder for use in the spot test shall be carried out as described in (d) (i) above.

Any sample showing an n-Heptane-xylene equivalent in excess of 36 or if the bitumen contains a proportion of bitumen prepared from cracked stock, in excess of the manufacturers test result on the new stock, shall be considered to have been overheated and shall be rejected.

(iii) The following additional test shall be carried out on asphalt samples taken from the paver hopper:

- Penetration of recovered binder @ 25°C (Method ASTM D5)

Should the penetration of the recovered binder be less than 24 at 25°C, the asphalt layer shall be deemed to be unsatisfactory and shall be condemned by the Project manager. The Project manager on site shall decide the frequency of testing.

(g) As-Built

The Contractor shall keep accurate records and submit the following information to the Project manager on a daily basis:

- I. Where every truckload of asphalt is laid (load, position, lane, time and date).
- II. The truck number from which control samples have been taken. All samples taken from trucks shall be numbered.
- III. The temperature of the asphalt in the truck both at the mixing plant and at the paving equipment.
- IV. Process control results

These shall be summarised on a spreadsheet/database and mapped for as-built purposes and supplied to the Project Manager on a daily basis.”

SECTION 4800: TREATMENT OF AN EXISTING SURFACE EXHIBITING CERTAIN DEFECTS**B4802 MATERIALS**

Add the following:

“The classification of modified binders for crack sealing shall be as shown in Table B4801.

Table B4801

Classification of Modified Binders for crack Sealing	
Modified Binder Class (C)	Application
C – E1	Crack Sealant – Hot applied
C – R1	Crack Sealant – Hot applied

The letter codes used in the classification are defined as follows:

C – crack seal applications (hot applied)

E – a polymer of the elastomer type (e.g. SBR, SBS, etc)

R – Bitumen Rubber type

The binders to be used on this contract for the sealing of cracks shall be C – E1. The properties of the crack sealant shall conform to the requirements listed in Table B4802.

Table B4802

Properties for modified binder crack sealants			
Property	Unit	Test Method	C – E1
Softening point (R&B)	°C	MB - 17	80 (min)
Elastic recovery @ 15°C	%	MB - 04	80 (min)
Flow @ 60°C	mm	MB - 12	Nil
Resilience	%	MB - 10	N/A
Torsion recovery @ 15°C	%	MB - 05	Report
Solids content (m/m)	%	MB - 22	N/A
Viscosity @ 165°C	Pa.s	MB - 18	0.55 (max)
Dynamic viscosity (Haake @ 190°C	Dpa.s	MB - 13	N/A
Viscosity @ 25°C	Pa.s	MB - 18	N/A

B4803 PLANT AND EQUIPMENT**(b) Equipment for crack sealing**

Delete this subclause, and replace with the following:

“The contractor shall inter alia provide the following equipment for crack sealing:

- (i) Blowing out cracks

The contractor shall provide a mobile compressor capable of discharging at least 3-m³/min compressed air at 650kPa pressure. The compressed air shall be free of deleterious matter that may adversely affect the bond between the sealant and the cracks. The compressor shall be free of oil, and diesel leaks.

A lance shall be used to direct the force of the air into the cracks and must be sufficiently manoeuvrable to enable the path of the crack to be followed accurately.

If hot air is specified, the compressed air must be heated by a hot air lance capable of achieving a temperature of 300°C in the combustion chamber.

(ii) Sealant applicator

“The sealant shall be applied through an applicator manufactured specifically for this purpose. Essentially the equipment for the hot sealant shall consist of a mobile vessel capable of heating the sealant to the required application temperature by indirect heat and controlled by a thermostat to prevent overheating. A calibrated thermometer shall be fitted in an accessible position to accurately measure the sealant temperature in the tank. Special pumps, which can deliver the sealant to the crack in a controlled manner, shall be used.

The sealant shall only be applied with pressure type application equipment to ensure that the cracks are filled rather than covered.

The contractor shall ensure that all equipment is kept clean so as to prevent blockages and resultant poor workmanship.”

B4804 CONSTRUCTION

(e) Sealing cracks

Add the following:

“Prior to sealing, areas for sealing shall be delineated by the Project manager.”

(ii) Preparation

Add the following:

“The cracks shall be blown out with heated (“hot air lance”) compressed air. All dirt, grit and other base or foreign matter shall be blown out and be removed from the cracks and pavement surface.”

(iii) Cracks smaller than 3 mm

Add the following:

“No cracks smaller than 3 mm width shall be sealed unless so ordered by the Project manager.”

(iv) Cracks of 3 mm and wider

Add the following:

“Cracks shall first be cleaned before the crack is sealed. The sealant shall be forced into the cracks by means of the specified sealant applicator. The contractor shall ensure that the sealant mixture actually penetrates the crack and does not merely cover the crack in the form of a bandage. All excess sealant on the road surface wider than 30mm on either side of the crack, and thicker than 1mm, shall be removed, and shall not be paid for.”

*I.***5700 : ROAD MARKINGS****B5701 SCOPE**

Replace contents of this clause with:

“ This section covers the marking of the road, runway, taxilanes, taxiways and apron surface with painted lines, letterings and symbols as per existing lines, letterings and symbols or as shown on drawings or as directed by the service manager or as existing on site before pavement repairs . The section further covers the removal of existing paint markings on road, runway, taxilanes, taxiways and apron surface. In the context of this section, all reference to ‘road surface’ shall mean road, runway, taxilanes, taxiways, apron surfaces and any other pavement having road paint markings, furthermore, all reference to the Project Manager shall mean the Project manager”

“All road markings shall be of standard regulatory, warning and guidance markings as detailed on the drawings and in accordance with ICAO Annexure 14, ACI Aprons Markings and Signs Handbook and ACSA Operations Department Policy D060-Maintenance and engineering related.”

B5703 WEATHER LIMITATIONS

Replace the remainder of the paragraph from the comma after 10deg C with the following:

“or when, in the opinion of Service Manager the wind strength is such that it may adversely affect the painting operations or where visual conditions are as such that the safety of the painting team will be compromised”

B5704 MECHANICAL EQUIPMENT FOR PAINTING

Replace the contents of this clause with the following:

“The equipment shall consist of an apparatus for cleaning the surfaces, a mechanical road-paint machine and all additional hand operated equipment necessary for completing the work. The mechanical road marking machine shall be capable of painting to a uniform film thickness at the rates of application specified hereinafter. The machine shall be so designed that it will be capable of painting the road markings everywhere to a uniform width with slides within the tolerance specified hereinafter, without the paint running or splashing or spattering. The machine shall further be capable of painting lines of different widths by adjusting the spray jets on the machine or by means of additional equipment attached to the machine.

The machine shall be capable of spraying at a speed of not less than 5,0 km/h, and shall be provided with clearly visible amber warning flashing lights which shall always be in operation when the machine is on the road”

B5705 SURFACE PREPARATION

Replace the contents of this clause with the following:

“Road markings shall be applied to bituminous surfaces only after sufficient time has elapsed to ensure that damage will not be caused to the painted surface by volatiles evaporating from the seal.

Before the paint is applied, the surface shall be clean and dry and completely free from any soil, grease, oil, acid, existing paint, tire rubber or any other material which will be detrimental to the bond between the paint and the surface. The surface where the paint is to be applied shall be properly cleaned by means of watering, brooming or compressed air if required.

Where road markings are to be applied to a concrete pavement, all laitance, oil and fuel stains, sewer discharge, existing paint, loose curing compound, dust or any other material which will be detrimental to the bond between the paint and the surface shall be removed.

B5706 SETTING OUT THE ROAD MARKINGS

Replace the contents of this clause with the following:

"Where road markings are to be replaced after milling/overlay/repairs, it is essential that all existing road markings be accurately referenced before commencement of milling or other operations which will obliterate the existing road markings. The position of the new road markings shall be reassessed on site by the Employer's Agent before the Contractor commences with the road marking."

"The dimensions and of road markings shall be shown on the drawings or as specified in the appropriate statutory provisions, ACI Aprons Markings and Signs Handbook, ICAO annexure 14 and the South African Traffic Signs Manual.

The lines, symbols, figures or marks shall be pre-marked by means of paint spots of the same colour as that of the final lines and marks. These paint spots shall be at such intervals as will ensure that the traffic markings can be accurately applied, and in no case shall they be more than 1,5m apart. Normally spots of approximately 10mm in diameter should be sufficient.

After spotting, the positions of the proposed road markings such as broken lines and the starting and finishing points of barrier lines shall be indicated on the road. These pre-markings shall be approved by the Project Manager prior to any painting operations being commenced.

The positions and outlines of special markings shall be produced on the finished road in chalk and shall be approved by the ACSA representative before they are painted. Approved templates may be used on condition that the positioning of the marking is approved by ACSA before painting is commenced.

B5707 APPLYING THE PAINT

Replace the contents of this clause with the following:

"Where the taxiway or taxiway is to be re-opened to traffic after shifts, the Contractor will be required to apply all necessary paint markings at completion of each such shift within a designated area. The paint shall be non-reflectorised and applied strictly in accordance with the manufacturer's instructions. The paint shall be normal road marking paint complying with SABS 731. Solvent-based paints will be used for temporary paint markings and water-based paint for all permanent paint markings. At the start of the project, the Contractor will supply samples of the paint he intends to use and apply trial sections to the

satisfaction of the Project Manager which will also include environmental risk mitigation measures to be implemented and maintained as well as waste management.

The Contractor's establishment on site and general obligation shall be deemed to fully include the establishment of the road-marking team, irrespective of the number of times the road-marking team is required to be on site or is required to move within the site."

"The figures, letters, signs, symbols, broken or unbroken lines or other marks shall be painted as directed by ACSA. Where the paint is applied by machine, it shall be applied in one layer. Before the road marking machine is used on the permanent works, the satisfactory operation of the machine shall be demonstrated on a suitable site which is not part of the permanent works. Adjustments the machine shall be followed by further testing. Only when the machine has been correctly adjusted and its use has been approved by the Project Manager after testing, may the machine be used on the permanent work. The operator shall be experienced in the use of the machine.

After the machine has been satisfactorily adjusted, the rate of application shall be checked and adjusted if necessary before application on a large scale is commenced.

Where two or three lines are required next to each other, the lines shall be applied simultaneously by the same machine. The paint shall be stirred before application in accordance with the manufacturer's instructions. Paint shall be applied without the addition of thinners.

Where, under special circumstances, painting is done by hand, it shall be applied in two layers, and the second layer shall not be applied before the first layer has dried out sufficiently. As most road marking paint reacts with the bitumen surface of the road, the paint shall be applied with one stroke only of the brush or roller.

Ordinary road marking paint shall be applied at a nominal rate of 0,42 l/m² or as directed by the Project Manager and proprietary brand paints or plastic road marking materials shall be applied at the rates specified in the project specifications.

Unless otherwise prescribed by ACSA, the road marking shall be completed before a particular section of road is opened to traffic. Each layer of paint shall be continuous over the entire area being painted.

B5708 APPLYING THE RETRO-REFLECTIVE BEADS

Replace the last paragraph with the following:

"Additional surface reflectorization of plastic road markings shall be applied at the rate to be decided by ACSA".

B5711 GENERAL

Delete the first paragraph:

Insert ", bituminous emulsion, slurry" into the last sentence of the last paragraph between "black paint" and "or chemical paint remover":

Add the following to the last paragraph:

"Where black paint is used, it shall be matt."

B5714 MEASUREMENT AND PAYMENT

Item	Unit
B57.01 Road Marking Paint -non-reflectorised paint	
(a) White lines (Broken or Unbroken) on Concrete Pavement	
i. Width = 100mm	m
ii. Width = 150mm	m
iii. Width = 200mm	m
iv. Width = 300mm	m
v. Width = 450mm	m
(b) White lines (Broken or Unbroken) on Asphalt Pavement	
i. Width = 100mm	m
ii. Width = 150mm	m
iii. Width = 200mm	m
iv. Width = 300mm	m
v. Width = 450mm	m
(c) Yellow lines (Broken or Unbroken) on Concrete Pavement	
i. Width = 100mm	m
ii. Width = 150mm	m
iii. Width = 200mm	m
iv. Width = 300mm	m
(d) Yellow lines (Broken or Unbroken) on Asphalt Pavement	
i. Width = 100mm	m
ii. Width = 150mm	m
iii. Width = 200mm	m
iv. Width = 300mm	m
(e) Black lines (Broken or Unbroken) on Concrete Pavement	
i. Width = 100mm	m
ii. Width = 150mm	m
iii. Width = 200mm	m
iv. Width = 300mm	m
(f) Red lines (Broken or Unbroken) on Concrete Pavement	
i. Width = 100mm	m
ii. Width = 150mm	m
iii. Width = 200mm	m
iv. Width = 300mm	m
(g) Red lines (Broken or Unbroken) on Asphalt Pavement	
i. Width = 100mm	m
ii. Width = 150mm	m
iii. Width = 200mm	m
iv. Width = 300mm	m

(h)	Characters and symbols as per ACI Handbook and ICAO Annex 14	
i.	Red Characters and Symbols	m ²
ii.	Black Characters and Symbols	m ²
iii.	Pedestrian crossing blocks (white)	m ²
iv.	Rectangular block (red)	m ²
v.	Red Circle	m ²
(i)	Staggered white lines	
(i)	500mm x 100mm	m
(ii)	500mm x 150mm	m
(iii)	500mm x 200mm	m

The unit for measurements for painting lines shall be a meter of each specified width of the line and the quantity paid for shall be the actual length of line painted in accordance with drawings, ICAO annexure 14, ACI Aprons Markings and Signs Handbook or in accordance with instructions of the service manager, excluding the length of gaps in broken lines.

The unit for measurements for painting lettering, symbols, characters, transverse lines and painted islands markings shall be a square meter and the quantity paid for shall be the actual surface area of the lettering, symbols, characters, transverse lines and painted islands markings completed in accordance with drawings, ICAO annexure 14, ACI Aprons Markings and Signs Handbook or in accordance with instructions of the service manager, excluding the length of gaps in broken lines.

The tendered rate per metre or square metre as the case may be for painting the road markings shall include full compensation for procuring and furnishing all materials and the necessary equipment, and for painting, protecting and for setting out of, lettering, symbols, transverse lines, painted island markings, the rate shall exclude setting out and pre marking of the lines.

B57.02 Retro- reflective Road Marking Paint

(a)	Taxiways and Taxilanes	
i.	Centreline (Yellow)	=150mm m
ii.	Bay Designators Blocks (yellow)	m
iii.	Holding Points (yellow)	=300mm m

The unit for measurements for painting lines shall be a meter of each specified width of the line and the quantity paid for shall be the actual length of line painted in accordance with as drawings, ICAO annexure 14, ACI Aprons Markings and Signs Handbook or in accordance with instructions of the service manager, excluding the length of gaps in broken lines.

The unit for measurements for painting lettering, symbols, characters, transverse lines and painted islands markings shall be a square meter and the quantity paid for shall be the actual surface area of the lettering, symbols, characters, transverse lines and painted islands markings completed in accordance with drawings, ICAO annexure 14, ACI Aprons Markings and Signs Handbook or in accordance with instructions of the service manager, excluding the length of gaps in broken lines.

The tendered rate per metre or square metre as the case may be for painting the road markings shall include full compensation for procuring and furnishing all materials, including retro-reflective beads and the necessary equipment, and for painting, protecting and for setting out of, lettering, symbols, transverse lines, painted

island markings, the rate shall exclude setting out and pre marking of the lines.

The unit for measurements for painting lines shall be a meter of each specified width of the line and the quantity paid for shall be the actual length of line painted in accordance with as drawings, ICAO annexure 14, ACI Aprons Markings and Signs Handbook or in accordance with instructions of the service manager, excluding the length of gaps in broken lines.

The unit for measurements for painting lettering, symbols, characters, transverse lines and painted islands markings shall be a square meter and the quantity paid for shall be the actual surface area of the lettering, symbols, characters, transverse lines and painted islands markings completed in accordance with drawings, ICAO annexure 14, ACI Aprons Markings and Signs Handbook or in accordance with instructions of the service manager, excluding the length of gaps in broken lines.

The tendered rate per metre or square metre as the case may be for painting the road markings shall include full compensation for procuring and furnishing all materials and the necessary equipment, and for painting, protecting and for setting out of, lettering, symbols, transverse lines, painted island markings, the rate shall exclude setting out and pre marking of the lines.

Item

B57.06 Setting out and pre-marking the lines (excluding traffic-island markings, lettering and symbols)

Add the following:

“If required the referencing of existing road markings prior to milling and other operations, shall be included in the tendered rate for setting out and pre-marking.”

C3.6.15 SECTION 7000: SUNDRY STRUCTURES**SECTION B7100: CONCRETE PAVEMENTS****B7101 SCOPE**

Add the following:

This section includes the provision of a 400 mm thick Jointed Concrete Pavement (JCP) as shown on the drawings.

B7102 MATERIALS**(a) Cement**

Delete the last paragraph and add:

The cement to be used for this contract shall be in accordance with the latest SANS 50197-1 "Cement - composition specifications and conformity criteria Part 1: Common Cements" and shall be either:

- Portland Cement CEM I: 42.5 or 32.5R or higher
- Portland Slag Cement CEM II A-S: 32.5 or higher

Rapid hardening cement in accordance with the SANS 50197-1 specification may, subject to the Project manager's approval and the contractor's discretion, be used in the Jointed Concrete Pavement (JCP) to initiate fast strength gains and early opening of the taxiways to traffic.

(c) Aggregate for concrete

(ii)(5) The nominal size of coarse aggregate shall be 26,5 mm.

(e) Material for joints

(iii) Silicone sealant

To Clause (iii) add the following:

"Tear strength determined in accordance with ASTM D624 using Die C = 5,25 kN/m minimum."

(g) Curing compound

Replace both paragraphs with the following:

"The curing compound used shall be a 60% bitumen emulsion curing compound."

B7103 REQUIREMENTS IN RESPECT OF CONCRETE**(d) Specified strength**

Add the following:

"The taxiway may only be opened to traffic when the concrete has attained a flexural strength of 4,2 MPa."

B7104 DETERMINING THE MIX PROPORTIONS

Add the following sub-clauses:

"(c) Changes to the mix proportions in the materials

- (iv) When hand placement of concrete is required the requirements of clause 7103 shall apply to all concrete which is placed, vibrated and finished by hand methods, irrespective of the size of concrete panel or concrete patch. However, should the contractor produce written proof that the requirements of clause 7103 cannot be complied with; the Project manager may allow the mix proportion to be adjusted to allow hand placing. These changes shall be made in terms of clause 7104(d).
- (v) The contractor is cautioned that the quality of cement may vary considerably from batch to batch, which will require adjustments to the cement contents of the mix. In order to ensure the uniform quality of the concrete, the contractor shall obtain from the cement manufacturer the data pertaining to cement quality for each batch in order to make the required adjustment to the cement content. This information shall be supplied to the Project Manager.

Irrespective of such variation in the cement quality no claim will be entertained for extra payment for additional costs which may arise as a result thereof. The contractor shall make allowance for these extra costs in his rate for concrete pavement under item B71.02."

B7105 BATCHING, MIXING AND TRANSPORTING CONCRETE

Delete the first paragraph and substitute with the following:

"The contractor shall be allowed to purchase concrete from a commercial supplier, but only if such product complies in all respects to the desired strength, workability and durability characteristics, and only if the required paving output, as specified under B7110(b), will be achieved. The use of ready-mix type trucks for delivery of concrete will not be allowed. The contractor shall remain responsible for providing suitable materials, determining the mix proportions, providing the mix design details and samples of the components of the concrete, manufacturing the concrete of the required quality as specified in clauses 7103 and 7104 of the standard specifications and clauses B7103 and B7104 of the project specifications."

B7107 GENERAL REQUIREMENT IN RESPECT OF PLACING AND COMPACTING CONCRETE

Add the following:

"The contractor shall, with his tender, submit a detailed method statement of his proposed placing/paving technique.

(c) Adverse weather conditions

- (i) Protection against rain, hail and jet blast."

Irrespective of the protective method used, the contractor shall be responsible for the repair of any damage to the concrete or texturing that may occur."

B7113 SURFACE TEXTURE**(c) Burlap-drag and grooved texture**

Add the following:

"The concrete surface shall be finished to a burlap-drag-and-ground texture. The contact length of the Burlap-drag shall be a minimum of 1,0 m and shall be kept damp permanently."

B7114 CURING

Replace the first three paragraphs with:

"The exposed surfaces, including the sides of the slab, shall be treated immediately after the required texturing of the surface has been effected and after the side formwork has been removed by covering it with white plastic sheeting.

The plastic sheeting shall be removed after three days and the concrete sprayed with a 60% bitumen emulsion, as soon as the surface moisture has evaporated, at a rate of 0,55 litre/m², or as directed by the Project Manager, and shall be applied mechanically by means of curing bridge capable of producing a spray which will not damage the surface of the concrete. No construction vehicles shall be permitted on the concrete during spraying of the bitumen emulsion curing membrane. Coverage shall be uniform over the entire surface and the rate of application of the bitumen emulsion shall be carefully controlled.

The spray nozzles shall be adequately protected against wind."

Replace "curing compound" in the fourth paragraph with "bitumen emulsion"

Replace "curing compound" in the sixth paragraph with "bitumen emulsion"

Add the following paragraphs:

"Plastic sheeting shall only be applied after the initial setting of the concrete has occurred. Plastic sheeting shall have an overlap of at least 300 mm and shall be completely sealed at the joints and overlaps to ensure that no moisture escapes from the concrete. The plastic sheeting shall cover all exposed edges of the concrete by at least 500 mm and shall be weighed down so that wind will not lift the plastic sheeting of the pavement either by getting underneath the edges or by means of aerodynamic lifting. The plastic sheeting shall be placed and weighed such that it remains in contact with the surface covered at all times.

The plastic sheeting shall be placed in such a manner as not to damage the surface or texturing of the concrete. Any damage caused to the concrete surface or texturing during the curing process shall be repaired by the contractor at his own expense and to the approval of the Project Manager. The plastic sheeting shall be maintained by the contractor at all times to ensure adequate curing of the concrete pavement."

B7115 CONSTRUCTION JOINTS

Add the following:

B7120 JOINT SEALING**(a) Pre-formed Elastomeric Compression Seals**

Add the following:

Pre-formed elastomeric compression seals shall not be used in this contract.

(b) Silicone Sealant

Add the following:

"(i) The joint sealant shall be Dow Corning 890 - SL low modulus type self levelling (or an equivalent) approved by the Project Manager.

The silicone sealant shall be tested by an approved laboratory according to the methods specified in sub-clause B7102(e). The certificate issued by the laboratory shall not be older than 3 months on the date of commencement of the sealing of joints.

A trial is to be carried out in the field with the proposed sealant to determine the suitability of the product before it will be approved by the Project Manager."

B7122 CONSTRUCTION TOLERANCES**(d) Thickness**

Add the following:

"The Project Manager reserves the right to vary the thickness of the JCP. The concrete paving shall be measured in cubic metres and the contractor shall therefore be deemed to be fully compensated by his tendered rate for any thickness variation.

The thickness tolerances shall be as specified in the standard specification clause 7122(d)."

B7124 QUALITY CONTROL AND WORKMANSHIP

Add the following new sub-clauses:

"(f) Sampling the Cement

The contractor shall supply the Project Manager, free of charge, a sample of at least 10 kg in mass from each bulk load of cement delivered to the site or from the commercial batching plant.

The sample shall be drawn off either directly from the bulk tanker or from the delivery line between the bulk tanker and the storage silo.

The sample shall be drawn off in five (5) approximately equal increments during the discharge of the tanker.

The sample shall be placed in a strong, clean plastic bag which shall be immediately sealed and marked as follows:

- (1) The date and time of sampling.
- (2) An identification of the delivery vehicle.
- (3) The date of manufacture of the cement.
- (4) The silo into which the cement is discharged.
- (5) Delivery note number.

B7125 REMEDIAL WORK**(d) Repairing of Cracks**

Delete the first sentence and replace with the following:

"The contractor shall be responsible for constructing a pavement which will show no other cracks.

Should crack repair be necessary, the contractor shall submit proposals for such repair work to the Project Manager for approval.

The cost of repairing cracks or demolishing, removing and replacing crack defective sections of concrete pavements shall be to the contractor's account."

B7126 OPENING TO TRAFFIC

Add the following:

"As specified in clause B7103(d) the JCP may not be opened to public or construction traffic until the concrete has attained a flexural strength of 4,2 MPa.

B7127 MEASUREMENT AND PAYMENT

Add the following item:

"Item	Unit
B71.10 Sawing existing concrete in rehabilitation work.....	m²

The unit of measurement shall be the square metre of saw-cut in the existing concrete required as approved by the project manager and sawn to the required depth, measured once only irrespective of the number of times sawing has to be repeated to obtain such depth. The quantity shall be the product of the authorised depth and length of the saw cut

The tendered rate shall include full compensation for demarcating the saw line, breaking out and disposing the sawn concrete and cleaning the repair area, providing and applying water, material ,plant & equipment required for sawing the concrete for repairs.

B71.22 Patching areas where defects appear using fast setting concrete

- | | |
|---|----------------|
| (a) Thickness less than 100mm | m ³ |
| (b) Thickness over 100mm but less than 250 mm | m ³ |
| (c) Thickness over 250mm | m ³ |

The unit of measurement shall be the cubic metre of repaired concrete, the quantity shall be volume of the repair concrete as measured by the contractor and the Project Manager or their representatives before pouring of the concrete.

The tendered rate shall include full compensation for providing, placing, finishing, protecting and curing the concrete. The rate shall include all labour, transportation, material and incidentals such as formwork e.t.c

B7129 PLANT AND EQUIPMENT

Prior to the start of the work the contractor shall supply to the Project Manager copies of the manufacturer's handbook relating to the concrete batching plant and paving train, containing details of the correct setting and adjustment of the plant and inspector's check lists."

C3.7: Annex B: Generic Specifications

The Specifications in Annex B are Generic (In-house) Specifications prepared by the employer applicable to this contract. Three Specifications are included:

C3.7.1: Occupational Health and Safety Specifications.....	C3-52
C3.7.2: Environmental Work Instructions.....	C3-72
C3.7.3: Airside procedures (use of service roads only).....	C3-92

C3.7.1: OCCUPATIONAL HEALTH AND SAFETY SPECIFICATIONS

This part of the Generic Specifications contains comprehensive occupational health and safety specifications.

LIST OF ABBREVIATIONS

ACSA	Airports Company South Africa
GAR	General Administration Regulations
GSR	General Safety Regulations
OHSA	Occupational Health and Safety Act 85 of 1993
OHSS	Occupational Health and Safety Specification
SABS	South African Bureau of Standards

1. INTRODUCTION

1.1 Purpose of the Occupational Health and Safety Specification

The purpose of the OHSS is to assist Contractors to achieve compliance with the Occupational Health and Safety law, in order to reduce incidents and injuries. The OHSS will be implemented during the construction of this project or any construction activity that the Employer has control over.

The OHSS is a performance specification to ensure that the Employer and any bodies that enter into formal agreements with the Employer viz. Agents, Consultants and Contractors achieve an acceptable level of OHS performance. No advice, approval of any document required by the OHSS such as hazard identification and risk assessment action plan or any other form of communication from the Employer shall be construed as an acceptance by the Employer of any obligation that absolves the Contractor from achieving the required level of performance and compliance with legal requirements. Further, there is no acceptance of liability by the Employer which may result from the Contractor failing to comply with the OHSS, i.e. the Contractor remains responsible for achieving the required performance levels.

1.2 Implementation of the Occupational Health and Safety Specification

This OHSS forms an integral part of the Contract, and Contractors are required to make it an integral part of their Contracts with Sub-Contractors and Suppliers. It will be disseminated by the Employer to persons responsible for the design of the infrastructure works, who will ensure that it is included in the Tender Document(s) issued to prospective Contractors. The prospective Contractors shall incorporate the requirements of the OHSS in their submission of tenders to the Employer.

This specification must be read in conjunction with the OHS Act No 85 of 1993 (as amended), the Regulations as published in Government Gazette No 7721 of 18 July as well as the General Safety Regulations published in Government notice No. R 1031 of 30 May 1986, as amended.

The OHS Act Agreement in this document (Returnable Schedules) must be fully completed by the Contractor.

2. STANDARD OCCUPATIONAL HEALTH AND SAFETY SPECIFICATION

2.1 Scope

This OHSS covers the requirements for eliminating and mitigating incidents and injuries in all Employer controlled projects.

The scope also addresses legal compliance, hazard identification and risk control, promoting a health and safety culture amongst those working on ACSA projects and those affected by the activities taking place in and around them.

2.2 Interpretations

2.2.1 Application

The OHSS contains clauses that are generally applicable to building / construction and that impose pro-active controls associated with activities that impact on human health and safety as they relate to plant and machinery.

Compliance to the requirements of the OHSA, Construction regulations and General Safety Regulations is in addition to the requirements of the OHSS and is part of the Contractor's responsibility. The Employer will through the Agents, as appointed, monitor that the Contractor complies with the requirements of the OHSA and will not prescribe to the Contractor how such compliance is achieved.

Definitions

The definitions used will be those set out in the Regulation Gazette No 7721 of 18 July 2003 with the following addition:

ACSA: Airports Company South Africa

Hazard Identification and Risk Assessment and Risk Control:

Means a documented plan, which identifies hazards, assesses the risks and details the control measures and safe working procedures which are to be used to mitigate and control the occurrence of hazards and risks during construction or operation phases.

Health and Safety Management Plan:

Means a documented plan which addresses the hazards identified and include safe working procedures to mitigate, reduce or control the hazards identified.

Induction Training:

Means once off introductory training on general health and safety issues given to all employees before commencement of work on site.

Risk: Means the probability or likelihood that a hazard can result in injury or damage.

Site: Means the area in the possession of the Contractor for the construction of the works. Where there is no demarcated boundary it will include all adjacent areas, which are reasonably required for the activities for the Contractor, and approved for such use by the Project Manager.

The Act: Means, unless the context indicates otherwise, the Occupational Health and Safety Act, 1993 (ACT NO. 85 of 1993) and Regulations promulgated there under.

Contractor: The Contractor terminology used in these specifications shall be deemed to cover Principle Contractor, Contractors and Sub-Contractors.

3: REQUIREMENTS AT TENDER STAGE

The Contractor shall make available the following with his completed tender:

A Preliminary Health and Safety Plan as described in Regulation 5 of the Construction Regulations. The Safety Plan must be based on the Construction Regulations 2003 and this specification and will be subject to approval by the Employer. This will include a Hazard Identification and Risk Assessment appropriate to the project, expansion of Annexure D, and a declaration to the effect that he has the competence, completion of Occupational Health and Safety Questionnaire, and necessary resources to carry out the work safely in compliance with the Construction Regulations 2003.

Failure to submit the foregoing with his tender, will lead to the conclusion that the Contractor is not able to carry out the work under the contract safely in accordance with the Construction Regulations and may result in the tender being disqualified.

4: NOTIFICATION OF COMMENCEMENT OF CONSTRUCTION WORK

Prior to the commencement of construction work but not later than 7 days after the award of the contract, the Contractor shall, in terms of Regulation 3, notify the Provincial Director of the Department of Labour in writing if the following work is involved:

- the demolition of structures and dismantling of fixed plant of height of 3,0 m or more;
- the use of explosives;
- construction work that will exceed 30 days or 300 person-days;
- excavation work deeper than 1,0 m; or
- working at a height greater than 3,0 m above ground or landings.

The notification must be done in the form of the pro forma included under Returnable Schedules (The Occupational Health and Safety Act) of the tender document. See Annexure A for a copy of the notification.

A copy of the notification form must be kept on site, available for inspection by inspectors, Employer, Project Manager, employees and persons on site.

5: GUIDELINES FOR THE DEVELOPMENT OF A HEALTH & SAFETY PLAN

5.01 Background

In terms of the Construction Regulations [Regulation 4 (1) (a)] of the Occupational Health and Safety Act, No 85 of 1993, the Client is required to compile an Occupational Health and Safety specification for each of its projects and the Contractor, appointed by the Client in terms of Regulation 4 (1) (c), is required to prepare an Occupational Health and Safety Plan. This plan has to be prepared in terms of Regulation 5 (1) as well as the Client's Occupational Health & Safety Specification. In terms of Regulation 4 (2), the Client and the Contractor are required to agree on the Occupational Health and Safety Plan before any work may commence.

5.02 Framework for an Occupational Health and Safety Plan

5.02.1 Introduction

The Contractor has to demonstrate to the Client that he has a suitable and sufficiently documented Occupational Health and Safety Plan as well as the necessary competencies, experience and resources to perform the construction work safely. The Contractor is required to submit, the following documentation for perusal and verification by the Client:

- Management Structure including an organogram – Tender Stage
- Quality Plan – Tender Stage
- Human Resources Plan – Tender Stage
- Registered Workplace Skills Plan
- "Letter of good standing" from the Compensation
- Commissioner or licensed compensation insurer. – Tender Stage
- Proof of induction and other training of employees
- Example copies of minutes of previous Occupational Health and Safety Committee meetings and copies of Incident Investigation Reports

5.02.2 Contents of an Occupational Health and Safety Plan

The Occupational Health and Safety Plan shall include the following:

5.02.2.1 Occupational Health and Safety Management Programme

- Management of Occupational Health and Safety risks
- Occupational Health and Safety structures and appointments
- Programme of Occupational Health and Safety inspections
- Occupational Health and Safety Representatives
- Occupational Health and Safety committee

5.02.2.2 Statement Regarding the Communication and Management of the Work

- Management structure and responsibilities
- Occupational Health and Safety objectives for the project and arrangements for monitoring and review of Occupational Health and Safety performance
- Arrangements for regular liaison between parties on site
- Consultation with the workforce
- The exchange of design information between the Client, Project Manager, supervisors and subcontractors on site
- Handling design changes during the project
- Selection and control of subcontractors
- The exchange of Occupational Health and Safety information between all subcontractors
- Security
- Site induction and on site training
- Facilities and first-aid
- The reporting and investigation of accidents and incidents
- The production and approval of risk assessments and method statements
- Site Occupational Health and Safety rules
- Fire and emergency procedures
- Reporting to the Client i.e. results of Occupational Health and Safety inspections.
- Incident investigations and committee meetings
- Reporting of incidents to the Department of Labour and Compensation Commissioner where appropriate

6: APPOINTMENT OF SAFETY PERSONNEL

6.01 Construction Supervisor

In terms of Section 16 of the Act, the Chief Executive officer of the Contractor may delegate, in writing, part or all of his powers to a suitable person on the site

The Contractor shall appoint a full-time **Construction Supervisor**, in writing, in terms of Section 6.1 of the Regulations with the duty of supervising the performance of the construction work.

He may also have to appoint one or more competent employees to assist the construction supervisor where justified by the scope and complexity of the works.

6.02 Construction safety officer

In terms of Section 6 of the Regulations the Contractor shall appoint in writing a full-time or part-time **Construction Safety Officer**. The Safety Officer shall have the necessary competence and resources to perform his duties diligently.

Provision will be made in the Bill of Quantities to cover the cost of a dedicated construction safety officer appointed after award of the contract.

6.03 Health and safety representatives

In terms of **Sections 17 and 18 of the Act (OHSA 1993)** the Contractor shall appoint, in writing, a **health and safety representative** whenever he has more than 20 employees in his employ on the works. The health and safety representative must be selected from employees who are employed in a full-time capacity at a specific workplace.

The number of health and safety representatives for a workplace shall be at least one for every 50 employees.

The function of the health and safety representative(s) will be to review the effectiveness of health and safety measures, to identify potential hazards and major incidents, to examine causes of incidents (in collaboration with his employer, the Contractor), to investigate complaints by employees relating to health and safety at work, to make representations to the employer (Contractor) or inspector on general matters affecting the health and safety of employees, to inspect the workplace, plant, machinery etc. on a regular base, to participate in consultations with inspectors and to attend meetings of the health and safety committee.

6.04 Health and safety committee

In terms of **Sections 17,18 and 19 of the Act (OHSA 1993)** the Contractor (as employer), shall establish one or more **health and safety committee(s)** where there are two or more health and safety representatives at a workplace. The persons selected by the Contractor to serve on the committee shall be designated in writing.

The function of the health and safety committee shall be to hold meetings at regular intervals, but at least once every three months, to review the health and safety measures on the contract, to discuss incidents related to health and safety with the Contractor's representative and any Department of Labour inspector, and to make recommendations regarding health and safety to the Contractor and to keep record of meetings, recommendations and reports made by the committee.

6.05 Competent persons

In accordance with the Construction Regulations the Contractor shall appoint, in writing, **competent persons** responsible for supervising construction work for the following work situations that may be expected on the site of the works, as applicable to the project.

Risk assessment (Regulation 7);
 Fall protection (Regulation 8);
 Structures (Regulation 9);
 Formwork and support work (Regulation 10);
 Excavation work (Regulation 11);
 Demolition work (Regulation 12);
 Tunneling (Regulation 13);
 Scaffolding work (Regulation 14);
 Suspended platform operations (Regulation 15);
 Boatswain chairs (Regulation 16);
 Material Hoists (Regulation 17);
 Batch plant operations (Regulation 18);
 Explosive powered tools (Regulation 19)
 Cranes (Regulation 20);
 Construction vehicle and mobile plant (Regulation 21(1));
 Electrical installation and machinery on construction site (Regulation 22);
 Use of temporary storage of flammable liquids on construction site (Regulation 23);
 Water environments (Regulation 24):

Housekeeping on construction sites (Regulation 25)
 Stacking and storage on construction sites (Regulation 26);
 Fire precautions on construction sites (Regulation 27); and
 Construction welfare facilities (Regulation 28).

A competent person may be appointed for more than one part of the construction work with the understanding that the person must be suitably qualified and able to supervise at the same time the construction work on all the work situations for which he has been appointed.

The appointment of competent persons to supervise parts of the construction work does not relieve the Contractor from any of his responsibilities to comply with **all** requirements of the Construction Regulations.

7: PROJECT / SITE SPECIFIC REQUIREMENTS

A list of activities and considerations that have been identified for the project and the construction site and for which Risk Assessments, Standard Working Procedures (SWP), management and control measures and Method Statements (where necessary) have to be developed by the Principal Contractor is given in Annexure D. This list is not to be considered as inclusive and other items must be added as required

In addition, the following health risks should be taken into account. It may become necessary to include others according to the requirements of the project.

Health risks

- Health risks arising from neighbouring as well as own activities and from the environment e.g. threats by dogs, bees, snakes, lightning etc.
- Exposure to noise
- Exposure to vibration
- Protection against dehydration and heat exhaustion
- Protection from wet & cold conditions
- Exposure to hazardous substances and chemicals used on site.

Emergency Procedures

The Principal Contractor shall submit a detailed Emergency Procedure for approval by the Client prior to commencement on site. The procedure shall detail the response plan including the following key elements:

List of key competent personnel;

Details of emergency services;

Actions or steps to be taken in the event of the specific types of emergencies;

Information on hazardous material/situations.

Emergency procedure(s) shall include, but shall not be limited to, fire, spills, accidents to employees, use of hazardous substances, bomb threats, major incidents/accidents, etc. The Principal Contractor shall advise the Client, Agent, Project Manager and all relevant authorities forthwith, of any emergencies, together with a record of action taken. This shall be confirmed in writing as soon as possible after the incident. A contact list of all service providers (Fire Department, Ambulance, Police, Medical and Hospital, etc) must be maintained and available to site personnel. These procedures shall form part of the Health and Safety Plan.

First Aid Boxes and First Aid Equipment

The Principal Contractor and all Contractors shall appoint in writing First Aider(s). If not already accredited, the appointed First Aider(s) are to be sent for accredited first aid training. Valid certificates are to be kept on site. The Principal Contractor shall provide an on-site First Aid Station with first aid facilities, including first aid boxes containing, at least, the requirements of the Annexure to Section 3 of the General Safety Regulations. All Contractors with more than 5 employees shall supply their own first aid box. Contractors with more than 10 employees shall have a trained and certified First Aider on site at all times.

Personal Protective Equipment (PPE) and Clothing

The Principal Contractor shall ensure that all workers are issued with and shall wear hard hats, protective footwear and overalls as well as any other necessary PPE as set out in Section 2.3 of the General Safety Regulations. Contractors are encouraged to provide reflective vests for all their staff. The Principal Contractor and all Contractors shall make provision and keep adequate quantities of SABS approved PPE on site at all times. This shall include necessary safety gear for visitors. The Principal Contractor shall clearly outline procedures to be taken when PPE or Clothing is:

Lost or stolen;

Worn out or damaged.

Issued to temporary labour or staff.

The above procedure applies to Contractors and their Sub-contractors, as they are all Employers in their own right.

Occupational Health and Safety Signage

The Contractor shall provide adequate on-site OHS signage. This should include but is not limited to: 'no unauthorised entry', 'report to site office', 'site office', 'beware of overhead work', 'hard hat area'. Signage shall be posted up at all entrances to site as well as on site in strategic locations e.g. access routes, stairways, entrances to structures and buildings, scaffolding, and other potential risk areas/operations. These signs shall be in accordance with the requirements of the General Safety Regulations as amended.

8: HEALTH AND SAFETY FILE

The Contractor shall in terms of Construction Regulation 5(7) maintain a Health and Safety File on site at all times. The Health and Safety File is a file or other permanent record containing information on aspects of the construction project - which will be necessary to ensure the health and safety of any person who may be affected by the construction work.

The Contractor shall appoint a suitably qualified person to prepare the Health and Safety File and to keep it up to date for the duration of the contract. The Health and Safety file shall include at least the following information:

All Documents as required by the Act and Regulations

All reports of inspections and audits

All non-conformity reports

All working drawings, calculations and design where applicable

Detailed list of sub-contractors with contact details

List of all hazardous materials used and stored on site with Data Sheets and Materials Hazard Data sheets

All Hazard Identification and Risk Assessments carried out for the project.

All Health and Safety Plans for the project.

All method statements

Minutes of all relevant meetings

Incident records, including investigations and results

Record of all appointments under the Regulations

Annexure B is a list of the records to be kept on site.

The Health & Safety File shall be handed over to the Client on completion of the contract. It must contain all the documentation as set out above, or as instructed, as well as any handed to the Principle Contractor by any subcontractors together with a record of all drawings, designs, materials used and other similar information concerning the completed project.

9: RISK ASSESSMENT

Before commencement of any construction work during the construction period, the Contractor shall have a risk assessment performed and recorded in writing by a competent person. (Refer Regulation 7 of the Construction Regulations 2003).

Risk is a measure of the likelihood that the harm from a particular hazard will be realised, taking into account the possible severity of the harm. Harm to people includes death, injury (permanent or temporary), physical or mental health or any combination thereof. Risk management in health and safety includes the identification of hazards, assessing risks, taking action to eliminate or reduce the risk, monitoring the effectiveness and performing regular reviews of the entire process. The Contractor shall compile method statements to address or handle the following:

Hazards particulars to the contract

Identify what could go wrong and how

Identify the likelihood of this happening

Identify the persons at risk

Identify the extent of possible harm

Eliminating or reducing this risk

A monitoring plan

A review plan

Contractors must ensure that all subcontractors conduct risk assessments for their scope of work as well. All risk assessments shall be updated and re-evaluated with any extra works or with any change to the scope of the works.

The risk assessment shall identify and evaluate the risks and hazards that may be expected during the execution of the work under the contract, and it shall include a documented plan of safe work procedures to mitigate, reduce or control the risks and hazards identified.

The risk assessment shall be available on site for inspection by inspectors, Employer, Project Manager, subcontractors, employees, trade unions and health and safety committee members, and must be monitored and reviewed periodically by the Contractor.

10: ARRANGEMENTS FOR MONITORING AND REVIEW

The Client and/or Agent will conduct a Monthly, or at greater frequency, Audit to audit compliance with Construction Regulation 4 (1) (d) to ensure that the Contractor has implemented and is maintaining the agreed and approved OH&S Plan. Annexure C will be used as format when conducting the audit.

The Client reserves the right to conduct other ad hoc audits and inspections as deemed necessary.

A representative of the Contractor must accompany the Client on all audits and inspections and may conduct his own audit/inspection at the same time. Each party will, however, take responsibility for the results of his own audit/inspection results.

11: MEASUREMENT AND PAYMENT

See section 3.6.5

ANNEXURE A

NOTIFICATION OF CONSTRUCTION WORK Regulation 3 of the Construction Regulations, 2003

1. (a) Name and postal address of principal Contractor:
.....
- (b) Name and telephone number of principal Contractor's contact person:
.....
2. Principal Contractor's compensation registration number:
.....
3. (a) Name and postal address of Client:
.....
- (b) Name and telephone number of Client's contact person or agent:
.....
4. (a) Name and postal address of designer(s) for the project:
.....
- (b) Name and telephone number of designer's contact person:
.....
5. Name and telephone number of principal Contractor's construction supervisor on site appointed in terms of regulations 6 (1):
.....
6. Name/s of principal Contractor's sub-ordinate supervisors on site appointed in terms of regulation 6 (2):
.....
7. Exact physical address of the construction site or site office:
.....
8. Nature of the construction work:
.....
.....
.....
.....
9. Expected commencement date:
10. Expected completion date:

11. Estimated maximum number of persons on the construction site:

.....

12. Planned number of Contractors on the construction site accountable to principal Contractor:

.....

13. Name(s) of Contractors already chosen:

.....

.....

.....

.....
Principal Contractor

.....
Date

.....
Client

.....
Date

- THIS DOCUMENT IS TO BE FORWARDED TO THE OFFICE OF THE DEPARTMENT OF LABOUR **PRIOR TO COMMENCEMENT** OF WORK ON SITE.
- **ALL PRINCIPAL CONTRACTORS** THAT QUALIFY TO NOTIFY MUST DO SO EVEN IF ANOTHER PRINCIPAL CONTRACTOR ON THE SAME SITE HAD DONE SO PRIOR TO THE COMMENCEMENT OF WORK.

ANNEXURE B**RECORDS TO BE KEPT ON SITE**

ITEM	CR	RECORD TO BE KEPT	RESPONSIBLE PERSON
1.	3(3)	Notification to Provincial Director – Annexure A Available on site	Contractor
2.	4(3)	Copy of Principal Contractor's Health & Safety Plan Available on request	Client (Consultant)
3.	5(6)	Copy of Principal Contractor's Health & Safety Plan As well as each Contractor's Health & Safety Plan Available on request	Principal Contractor
4.	5(7)	Health & Safety File opened and kept on site (including all documentation-required i.t.o. OHSA & Regulations Available on request	Contractor
5.	5(8)	Consolidated Health & Safety File handed to Client on completion of Construction work. To include all documentation required i.t.o. OHSA & Regulations and records of all drawings, designs, materials used and similar information on the structure.	Contractor
6.	5(9)	Comprehensive and Updated List of all Contractors on site, the agreements between the parties and the work being done Included in Health & Safety file and available on request	Contractor
7.	6(7)	Keep record on the Health & safety File of the input by Construction Safety Officer [CR 6 (6)] at design stage or on the Health & Safety Plan	Contractor
8.	7(2)	Risk Assessment Available on site for inspection	Contractor
9.	7(9)	Proof of Health & Safety Induction Training	Every Employee on site
10.	8(3)	Construction Supervisor [CR 6 (1)] has latest updated version of Fall Protection Plan [CR 8 (1)]	Contractor
11.	9(2)(b)	Inform Contractor in writing of dangers and hazards relating to construction work	Designer of Structure
12.	9(3)	All drawings pertaining to the design of structure On site available for inspection	Contractor
13.	9(4)	Record of inspection of the structure [First 2 years – once every 6 months, thereafter yearly]	Owner of Structure
14.	9(5)	Maintenance records – safety of structure Available on request	Owner of Structure
15.	10(1)(d)	Drawings pertaining to the design of formwork/support work structure Kept on site, available on request	Contractor
16.	11(3)(h)	Record of excavation inspection On site available on request	Contractor
17.	15(11)	Suspended Platform inspection and performance test records Kept on site available on request	Contractor
18.	17(8)(c)	Material Hoist daily inspection entered and signed in record book kept on the premises	Contractor
19.	17(8)(d)	Maintenance records for Material Hoist Available on site	Contractor
20.	18(9)	Records of Batch Plant maintenance and repairs On site available for inspection	Contractor

21.	19(2)(g)(ii)	Issuing and collection of cartridges and nails or studs (Explosive Powered Tools) recorded in register – recipient signed for receipt as well as return	Contractor
22.	21(1)(d)	Findings of daily inspections (prior to use) of Construction Vehicles and Mobile Plant	Contractor
23.	22(d)	Record of temporary electrical installation inspections [once a week] and electrical machinery [daily before use] in a register and kept on site	Contractor
24.		Copies of all appointments made in regard to safety supervisors and inspectors	

ANNEXURE C

**OCCUPATIONAL HEALTH AND SAFETY
AUDIT SYSTEM**

ADMINISTRATIVE & LEGAL REQUIREMENTS

a) Subject	(1) Requirements	Yes/No
Notice of carrying out Construction work	Department of Labour notified Copy of Notice available on Site	
Copy of OH&S Act (Act 85 of 1993)	Updated copy of Act & Regulations on site Readily available for perusal by employees	
Registration with Compens. Insurer	Written proof of registration / Letter of good standing available on Site	
OH&S Specification & Plan	OH&S Specification received from Client OH&S plan developed Updated regularly	
Hazard Identification & Risk Assessment	Hazard Identification carried out/Recorded Risk Assessment and Plan drawn up/Updated Risk Assessment Plan available on Site Employees/Subcontractors informed/trained	
Assigned duties (Managers)	Responsibility of complying with the OH&S Act assigned to other person/s by CEO.	
Designation of Person Responsible on Site	Competent person appointed in writing as Construction Supervisor	
Designation of Subordinate Person	Competent person appointed in writing as Sub-ordinate Construction Supervisor	
Designation of Occupational Health & Safety Representatives	More than 20 employees - one OH&S Representative, one additional OH&S Rep. for each 50 employees or part thereof. Designation in writing, period and area of responsibility specified. Meaningful OH&S Rep. reports. Reports actioned by Management.	
Occupational Health & Safety Committee/s	OH&S Committee/s established. Members appointed in writing. Meetings held monthly. Minutes kept. Actioned by Management.	
Agreement with Mandataries (Subcontractors)	Written agreement with Subcontractors. List of Subcontractors displayed. Proof of Registration with Compensation Insurer/Letter of Good Standing Construction Work Supervisor designated Written arrangements concerning OH&S Reps & OH&S Committee Written arrangements regarding First Aid	
Fall Prevention & Protection	Competent person appointed to draw up and supervise the Fall Protection Plan Proof of appointees competence available on Site Risk Assessment carried out for work at heights Fall Protection Plan drawn up/updated Available on Site	
Roofwork	Competent person appointed to plan & supervise Roofwork. Proof of appointees competence available on Site Risk Assessment carried out Roofwork Plan drawn up/updated Roofwork inspect before each shift. Inspection register kept Employees medically examined for physical & psychological fitness. Written proof available	
Structures	Information re. the structure being erected received from the Designer including: - geo-science technical report where relevant - the design loading of the structure - the methods & sequence of construction - anticipated dangers / hazards / special measures to construct safely Risk Assessment carried out Method statement drawn up All above available on Site Structures inspected before each shift. Inspections register kept	

a) Subject	(1) Requirements	Yes/No
Formwork & Support work	Competent person appointed in writing to supervise erection, maintenance, use and dismantling of Support & Formwork Design drawings available on site Risk Assessment carried out Support & Formwork inspected: - before use/inspection - before pouring of concrete - weekly whilst in place - before stripping/dismantling. Inspection register kept	
Scaffolding	Competent persons appointed in writing to: - erect scaffolding (Scaffold Erector/s) - act as Scaffold Team Leaders - inspect Scaffolding weekly and after inclement weather (Scaffold Inspector/s) Written Proof of Competence of above appointees available on Site Copy of SABS 085 available on Site Risk Assessment carried out Inspected weekly/after bad weather. Inspection register/s kept	
Suspended Scaffolding	Competent persons appointed in writing to: - erect Susp.scaffolding (Scaffold Erector/s) - act as Susp.Scaffold Team Leaders - inspect Susp.Scaffolding weekly and after inclement weather (Scaffold Inspector/s) Risk Assessment conducted Certificate of Authorization issued by a registered professional Project Manager available on Site/copy forwarded to the Department of Labour The following inspections of the whole installation carried out by a competent person - after erection and before use - daily prior to use. Inspection register kept The following tests to be conducted by a competent person: - load test of whole installation and working parts every 12 months - hoisting ropes/hooks/load attaching devices quarterly. Tests log book kept Employees working on Susp.Scaffold medically examined for physical & psychological fitness. Written proof available	
Excavations	Competent person/s appointed in writing to supervise and inspect excavation work Written Proof of Competence of above appointee/s available on Site Risk Assessment carried out Inspected: - before every shift - after any blasting - after an unexpected fall of ground - after any substantial damage to the shoring - after rain. Inspections register kept Method statement developed where explosives will be/ are used	
Demolition Work	Competent person/s appointed in writing to supervise and control Demolition work Written Proof of Competence of above appointee/s available on Site Risk Assessment carried out engineering survey and Method Statement available on Site Inspections to prevent premature collapse carried out by competent person before each shift. Inspection register kept	
Materials Hoist	Competent person appointed in writing to inspect the Material Hoist Written Proof of Competence of above appointee available on Site. Materials Hoist to be inspected weekly by a competent person. Inspections register kept.	

a) Subject	(1) Requirements	Yes/No
Caissons & Cofferdams	Competent person appointed in writing to supervise, control & inspect the construction, installation/dismantling of caissons/coffer dams Written Proof of Competence of above appointee available on Site Risk Assessment carried out To be inspected daily by a competent person. Inspections register kept	
Explosive Powered Tools	Competent person appointed to control the issue of the Explosive Powered Tools & cartridges and the service, maintenance and cleaning. Register kept of above Empty cartridge cases/nails/fixing bolts returns recorded Cleaned daily after use	
Batch Plants	Competent person appointed to control the operation of the Batch Plant and the service, maintenance and cleaning. Register kept of above Risk Assessment carried out Batch Plant to be inspected weekly by a competent person. Inspections register kept	
Tunneling	Complying with Mines Health & Safety Act (29 of 1996) Risk Assessment carried out	
Cranes & Lifting Machines Equipment	Competent person appointed in writing to inspect Cranes, Lifting Machines & Equipment Written Proof of Competence of above appointee available on Site. Cranes & Lifting tackle identified/numbered Register kept for Lifting Tackle Log Book kept for each individual Crane Inspection: - All cranes - daily by operator - Tower Crane/s - after erection/6monthly - Other cranes - annually by comp. person - Lifting tackle(slings/ropes/chain slings etc.) - 3 monthly Risk Assessment carried out	
Inspection & Maintenance of Electrical Installation & Equipment (including portable electrical tools)	Competent person appointed in writing to inspect/test the installation and equipment. Written Proof of Competence of above appointee available on Site. Inspections: - Electrical Installation & equipment inspected after installation, after alterations and quarterly. Inspection Registers kept Portable electric tools and -lights and extension leads identified/numbered. Monthly visual inspection by User/Issuer/Storeman. Register kept.	
Water Environments	Competent person appointed in writing to supervise diving operations and ensure maintenance, statutory inspection and testing by an Approved Inspection Authority of equipment used Written Proof of Competence of above appointee available on Site Proof of registration of all divers present on site available Risk Assessment carried out Diving Manual produced. Available on Site Record of Voice Communications kept Diving Operations record kept Each Diver keeps a personal logbook. Entries countersigned by the Diving Supervisor Decompression tables available on Site Records of any Decompression illness kept Certificate of Manufacture of any Compression Chamber or Diving Bell in use available on Site	
Designation of Stacking & Storage Supervisor.	Competent Person/s with specific knowledge and experience designated to supervise all Stacking & Storage Written Proof of Competence of above appointee available on Site	

a) Subject	(1) Requirements	Yes/No
Designation of a Person to Co-ordinate Emergency Planning And Fire Protection	Person/s with specific knowledge and experience designated to co-ordinate emergency contingency planning and execution and fire prevention measures Emergency Evacuation Plan developed: Drilled/Practiced Plan & Records of Drills/Practices available on Site Fire Risk Assessment carried out All Fire Extinguishing Equipment identified and on register. Inspected weekly. Inspection Register kept Serviced annually	
First Aid	Every workplace provided with sufficient number of First Aid boxes. (Required where 5 persons or more are employed) First Aid freely available Equipment as per the list in the OH&S Act. One qualified First Aider appointed for every 50 employees. (Required where more than 10 persons are employed) List of First Aiders and Certificates Name of person/s in charge of First Aid box/es displayed. Location of F/Aid box/es clearly indicated. Signs instructing employees to report all Injuries/illness including first aid injuries	
Personal Safety Equipment (PSE)	PSE Risk Assessment carried out Items of PSE prescribed/use enforced Records of Issue kept Undertaking by Employee to use/wear PSE	
*Inspection & Use of Welding/Flame Cutting Equipment	Competent Person/s with specific knowledge and experience designated to Inspect Electric Arc, Gas Welding and Flame Cutting Equipment Written Proof of Competence of above appointee available on Site Equipment identified/numbered and entered into a register Equipment inspected monthly. Inspection Register kept	
*Control of Storage & Usage of HCS	Competent Person/s with specific knowledge and experience designated to Control the Storage & Usage of HCS Written Proof of Competence of above appointee available on Site Risk Assessment carried out Register of HCS kept/used on Site	
Vessels under Pressure (VUP)	Competent Person/s with specific knowledge and experience designated to supervise the use, storage, maintenance, statutory inspections & testing of VUP's Written Proof of Competence of above appointee available on Site Risk Assessment carried out Certificates of Manufacture available on Site Register of VUP's on Site Inspections & Testing by Approved Inspection Authority (AIA): after installation/re-erection or repairs every 36 months. Register/Log kept of inspections, tests. Modifications & repair	
Construction Vehicles & Earth Moving Equipment	Operators/Drivers appointed to: Carry out a daily inspection prior to use Drive the vehicle/plant that he/she is competent to operate/drive Written Proof of Competence of above appointee available on Site Record of Daily inspections kept	
Inspection of Ladders	Competent person appointed in writing to inspect Ladders Ladders inspected at arrival on site and monthly there after. Inspections register kept	
Ramps	Competent person appointed in writing to Supervise the erection & inspection of Ramps. Inspection register kept.	

ANNEXURE D

(a) HAZARDOUS TASK IDENTIFICATION

(b) (The list given is not inclusive and other hazardous tasks may be identified as the construction progresses)

(c) <u>MAIN TASK</u>	(d) <u>SUB TASK</u>
(e)	(f)
(g) <u>ACCOMMODATION OF TRAFFIC</u>	(h) <u>Clashes between Airport Fire and Safety traffic and construction work</u>
(i)	(j) <u>Dust (from jet blast)</u>
(k)	(l) <u>Traffic speed</u>
(m)	(n) <u>Provision of safety equipment</u>
(o)	(p) <u>Working next to air traffic (noise and jet blast)</u>
(q)	(r) <u>Erection of signage and barricades</u>
(s)	(t)
(u) <u>EARTHMOVING AND LAYERWORKS</u>	(v) <u>Use of tip trucks and other transportation</u>
(w)	(x) <u>Working at spoil site</u>
(y)	(z)
(aa) <u>EXCAVATING</u>	(bb) <u>By manual labour</u>
(cc)	(dd) <u>By excavating equipment e.g. Milling Machine</u>
(ee)	(ff) <u>Excavating duct slots by electrical/pneumatic breakers</u>
(gg)	(hh)
(ii) <u>ELECTRICAL</u>	(jj) <u>Working with generators and lighting</u>
(kk)	(ll) <u>Temporary installations</u>
(mm)	(nn) <u>Dealing with services provided by others</u>
(oo)	(pp)

(qq) <u>FIRE</u>	(rr) <u>Use and placement of fire extinguishers</u>
(ss)	(tt) <u>Fire fighting</u>
(uu)	(vv) <u>Gas Screed heaters</u>
(ww)	(xx) <u>Hand held gas burners</u>
(yy)	(zz) <u>Notification of Fire & Safety</u>
(aaa)	(bbb)
(ccc) <u>MISCELLANEOUS</u>	(ddd) <u>Site Establishment</u>
(eee)	(fff) <u>Housekeeping</u>
(ggg)	(hhh) <u>General storage</u>
(iii)	(jjj) <u>Movement of equipment</u>
(kkk)	(lll) <u>Use of personal transport</u>
(mmm)	(nnn)
(ooo) <u>SURFACING</u>	(ppp) <u>Asphalt batch plant</u>
(qqq)	(rrr) <u>Use, storage and handling of bituminous products</u>
(sss)	(ttt) <u>Distributors</u>
(uuu)	(vvv) <u>Spraying by hand</u>
(www)	(xxx) <u>Use of paving machines</u>
(yyy)	(zzz) <u>Use of rollers</u>
(aaaa)	(bbbb) <u>Use of heating apparatus</u>
(cccc)	(dddd) <u>Use of nuclear gauge</u>
(eeee)	(ffff)
(gggg) <u>WORKSHOPS</u>	(hhhh) <u>Use of small electrical tools</u>
(iiii)	(jjjj) <u>Gas and Flame Cutting</u>
(kkkk)	(llll) <u>Welding</u>
(mmmm)	(nnnn) <u>Use of general workshop equipment</u>

(oooo)	(pppp) <u>Tyre repair</u>
(qqqq)	(rrrr) <u>Use of jacking and lifting apparatus</u>
(ssss)	(tttt)
(uuuu) <u>HAZADOUS MATERIALS</u>	(vvvv) <u>Petrol</u>
(www) <u>To be added to as required</u>	(xxxx) <u>Diesel</u>
(yyyy) <u>Materials safety date sheets as required</u>	(zzzz) <u>Lubricants</u>
(aaaa)	(bbbb) <u>Cement and cement bags</u>
(ccccc)	(dddd) <u>Road lime and lime bags</u>
(eeee)	(ffff) <u>Flammable materials</u>
(ggggg)	(hhhhh) <u>Gas bottles</u>
(iiii)	(jjjj)
(kkkkk) <u>ANY OTHER DANGEROUS ACTIVITIES IDENTIFIED BY THE CONTRACTOR</u>	(llll)
(mmmmm) <u>To be added by the contractor at tender stage</u>	(nnnnn)
(ooooo)	(ppppp)
(qqqqq)	(rrrrr)
(sssss)	(ttttt)
(uuuuu)	(vvvvv)
(wwwww)	(xxxxx)
(yyyyy)	(zzzzz)
(aaaaa)	(bbbbb)
(ccccc)	(ddddd)
(eeeeee)	(ffffff)
(gggggg)	(hhhhh)

C3.7.2: ENVIRONMENTAL WORK INSTRUCTIONS

THE ACSA ENVIRONMENTAL SPECIFICATION

It is a requirement of the Airports Company South Africa (ACSA) - that all construction works within ACSA airports be undertaken in accordance with the ACSA Environmental Specification

TABLE OF CONTENTS

INDEX

SECTION 1: ACSA - ENVIRONMENTAL SPECIFICATIONS OVERVIEW

- 1. Purpose of the Environmental Specifications**
- 2. Implementation of the Environmental Specifications**
- 3. Structure of the Environmental Specifications**

SECTION 2: ACSA ENVIRONMENTAL PARTICULAR SPECIFICATIONS

- EP1 Introduction**
- EP2 Organisational Requirements**
- EP3 Method Statements**
- EP4 General Site Procedures**
- EP5 Site Clearance**
- EP6 Site Rehabilitation**
- EP7 Management and Monitoring**
- EP8 Measurement and Payment**

LIST OF ABBREVIATIONS

ACSA	Airports Company South Africa
AEC	Airport Environmental Committee
EO	Environmental Officer
ES	Environmental Specification
EMS	Environmental Management System for ACSA
ESA	Environmentally Sensitive Areas
SABS	South African Bureau of Standards
SAHRA	South African Heritage Resource Agency
SSSI	Sites of Special Scientific Interest

PART 1: ACSA ENVIRONMENTAL SPECIFICATIONS OVERVIEW

1 PURPOSE OF THE ENVIRONMENTAL SPECIFICATIONS

The purpose of the Environmental Specifications (ES) is to translate the recommendations of the Environmental Management System (EMS) into a contractual environmental specification for application during construction activities.

The Environmental Specifications will be applicable to all construction activities that occur on ACSA owned and/or managed airports. Construction activities include construction of buildings, infrastructure as well as developer / tenant property at the airport.

2 IMPLEMENTATION OF THE ENVIRONMENTAL SPECIFICATIONS

The Environmental Specifications is intended for dissemination by ACSA to the "Employer", who is the party for whom the construction works are to be executed (hereafter referred to as the Employer). The Employer may therefore be ACSA (the relevant Departmental Manager responsible for construction activities), a tenant or a developer with a land lease or another party responsible for developing a site or sites at the airport.

The Employer shall ensure that the Environmental Specification is included in the Tender Document(s) issued to the prospective Contractor and is also responsible for appointing/designating, in writing, a Responsible Person for the construction works.

The Responsible Person would manage the requirements outlined in the Environmental Specifications on behalf of the Employer. The Contractors shall incorporate the requirements of the ES in their tender submissions to the Employer and are responsible for implementing the ES on a daily basis.

The Environmental Officer (EO) will be responsible for updating the ES as required, auditing the implementation of the ES for each construction project and for maintaining the document control and record systems associated with it.

3 STRUCTURE OF THE ENVIRONMENTAL SPECIFICATIONS

The Environmental Specifications report has been structured to be incorporated into a standard engineering tender document as the Environmental Particular Specification.

A 'Particular Specification' is the terminology used for a specification that covers activities that are not adequately covered in the standardised SABS 1200 series specifications for engineering contracts, or where the specification is sufficiently detailed to make it inappropriate for inclusion as a variation or addition to a standardised specification.

The Environmental Specification is a generic document applicable to construction projects at all ACSA airports. The majority of the specifications within the ES will apply to all construction work, although it is anticipated that variations to this specification may need to be included for some specific developments. Variations would be made by the Environmental Officer, prior to the issue of the ES to the Employer.

PART 2: ENVIRONMENTAL PARTICULAR SPECIFICATIONS

Index to Environmental Particular (EP) Specifications

Clause	Description
EP1	INTRODUCTION
EP2	ORGANISATIONAL REQUIREMENTS
EP2.1	Organisational overview and structure
EP2.2	Roles and responsibilities
EP3	METHOD STATEMENTS
EP4	GENERAL SITE PROCEDURES
EP4.1	Demarcation of Environmentally Sensitive Areas (ESAs)
EP4.2	Location of camp and depot
EP4.3	Demarcation of the site
EP4.4	Ablution Facilities
EP4.5	Domestic waste water
EP4.6	Refuse
EP4.7	Protection of the fauna and flora
EP4.8	Defacement of natural features
EP4.9	Protection of archaeological and palaeontological sites
EP4.10	Effluent and storm-water management
EP4.11	Dust control
EP4.12	Noise control
EP4.13	Materials use, handling, storage and transport
EP4.14	Emergency procedures
EP4.15	Social issues
EP5	SITE CLEARANCE
EP5.1	Removal of top soil
EP5.2	Stabilisation of steep slopes
EP5.3	Removal of alien vegetation
EP6	SITE REHABILITATION
EP6.1	Scope
EP6.2	Landscaping and preparation for re-vegetation
EP7	MANAGEMENT AND MONITORING:
EP7.1	Monitoring and reporting
EP7.2	Environmental awareness training
EP7.3	Non-conformance and corrective actions
EP7.4	Documentation
EP7.5	Incentives and penalties
EP7.6	External audit

EP1 INTRODUCTION

The ES has been prepared and is to be implemented as part of the Environmental Management Systems for ACSA.

The ES provides specifications that the Contractor shall adhere to, in order to minimise adverse environmental impacts and optimise opportunities associated with construction activities.

The ES is provided to the Contractor at the tender stage so that the costs of implementing the ES are included into the contract cost and so that the Contractor is aware of his environmental responsibilities before commencing work.

The aim of this ES is to ensure that environmental management of site activities is integrated into the other management systems implemented by the Contractor (e.g. quality management, health and safety). For this reason, the ES includes a requirement for the Contractor(s) to develop their own system (i.e. roles, responsibilities and timing) for ensuring that the requirements of the ES are met, and that the Contractor checks, by means of an internal audit, that this system is operating effectively.

EP2 ORGANISATIONAL REQUIREMENTS**EP2.1 Organisational Structure**

This section outlines the required management structure for the administration of the ES, with particular emphasis on the roles and responsibilities of key individuals.

The organisational structure for the implementation of the ES is presented in Figure 1 and should be viewed in conjunction with the roles and responsibilities below.

EP2.2 Roles and responsibilities**EP2.2.1 Airports Company South Africa**

Airports Company South Africa is ultimately responsible for ensuring effective environmental management at the airport in terms of the scope of the Environmental Management Systems.

EP2.2.2 Environmental Officer (EO)

The Environmental Officer has been appointed by ACSA, and is responsible for monitoring the implementation of the requirements of the Environmental Specification by the relevant parties as specified.

The Environmental Officer shall:

- Review and approve in writing valid method statements;
- Inspect the Contractor's site to check compliance with method statements and the requirements of the ES (at least weekly and more frequently if thought to be warranted by the EO) and maintain inspection reports on file;
- Meet with the Responsible Person for the developer or tenant, whereby the Responsible Person reports on the implementation of the ES (at least monthly) and keep a record of minutes of the above meetings;
- Provide material / manuals and assistance to the Responsible Person for the initial environmental training sessions; and
- Report in writing any problems related to conformance with the ES which cannot be resolved in co-operation with the relevant Responsible Person to ACSA Managers or the relevant developer / tenant.

EP2.2.3 Employer

The Employer shall:

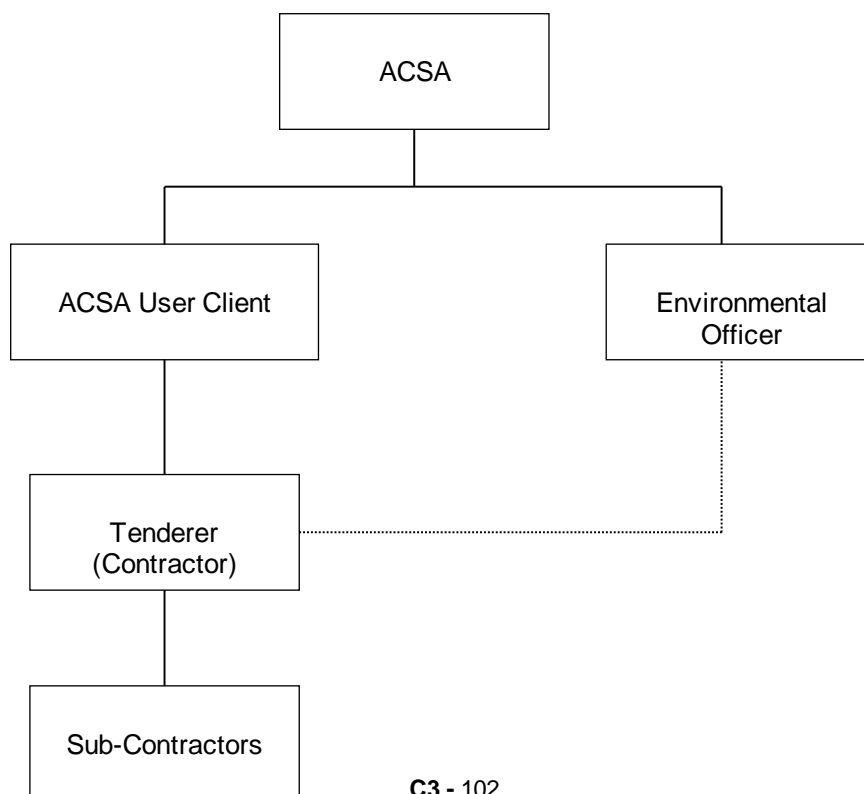
- Include the ES, with any revisions, in any tender document related to construction activities on site;
- Designate in writing a Responsible Person for the proper implementation of the ES; and
- Send a copy of the letter of appointment of the Responsible Person to the EO.

EP2.2.4 Responsible Person

The Responsible Person for each building site or infrastructure installation shall:

- Develop a system to ensure that the ES is effectively implemented;
- Audit this system so that he/she can demonstrate to the EO that the ES is being effectively implemented;
- Ensure that Contractors staff, sub-contractors, suppliers etc. receive appropriate environmental awareness training prior to commencement of work on the project and maintain records of training. It is anticipated, though not a requirement, that the Responsible Person will deliver training sessions;
- Ensure that responsible persons for sub-contractors are designated to carry out the requirements of the Environmental Specifications
- Submit method statements to the Environmental Officer for approval as specified in the Environmental Specifications and maintain approved method statements on file; and
- Have sufficient authority to issue site instructions to the Contractors staff on their site. It is probable, though not a requirement, that the Responsible Person will be the Project Managers Representative.

Figure 1: Organisational structure showing lines of responsibility and communication during the construction phase at the airport.



EP3 METHOD STATEMENTS

The Contractor shall submit a written method statement to the Responsible Person for approval, covering those activities which are identified (in this document and/or by the Environmental Officer), as being potentially harmful to the environment.

Method statements indicate how compliance with the Environmental Particular Specification will be achieved.

The 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 Environmental Officer and Responsible Person.

The method statement shall be submitted at least five working days prior to expected commencement of work on an activity, to allow the Responsible Person time to study and approve the method statement. The contractor shall ensure ACSA that the activity is conducted according to the method statement which will be approved in writing by the ACSA successful tenderer (and also signed by the ACSA Environmental Officer), which shall be done within five working days of receipt.

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 Environmental Officer and Responsible Person. The EO and Responsible Person must retain records of any amendments and ensure that the most current version of any method statement is being used.

EP4 GENERAL SITE PROCEDURES**EP4.1 Demarcation of Environmentally Sensitive Areas**

Before construction commences there needs to be confirmation by ACSA's Environmental Officer that the vegetation in the area to be impacted by construction activities is not identified as an Environmentally Sensitive Area (ESA). However, should Environmentally Sensitive Areas be identified during the construction period the following actions would have to be taken to minimize adverse impacts:

- Environmentally Sensitive Areas, shall not be entered or used for any purpose unless a written motivation has been submitted to the EO by the Responsible Person, and written approval has been obtained from the EO;
- The Contractor shall exercise special care when working close to the ESA's in order to avoid damage or physical disturbance of these areas. The EO may instruct the Responsible Person to restrict the number of construction personnel and equipment operating near Environmentally Sensitive Areas (ESA's);

- Damage caused to ESAs by the Contractor shall be cause for the Contractor to make good any damaged areas to the written satisfaction of the EO;
- The Contractor shall note the proximity to the site of any designated ESAs. The Contractor shall fence any ESAs located within 20-m of the site boundary. The fencing shall extend along the boundary of the ESA for sufficient distance to ensure that the location of the ESA is obvious from the Contractor's site and from the approach to the Contractor's Site; and
- The Contractor shall make provision for the demarcation of ESAs with fencing to the following specifications:
 - Posts shall be wooden droppers or steel standards where the ground is too hard for wooden droppers to be driven in;
 - The posts shall be long enough and spaced closely enough to support a strand of 12-gauge wire at 750- mm above the ground level; and
 - The top 300-mm of the posts shall be painted white for easy visibility.

EP4.2 Location of camp and depot

The Contractor's Camp and Materials Storage Area shall be located at a position approved by the Responsible Person. 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.

EP4.3 Demarcation of the site

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 method of demarcation and the location of the demarcated area shall be determined by the Contractor and approved by the Responsible Person before any work being undertaken. The Contractor shall ensure that all 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/her own expense to the satisfaction of the Responsible Person.

If additional areas (e.g. for lay down, rest areas) are required, these must be approved in writing by the Responsible Person. The Contractor is advised that it may take approximately one week to obtain such permission from the Responsible Person.

Suitable temporary fencing may need to be erected during construction to minimise the risk of injury to the public, and animals.

EP4.4 Ablution Facilities

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

Toilets with chemical disinfectants 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 EO shall require the Contractor 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 open areas, rivers 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.

EP4.5 Domestic waste water

Waste-water 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.

EP4.6 Refuse

Refuse refers to all solid waste, including construction debris (e.g. wrapping 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 Responsible Person 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 if so instructed by the Responsible Person. 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 recommended. 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 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 permitted hazardous waste disposal site.

The EO shall be consulted about, and agree to, the method of storage and disposal of hazardous waste.

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

EP4.7 Protection of fauna and flora

All fauna 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. Offenders may be prosecuted in terms of the Animals Protection Act 71 of 1962.

EP4.8 Defacement of natural features

Defacement of any features outside of the construction site shall not occur without the prior written permission of the Responsible Person. Any features defaced by the Contractor shall be restored to the satisfaction of the Responsible Person.

EP4.9 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 Responsible Person. The Responsible person 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 from the National Monuments Council. Costs incurred will be for the Employer's account.

EP4.10 Effluent and storm-water management

EP4.10.1 General

The Contractor must ensure that pollution of the ground or surface water does not occur as a result of site activities. Pollution could result from the accidental release of contaminated run-off from construction camps, discharge of contaminated construction water, chemicals, oils, fuels, sewage, run-off from stockpiles, solid waste, litter, etc.

EP4.10.2 Run off from construction camps

The Contractor shall ensure that polluted run-off (excluding silt "pollution"), such as run-off from construction camps where equipment is cleaned and/or serviced, fuel stores, workshops, etc. is not discharged overland. The Contractor may direct it into the local sewerage main, with the written permission of the Responsible Person. Alternatively, the Contractor shall erect an earth/brick berm 0,5 m high around such areas and shall collect all run-off from these areas and store it in a conservancy tank for removal from the site. The Contractor shall ensure that silt-laden water is not discharged directly into any surface watercourses (i.e. vleis, etc.), and shall take suitable measures to prevent this.

Natural run-off shall be diverted away from any camps towards the storm-water drains where these are available. Special care must be taken in areas susceptible to erosion, e.g. steep slopes. The Contractor shall ensure that excessive quantities of sand, silt and silt-laden water do not enter the storm-water drain system, or any surface watercourse. The Contractor shall take appropriate measures, e.g. the erection of silt traps, or drainage retention areas, to prevent silt and sand entering drainage or watercourses. Any partial or complete blockage of the storm-water drainage system shall be cleared by the Contractor at his / her own expense.

EP4.10.3 Discharge of construction water

Construction water refers to all water dirtied as a result of construction activities.

The Contractor may discharge silt laden water overland and allow this water to filter into the ground. However, s/he shall ensure that he does not cause erosion as a result of any overland discharge.

The Contractor may discharge limited quantities (less than 50L) of cement-laden water overland, i.e. washings from trowels, wheelbarrows and the like.

Water from washing large 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.

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.

EP4.10.4 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 Responsible Person. 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 Responsible Person. 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.

EP4.10.5 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, which is intended 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.

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

Should the Responsible Person/ECO 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 ECO and relevant authorities, if appropriate.

EP4.11 Dust control

The Contractor shall be responsible for the continued control of dust arising from his/her 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, due to water loss through evaporation. The use of water carts is preferred.

The Contractor shall inform the Responsible Person 48 hours in advance of anticipated "unavoidable" dust-generating activities. The Responsible Person and/or ECO may inform adjacent land users, tenants and communities about the possibility of dust pollution, and the approximate duration of the problem.

EP4.12 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 Contractor shall inform the Responsible Person 48-hours in advance of anticipated "unavoidable" noise-generating activities. The Responsible Person and/or Environmental Officer may inform adjacent land users, tenants and communities about the possibility of noise pollution and the approximate duration of the problem.

EP4.13 Materials use, handling, storage and transport

Procedure for material handling must be discussed with and approved by the Responsible Person prior to commencement of this activity.

EP4.13.1 Use of cement/concrete

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

EP4.13.2 Fuel storage and use

Tanks containing fuels shall have lids and shall remain firmly shut. Only clean, empty tanks may be stored on the bare ground. Fuel stores shall be placed on a bunded sealed base - the bunds shall have a volume of 110% of the volume of the largest tank in the storage area. Any waste-water or spilled fuel collected within the bund shall be disposed of as hazardous waste.

The Contractor shall take all the necessary precautions to prevent fires or spills. No smoking shall be allowed in the vicinity of the fuel stores. Failure to adhere to this specification shall be cause for a spot fine being imposed on the offender.

The Contractor shall ensure that there is adequate fire-fighting equipment at the fuel stores.

EP4.13.3 Hazardous materials

The Contractor shall comply with all relevant national, regional and local legislation with regard to the transport, use and disposal of hazardous materials. If necessary, the Contractor shall obtain the advice of the manufacturer with regard to the safe handling of hazardous materials. Any claims against the Contractor shall be for his/her account.

The Contractor shall provide the Responsible Person with a list of hazardous substances on site, together with storage procedures for these materials.

The Contractor shall ensure that there is an emergency procedure to deal with accidents and incidents (e.g. spills) arising from hazardous substances. The Contractor shall report major incidents (spills in excess of 50 litres) to the Responsible Person immediately.

The Contractor shall maintain a register of spills or incidents involving hazardous materials, as well as measures taken.

The Contractor shall ensure that information on all hazardous substances is available to all personnel on site. The Contractor shall furthermore be responsible for the training of all personnel on site who will be handling the material about its proper use, handling and disposal.

EP4.13.4 Transport of materials outside the site

The Contractor shall comply with all the applicable local, regional and national by-laws with regard to road safety and the transport of materials, especially hazardous and/or toxic materials. Any claims against the Contractor shall be for his account.

The Responsible Person shall provide the Environmental Officer with a schedule of the proposed transportation of significant quantities of hazardous material onto the site, before commencing work on site. The Environmental Officer may request further details or notifications of specific material movements if considered necessary.

EP4.14 Emergency procedures

EP4.14.1 General

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 Responsible Person shall advise the EO of any emergencies on site, together with a record of action taken.

EP4.14.2 Fire

The Contractor shall take all the necessary precautions to ensure that fires are not started as a result of his/her 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.

EP4.15 Social issues

EP4.15.1 Third party or public complaints

The Environmental Officer shall be responsible for responding to queries and/or complaints and may request assistance from the Responsible Person in this regard.

The Environmental Officer shall notify the Responsible Person of any complaints lodged by a third party, and request appropriate information and measures to address such complaints. The Environmental Officer shall be responsible for maintaining a complaints register in which all complaints are recorded, as well as action taken. This register shall be available to the Responsible Person and the Contractor on request.

EP4.15.2 Information sharing

The Responsible Person and/or the Contractor may need to make staff available for formal consultation with affected parties for the purpose of explaining the construction process and answering queries if necessary.

EP5 SITE CLEARANCE

EP5.1 Removal of topsoil

Following removal of vegetation from the site, all topsoil shall be removed (up to a maximum of 30-cm depth) and stock-piled 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 Responsible Person.

EP5.2 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. Where re-vegetation of slopes is undertaken, this shall be in accordance with the specification provided in EP6.

Slopes that are susceptible to accidental damage during construction shall be protected to reduce the risk of disturbance.

Any erosion that does occur must be reinstated at the Contractor's cost.

EP5.3 Removal of alien vegetation

The Contractor shall clear all alien vegetation from areas within the demarcated site that are to be landscaped or which fall within open space or buffer zones (e.g. pipeline routes, road fringes).

EP6 SITE REHABILITATION

EP6.1 Scope

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. The Contractor shall re-vegetate such areas in accordance with the specification provided below.

The Contractor shall stabilise, by straw rot ovation or other means, 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.

EP6.2 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 re-vegetation is commenced, the Contractor shall, at his own cost, loosen the crust by scarifying to a depth of 150-mm.

EP7 MANAGEMENT AND MONITORING

This section focuses on the systems and procedures required to ensure that the environmental specifications are effectively implemented. The emphasis is on monitoring, training and penalties/incentives aimed at ensuring compliance with this document. Suitable documentation and external checks are crucial to ensure compliance and methods to achieve this are also presented in this section.

EP7.1 General Inspection, Monitoring and Reporting

The Responsible Person shall:

- Inspect the site on a daily basis to ensure that the environmental specifications are adhered to.
- Provide the Environmental Officer with a monthly written report, detailing both compliance with the Environmental Specifications as well as general environmental performance.
- Maintain a record of major incidents (spills, impacts, complaints, legal transgressions etc) as well as corrective and preventive actions taken, for submission to the Environmental Officer at scheduled monthly report back meetings.
- Conduct regular internal audits to ensure that the system for implementation of the ES is operating effectively. The audit shall check that a procedure is in place to ensure that:
 - the Method Statements and Environmental Specifications being used are the up-to-date versions;
 - variations to the Environmental Specifications/Method Statements and non-compliances and
 - corrective action are documented;
 - appropriate environmental training of personnel is undertaken; and
 - emergency procedures are in place and effectively communicated to personnel.

- Provide the required information to the Environmental Officer during external audits conducted, as part of the Environmental Management Systems auditing procedure. The information required will include the reports of internal audits conducted by the Responsible Person.

EP7.2 Environmental awareness training

EP7.2.1 Environmental awareness training prior to commencing work

An initial environmental awareness training workshop shall be held prior to any work commencing at the airport. The Responsible Person shall organise (deliver) the workshop and will record the names of those attending. It is recommended that the Contractor allow one hour for this workshop. The workshop shall be attended by all site staff, including sub-contractor's staff.

The Contractor is responsible for ensuring that personnel commencing work on site after the start of the contract (who therefore miss the initial workshop) are also made aware of the environmental procedures before commencing work.

The emphasis should be on any (potential) environmental impacts relating to the construction activities to be undertaken on site and the related environmental precautions, which need to be taken to avoid or mitigate these impacts. The contractual obligation to comply with the specifications in the Environmental Specifications must also be emphasised (some training material will be specific to certain sites or tenders).

A general environmental awareness programme aimed at all employees of the Contractor, sub-contractors and suppliers is available from the Environmental Officer.

EP7.2.2 Additional environmental awareness sessions

If there are persistent breaches of the specifications contained in the Environmental Specification and/or if new environmental issues arise during the course of construction, the Environmental Officer may require additional environmental training sessions. Attendance at these sessions will be determined by the EO, in consultation with the Responsible Person. The Contractor shall make provision for one hour a month for attendance (of construction staff) at these meetings.

EP7.3 Documentation

The Responsible Person shall ensure that all records of spills, pollution incidents, spot fines, training details etc. are copied to the Environmental Officer for his/her records. All documents shall be open for inspection by the Airport Environmental Committee (AEC).

The Environmental Officer shall ensure that a register of public complaints and action taken thereon, plus the relevant documentation from the Contractors, is maintained.

EP7.4 Incentives and penalties

EP7.4.1 Incentives

The Environmental Officer may identify a Contractor that is best implementing this Environmental Specifications and may make a (monthly) award to, or acknowledge, that Contractor.

EP7.4.2 Penalties

Spot fines shall be imposed by the Environmental Officer 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 spot fine, and furthermore 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 Environmental Officer accordingly.

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

Spot fines shall be between R500 and R2000, depending upon the severity of the infringement. The decision on how much to impose will be made by the Environmental Officer, and will be final. In addition to the spot fine, the Contractor shall be required to make good any damage caused as a result of the infringement at his/her own expense.

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

- moving outside the demarcated site boundaries;
- littering of waste on site and surrounds and 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 Environmental Officer.

The Responsible Person may also order the Contractor to suspend part or all the works if the Contractor repeatedly causes damage to the environment by not adhering to the ES (i.e. more than 3 cases of infringements). 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.

EP7.5 External audit

Regular scheduled audits of the EMS will be conducted. However, this is not a dedicated audit of the implementation of this document (which is one of many components of the EMS). Nevertheless, it is anticipated that implementation of the terms and specifications contained in this document will be periodically audited as part of the EMS audit.

All documentation held by the Environmental Officer shall be available for the EMS audit at all times. Contractors shall also be required to provide any information required by the EMS auditors.

AIRSIDE PROJECT/WORK SAFETY PLAN

(OHS and Environmental Safety Plans to be submitted separately)

Contractor:

Project/work:

ACSA Dept.

1 Disruption to normal operations (Minimise)

- a. Hours of work
- b. Information to Stakeholders in writing
- c. NOTAM

2 Access

- a. Access point and route
- b. Marking of Route
- c. Movement area crossing points
- d. Vehicle / Equipment control
- e. Communication facilities
- f. Escorts

3 Height restrictions

- a. Vehicles / Cranes
- b. Operating heights of crane jibs

4 Electrical equipment limitations

- a. Interference with navigational facilities
- b. Interference with aircraft communications

5 Aircraft movement area inspections : F&RS/Airside Safety

- a. Frequency
 - Areas open to a/c use
 - Areas closed to a/c use
- b. Cleaning / sweeping

6 Site inspection

- a. Adherence to safety requirements

7 Marking of obstacles

- a. Hoarding / demarcation of site
- b. Markings
- c. Lighting

8 Safety training

- a. Airside Inductions
- b. AVOP
- c. OHS
- d. Environment

9 Security Permits

- a. Personnel
- b. Vehicles / equipment inspections

- 10 **PPE**
 - a. Reflective jackets / vests
 - b. Ear protections
- 11 **Hot work permit – Fire & Rescue**
- 12 **Contractor staff briefings** (proof may be requested)
 - a. Precise area in which work may be done
 - b. Routes to be followed to and from working area
 - c. R/T procedures to be used
 - d. Escorting procedures and briefs
 - e. Safety precautions to be observed, eg:
 - Maintenance of listening watch
 - Use of look-outs
 - f. Reporting procedure to be followed on completion of work
- 13 **Written warning to contractor of possible hazards to personnel**
(Attach copy)
eg: - Jet blast; Noise
- 14 **List of mechanical equipment**
(Brief descriptions of equipment may be requested to enhance understanding.)
- 15 **Schedule of Contractors**
- 16 **General comments**

Compiled by:

Signature:

Date:

APPENDIX A

SITE INSPECTION PROTOCOL FOR CONSTRUCTION ACTIVITIES

The ACSA: Environmental Officer should audit one or more method statement per site (if applicable), as well as the general requirements of the Construction ES (see checklist overleaf) during a site inspection.

Project reference:.....
Contractor:.....
Responsible Person:.....
Date:.....
....

Method statement(s) audited:

Tick one box:

☐

method statement properly implemented

☐

method statement not properly implemented

If method statement not properly implemented, describe deviations/omissions/problems:

1

2

3

Describe actions/plans to ensure proper implementation of the method statement:

1

2

3

Other observations about implementation (if any):

1

Signed..... (ACSA ECO) Signed..... (Responsible Person)

DATE

DATE

SITE INSPECTION PROTOCOL FOR CONSTRUCTION ACTIVITIES

ISSUE	REQUIREMENT FOR COMPLIANCE		COMMENTS/ACTIONS
Site	Site boundary is clearly demarcated and activities undertaken within boundary.		
Toilets	Adequate toilets have been provided. These are secure and well maintained.		
Wastewater	Waste water is discharged to the reticulated system or to a conservancy tank which is emptied as required.		
Refuse	Site is generally tidy and free from litter.		
	No burning or burying waste.		
Natural features	No defacement of natural features to be protected in the site or the immediate surrounding area.		
Runoff	No polluted runoff from the site.		
	No pollution or erosion resulting from runoff of construction water.		
Fuels & chemicals	Servicing & fuelling occurs in designated place. No significant ground contamination.		
	Drip trays in place for pumps and other machinery in fixed location for at least 2 days.		
	Fuel stores on sealed base and adequately bunded.		
	Hazardous materials stored in an enclosed area or as agreed in method statement and appropriately labelled.		
	Spill clean up materials available on site.		
	No significant spillage.		
Dust	No excessive dust which could cause a nuisance to employees or the public.		
Fire	No fires on site. Use of closed stoves or fires limited to construction camps.		
	Fire extinguishers available near any welding or metal cutting.		
Topsoil	Topsoil removed and stockpiled < 2m high.		
Stabilisation	Slopes stabilised as necessary to prevent erosion.		
Monitoring	Responsible Person's record of major incidents is up to date.		
Training	All Contractors' personnel are aware of environmental responsibilities.		
	Records of training maintained by Responsible Person.		

C3.7.3: AIRSIDE PROCEDURES (SERVICE ROADS ONLY)

This part of the Generic Specifications contains the airside procedures related to the use of the airside service roads.

1. GENERAL

This document is a Procedure Manual for the Contractor's establishment and working airside to guarantee and safeguard the continuous operation of the airport at all times. This document is complimentary to the main Contract Document (Volume 3) and should be used for easy reference working airside. Information provided in this document will affect the Contractor's programme.

The Contractor shall not commence with any establishment or construction work on the airside unless the Contractor:

- Is fully conversant with the contents of this document and it has been signed and implemented by the parties.
- His staff moving on the airside outside demarcated work areas are escorted by a person duly authorised by the ACSA to assist and guide the Contractor.
- Comply with the regulations of the Occupational Health and Safety Act and Regulations 85 of 1993 Full Version.

The Contractor shall be subject to various procedures as listed below to guarantee and safeguard the operation of the airport at all times.

This document forms part of the contract documentation as listed in the Tender Data. This Volume must be read in conjunction with Volumes 3 and 4.

2. DEFINITIONS

ACSA: Airports Company South Africa

ATC: Air Traffic Control.

ATNS: Air Traffic and Navigation Services who undertake the ATC services at Bram Fischer

AIRPORT/AERODROME: An area of land including buildings intended to be used partly or wholly for the arrival, departure and movement of aircraft, air passengers and airfreight.

AIRPORT MANAGER (AM): The Airport Manager or any official of the airport authority acting on his behalf.

AIRSIDE: The movement area of an airport, adjacent terrain and building or portions thereof, access to which is controlled, but excluding leased areas.

APPROVED ISSUING AUTHORITY: An organisation approved by the airport manager to issue airport security and airside vehicle permits.

APRON: The part of the Airport Movement Area used for:

- the purpose of enabling passengers to board, or disembark from aircraft
- loading cargo onto, or unloading cargo from aircraft;
- refuelling, parking aircraft or carrying out maintenance on aircraft;

AUTHORITY TO DRIVE AIRSIDE: Authority issued by the Airport Operator to a driver for the purpose of driving in certain areas on the Airside:

- *Authority to Drive Airside Category 1* – An Authority issued by the Airport Operator to a driver for the purpose of driving only on the Airside Road in the vicinity of the Terminal or Apron Areas.
- *Authority to Drive Airside Category 2* – An Authority issued by the Airport Operator to a driver for the purpose of driving on the Airside Roads and Aprons (this may include crossing specific taxiways where a taxiway crossing is marked, and when the driver has received specific training to cover this occurrence).
- *Authority to Drive Airside Category 3* – An Authority issued by the Airport Operator, following a satisfactory attendance and written test, to a driver for the purpose of driving on all movement areas at the airport.

AUTHORITY FOR USE AIRSIDE: Is an authority to be affixed to a Vehicle or motorised item of Construction Equipment approved to access the Airside.

ER: Project Manager's Representative for the Consulting Project Manager

ESCORT – Means the supervision of a vehicle or item of construction equipment on the airside whereby the supervising person takes responsibility for and provides guidance and may take immediate action to prevent an unsafe act by the vehicle or item of construction equipment being escorted.

ESCORT OFFICER – Means a person authorised by the Airport Operator to perform the act of escorting another vehicle on the airside of the airport.

F&R: Fire and Rescue.

ILS: Instrument Landing System. Instrumentation installed along the runway strip to assist pilots during poor weather conditions.

LANDSIDE: The area of the airport to which the public has unrestricted access.

MOVEMENT AREA: That part of an aerodrome to be used for the take-off, landing and taxiing of aircraft consisting of the manoeuvring area and the apron(s)

MANOEUVRING AREA: That part of an aerodrome to be used for take-off, landing and taxiing of aircraft – excluding aprons.

MARKINGS: Symbols, lines, words and figures displayed on the surface of a movement area, or special visual features added to vehicles.

NOTAM: A notice distributed by means of telecommunication containing information concerning the establishment, condition or change in any aeronautical facility, service, procedure or hazard, the timely knowledge of which is essential to personnel concerned with flight operations.

PERIMETER ROAD: A road within the airside to facilitate movement of vehicles to various areas while remaining clear of the manoeuvring areas.

RESTRICTED AREA: Any part of an airport, designated by notices posted by the airport manager. Access to this designated area is restricted to persons in possession of an authorised identification card valid for the specific restricted area.

RUNWAY (RWY): A defined surfaced rectangular area at an airport prepared for the landing and take-off of aircraft.

RUNWAY STRIP: The area adjacent to the runway extending to 150 m on either side from the centre line of the runway.

TAXIWAY (TWY): A defined path for the taxiing of aircraft, including aircraft stand taxi lane, apron taxiway and rapid exit taxiway.

VEHICLE: Any self-propelled ground surface vehicle or mobile equipment (including specialised aircraft servicing vehicles and ramp equipment).

3. CONTRACTOR'S CAMPSITE

The Contractor's Campsite for this project will be on the landside property of ACSA

The Contractor shall not be allowed to store / deliver materials or occupy any other area, other than approved area demarcated as such.

Under no circumstances will construction traffic, deliveries, etc. be allowed through and via the normal airport traffic routes or perimeter roads. Construction traffic that has to travel on the airside must be strictly controlled and channelled via approved routes inside the airport boundary.

4. RESTRICTED ACCESS TO THE SITE OF THE WORKS

Contractor will be limited to access routes to the site, and will not be allowed to cross any taxiways and will not be allowed to use the service roads at the Terminal building to transport Materials.

5. BARRICADES

The Contractor shall erect, maintain, move and finally remove temporary barriers as prescribed by the airport authorities when collecting or processing material on the airside.

6. ON SITE STORAGE OF PLANT AND EQUIPMENT

Temporary stockpiling and storage of equipment on the site shall be done within the approved demarcated areas for construction work. The Contractor shall submit a proposal for approval by the Project Managers Representative.

7. TEMPORARY TRAFFIC-CONTROL FACILITIES

The Contractor shall supply, erect and maintain all necessary temporary road signs in accordance with South African Road Traffic Signs Manual, Volume 2, Chapter 13 (latest edition) where required i.e. when collecting material from site.

8. SPECIAL PROCEDURES FOR CONSTRUCTION AND NIGHT WORK

The Employer reserves the right to order that either all or part of the work be undertaken at night.

The Contractor shall provide artificial light after sunset to ensure the proper execution of the work in terms of the contract and shall be subject to the AM's approval and the power system shall comply with the Machinery and Occupational Safety Act No 6 of 1983 as amended, and the Standard Regulations for Wiring of Premises of the South African Institute of Electrical Principal agents.

9. RESPONSIBILITY OF AIRPORT MANAGER AND AIR TRAFFIC CONTROL

11.1. AIRPORT OPERATIONS AND AIR TRAFFIC CONTROL

The Airport Manager (AM) and the Air Traffic Controller (ATC) are ultimately responsible for the safe and efficient operation of the airport.

The AM will in his/her official capacity have authority to give the Contractor verbal or written orders on matters concerning the operation, security or safety of the airport and the Contractor shall inform the Project Manager of the orders and carry out the instructions as if issued by the Project Manager

11.2. PERMITS

The airport manager will issue the necessary application forms to those who apply to the airport management for an Airside Vehicle Permit and / or an Airport Security Permit and will decide, on receipt of the completed forms, whether or not to issue the permits.

The Airport Manager may at any time withdraw or suspend the Airside Vehicle Permit or any Airport Security Permit.

10. AIRPORT SECURITY

The Contractor shall ensure that the security of the airport is maintained wherever it may be affected by his operations. He shall be responsible for the observance of all security regulations and related requirements, both by his employees, subcontractors and their employees, as well as by his suppliers.

Entry into the security area, whether for personnel, vehicles or self-propelled construction equipment shall be subject to the issue of access permits. All personnel or vehicle permits shall be displayed at all times while such person or vehicle is within the security area. Permits may be issued to grant access to a designated area only and it shall be the Contractor's responsibility to exercise the necessary control on site in order to prevent trespassing by personnel or vehicles.

No photographs shall be taken on the airport and the possession of cameras on the site is expressly forbidden. The possession of any firearms, explosives or other weapons on the site is also expressly forbidden. Smoking or fires are prohibited in certain areas on the airport, and forbidden on the airside, and fires required for any purpose may only be lit after written approval has been obtained from the airport authorities who will also supervise such fires. Smoking is only allowed at properly demarcated areas and marked with SMOKING ZONE signs.

Sketches, drawings, diagrams, information, etc. regarding the works may not be made, recorded or reproduced other than that specifically required by and for the purpose of the contract, and no sketches, drawings, diagrams, information, etc. may be published in magazines, journals or elsewhere unless authorised in writing by the Employer.

This document contains information related to the defence of the Republic of South Africa and should be treated as secret. Amongst others, the provisions of section 118 of the Defence Act, Act 44 of 1957, as

amended, as well as the provisions of the Official Secrets Act, Act No 16 of 1956, as amended, are applicable.

The failure of the Contractor to comply with these or other security regulations and requirements, shall be sufficient reason to cancel the Contractor's access permits and / or terminate all construction activities until such shortcomings or breaches of security have been rectified, and the Contractor shall have no right to claim for any resulting delays, standing time or losses whatsoever. Any costs incurred by ACSA in rectifying and controlling the breach will be for the Contractor's account.

11. ENVIRONMENTAL CONSIDERATIONS

1.1. 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 ECO (Environmental Control Officer) shall require the Contractor 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.

Ablutions anywhere other than in the toilets shall not be permitted. Repeated use of the veld, the river 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.

1.2. 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.

1.3. REFUSE

Refuse refers to all solid waste, including construction debris (e.g. wrapping 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 ACSA 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 if so instructed by ACSA. 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 recommended. 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 ACSA, 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 ECO shall be consulted about, and agree to, the method of storage and disposal of hazardous waste.

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.

1.4. PROTECTION OF FAUNA AND FLORA

All fauna 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. Offenders may be prosecuted in terms of local bylaws and will incur a spot fine.

1.5. EFFLUENT AND STORMWATER MANAGEMENT

1.5.1. General

The Contractor must ensure that pollution of the ground or surface water does not occur 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.

1.5.2. Run off from construction camps

The Contractor shall ensure that polluted runoff (excluding silt "pollution"), such as runoff from construction camps where equipment is cleaned and/or serviced, fuel stores, workshops, etc. is not discharged overland. The Contractor may direct it into the local sewerage main, with the written permission of ACSA.

Natural run-off shall be diverted away from any camps towards the storm water drains where these are available. Any partial or complete blockage of the storm water drainage system shall be cleared by the Contractor at his own expense.

1.5.3. Discharge of construction water

Construction water refers to all water dirtied as a result of construction activities.

The Contractor may discharge silt laden water overland and allow this water to filter into the ground. However, he shall ensure that he does not cause erosion as a result of any overland discharge.

The Contractor may discharge limited quantities (less than 50L) of cement-laden water overland, i.e. washings from trowels, wheelbarrows and the like.

Water from washing large 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.

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.

1.5.4. 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 with ACSA. 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 re-fuelled on site except at designated re-fuelling locations, unless otherwise agreed with ACSA. 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.

1.5.5. 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 are 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.

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

Should ACSA 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 ACSA and relevant authorities, if appropriate.

1.6. 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.

The Contractor shall inform ACSA, 48 hours in advance of anticipated "unavoidable" dust generating activities. ACSA and/or ECO may inform adjacent land users, tenants and communities about the possibility of dust pollution, and the approximate duration of the problem.

1.7. MATERIALS USE, HANDLING, STORAGE AND TRANSPORT

Procedure for material handling must be discussed with and approved by ACSA prior to commencement of this activity.

All storage shall be in terms of SANS 10228, 10229, 10232.

The Contractor shall ensure that there is adequate fire-fighting equipment at fuel stores.

1.8. FIRE

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.

12. THE SAFETY PLAN

The following fundamental safety procedures must be taken into account with which to ensure that work in the airside is properly conducted and are to be followed by those responsible for organising and briefing working parties.

13. REPORTING OF ACCIDENTS / INCIDENTS

Contractors shall report to the AM any accident involving vehicle or plant under their control where the accident has involved injury or damage to another vehicle, aircraft or airport property; or where there is

injury to driver(s) or passenger(s) in the vehicle. The prescribed accident report shall be used for this purpose.