

## ANNEXURE A1: TECHNICAL SPECIFICATIONS

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# Annexure A1

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# **1 SERIES 1000: GENERAL**

## **Section B1100: DEFINITIONS AND TERMS**

### **B1155 GENERAL CONDITIONS OF CONTRACT**

*Replace Clause 1115 with the following:*

The General Conditions applicable to this Contract are the NEC3 Engineering and Construction Contract (June 2005), amended June 2006, Option B: Priced contract with bill of quantities.

### **B1155 WORK IN RESTRICTED AREAS**

*Add the following:*

"Any omission of pay items from the pricing schedule with regard to additional or extra over payment for work in restricted areas should be regarded as deliberate and any additional cost incurred shall be included in the bulk rate. (Refer also to clause B1209(g))."

*Add the following clauses:*

### **B1156 Provisional Sum**

Shall mean any amount stated as a provisional sum and shall only be used, in whole or in part, in accordance with the *Project Manager's* instructions, and the contract price shall be adjusted accordingly. The total sum paid to the Contractor shall include only such amounts, for the work, supplies or services to which the Provisional Sum relates, as the *Project Manager* shall have instructed. For each Provisional Sum, the *Project Manager* may instruct:

- (a) work to be executed by the Contractor, including Plant, Materials or services, and valued under Clause 60 and/or
- (b) Plant, Materials or services to be purchased by the Contractor, from a Subcontractor or otherwise; and for which there shall be included in the Contract Price:
  - (i) the actual amounts paid (or due to be paid) by the *Contractor*, and
  - (ii) a sum for overhead charges and profit, calculated as a percentage of these actual amounts by applying the relevant percentage rate (if any) stated in the appropriate Schedule.

The *Contractor* shall, when required by the *Project Manager*, produce quotations, invoices, vouchers and accounts or receipts in substantiation.

### **B1157 Prime Cost Sum**

Means a sum provided in the Bill of Quantities to cover the cost price of certain goods, services or materials to be supplied under the Contract, the amount to be paid therefor to the *Contractor* shall be the actual price payable by him, in substitution for the Prime Cost Sum, together with any charge included by the *Contractor* in his Tender to allow for labour, profit, carriage, establishment and for other charges related to such goods, services or materials. Expenditure shall be solely at the discretion and on the instruction of the *Project Manager*.

The *Contractor* shall, when required by the *Project Manager*, produce quotations, invoices, vouchers and accounts or receipts in substantiation."

## **SECTION B1200: GENERAL REQUIREMENTS AND PROVISIONS**

### **B1202 SERVICES**

*Add the following first paragraph:*

"All reference to services in this clause shall mean utility services as well as traffic monitoring devices such as Comprehensive Traffic Observation (CTO), Speed Measuring Device (SMD) and Weigh-in-Motion (WIM) stations."

*In the final paragraph, replace "clause 15" in the second line with "clause 31"*

*In the second paragraph, delete the word "utility" at the end of the second line.*

*In the final paragraph delete the second and third sentences starting with 'Should' and replace with the following:*

"All known services on the site have been indicated on the services layout plans. However, before any work can commence the *Contractor* shall verify the actual position of each station and bring to the attention of the engineer any service that is not recorded. As the *Contractor* is not authorized to remove or replace these facilities he shall:

- (i) Give preliminary notice, in writing to the relevant service provider, that the services on the site will require removal or protection prior to works being carried out in the vicinity of each station. The *Contractor* shall advise the service provider of:
  - a) The number of services, their locations and station ID numbers and
  - b) The proposed dates when work will commence in the vicinity of each service.
- (ii) In addition to the above preliminary notice, give the service provider 14 days written notice of the intention to commence work in the vicinity of each facility.
- (iii) Upon completion of the work in the vicinity of each facility, the *Contractor* shall notify the service provider, in writing, that work is complete, and the service may be reinstated.

Any delay resulting from the removal/replacement of a service shall not be the subject of a claim, it being deemed that the *Contractor* shall employ the services of the service provider as a subcontractor.

## **B1204 PROGRAMME OF WORK**

### **(a) General requirements**

*Insert the following before the first paragraph:*

"A network-based programme and sequence of construction in accordance with the precedence method shall be provided showing the various activities in such detail as may be required by the Engineer. The programme shall be updated *every two (2) weeks* in accordance with or as required in terms of clause 32 to indicate the progress made by the *Contractor*.

Failure to comply with these requirements will entitle the Engineer to apply a programme based on his own assumptions for the purpose of evaluating claims for extension of time for completion of the works, or for additional compensation."

*Add the following as a continuation of the first paragraph:*

"In drawing up the programme the *Contractor* shall make allowance for the following:

- (i) Road construction should be phased to allow Port operations to continue. The Maydon wharf precinct should be the first phase of the program, followed by the roads in Bayhead Park and finally the Island View Precinct. All investigations, detailed designs, and approvals for the upgrade of Bayhead Park roads should be completed before the completion of Maydon wharf roads.
- (ii) The expected delays defined in B1215: Extension of time resulting from inclement weather.
- (iii) Sectional Completion of the works shall be clearly indicated, and shall be in accordance with the Sections specified in the contract Data, unless otherwise approved by the *Project Manager*."

### **(b) Programme revisions**

The programme will be reviewed at the monthly site meetings at which the *Contractor* shall provide sufficient detail that will allow the comparison of completed work per activity against the original approved programme. The *Contractor* shall indicate what resources and programme changes he intends to implement in order to remedy any activity that has fallen behind. The engineer may demand from the *Contractor* a major revision of the programme. Such a revision shall be submitted for approval within fourteen days of the demand.

## **B1205 WORKMANSHIP AND QUALITY CONTROL**

"The *Contractor* shall implement a quality assurance system in accordance with ISO 9002 and appoint a quality manager who shall ensure that members of the *Contractor's* staff comply with the requirements of the quality system. The quality system and the methods used to implement it shall be described in a quality plan produced by the *Contractor*.

The quality manager shall be resident on site full time. No construction activities shall take place on site before the engineer approves the quality plan".

"The *contractor* shall submit the quality assurance system he proposes using to the engineer, for his approval, within two weeks of the site handover. Once accepted by the engineer the *contractor* shall not deviate from it unless written notification of proposed changes have similarly been submitted and approved. The system shall record the lines and levels of responsibility and indicate the method by which testing procedures will be conducted.

The engineer shall, however, undertake acceptance control tests for the judgement of workmanship and quality, without accepting any responsibilities vested with the *contractor* in terms of the contract."

*Add the following at the end of this clause:*

"The engineer shall, for the purpose of acceptance control on products and workmanship, assess tests results and measurements in accordance with the provisions of Section 8200 (scheme 1) of the standard specifications.

Where small quantities of work are involved, a lot (Section 8203 (a)) shall mean a full day's production for a specific item of work subject to acceptance control testing.""

## **B1209 PAYMENT**

- (c) Rates to be inclusive

*Add the following to the first paragraph:*

"VAT shall be excluded from the rates."

- (d) The meanings of certain phrases in payment clauses

Procuring and furnishing...(material)

*Add the following:*

"Payment for procuring and furnishing material from commercial sources shall include all transport costs, irrespective of distance hauled".

- (e) Materials on the site

*Replace "clause 52" in the first line with "subclauses 70.1 and 70.2"*

*Add the following subclauses:*

(f) Work in confined areas

Except where provided for in the specification and the Pricing schedule no extra payment shall be made nor shall any claim for additional payment be considered for construction in confined areas. The omission of standard pay items from the schedule of quantities shall be taken to be deliberate and any additional costs incurred shall be included in the bulk rate."

## **B1215 EXTENSION OF TIME RESULTING FROM INCLEMENT WEATHER**

*Change the existing heading of clause 1215 to read as above and wherever the expression 'abnormal rainfall' or 'rainy weather' is encountered replace it with 'inclement weather'.*

*In the first line of the first paragraph change 'clause 45' to read 'subclause 61'.*

*Make the following changes to Method (ii) (Critical-path method):*

*In line six of the second paragraph delete 'five-day working week' and replace with '23-day working month', and*

*Add the following final paragraphs:*

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

Table B1215/1: Average delays due to inclement weather

Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
'n'delays (rain)	6	6	5	2	2	2	2	3	3	6	6	6	49
'n'delays (other)	3	3	2	1	1	1	1	2	3	3	3	3	25

The number of rain-related delays is the average number of days on which (10 mm) of rain or more has been measured by the weather station at (Bluff weather station 0241083\_W) over the last (20) years. Other inclement weather delays for which the *Contractor* must make allowance in his programme have been derived from previous experience of wind and temperature influence on similar construction in the area of the site. Actual extensions of time due to inclement weather shall be agreed between the engineer's and Contractor's representatives on the site. The agreed whole days

or parts thereof shall be recorded at the monthly site meetings. Adjustment to the contract period shall only be made at the end of the contract when the Contractor may submit its claim for the agreed extension due as well as any additional payment resulting from the delay.

If approved extensions of time extend the completion date beyond the start of the *contractor's* holiday in December, the holiday period shall not be considered as working days. Any remaining extension of time at this date shall be calculated from the first statutory working day in January the following year, provided that the *Contractor* has shown in his programme that he intends to close during the traditional Christmas/New Year break."

## **SECTION B1300: CONTRACTOR'S ESTABLISHMENT ON SITE AND GENERAL OBLIGATIONS**

### **B1302 GENERAL REQUIREMENTS**

*Delete the third paragraph commencing "Should the final value of the work....."*

*Replace "clause 49" in the fourth, eighth and tenth paragraphs with "clauses X2 and X1, if applicable".*

*Delete the eleventh paragraph commencing "The tendered rate per month for subitem B13.01(c) .....and replace with:*

"The tendered rate per month for subitem B13.01(c) represents full compensation for that part of the *contractor's* general obligations that are mainly a function of construction time. The tendered sum will be paid monthly, pro rata for parts of a month, from the Commencement Date (as defined in the Conditions of Contract) until the end of the period for completion of the works, plus any extension thereof as provided in clause 61 of the conditions of contract.

Payment for time related costs arising from extensions of time granted by the *Employer*, where the *Contractor* is fairly entitled to such compensation in terms of subclause 61 of the Conditions of Contract, will be calculated by taking account only of pay items for which the unit of measurement is "month". All pay items for which the unit of measurement is "month" are deemed to be based on 23 working days per month."

*Insert the following paragraph:*

"Should the combined total tendered for subitems (a), (b), and (c) exceed 15% of the total of Prices, the tenderer shall state his reasons in writing for tendering in this manner. If the tenderer should require additional compensation for his obligations under section 1300 (over and above the total tendered for item B13.01) by including such additional compensation in the tendered rates and/or lump sum of items in the Activity Schedule, these items and the value of such additional compensation shall also be indicated in writing.



## **SECTION B1500: ACCOMODATION OF TRAFFIC**

### **B1501 SCOPE**

*Add the following:*

"It is a condition of this contract that traffic is accommodated taking into account the provisions of the latest edition of the South African Road Traffic Signs Manual (SARTSM). The latest version for use in the accommodation of traffic is volume 2, chapter 13 of the June 1999 edition. Copies of this publication are available from Government Printers –Tel: (012) 334 4507/8/9 or (012) 334 4510 Fax: (012) 323 9574.

This section also covers the provision of additional information signs for motorists and the release of any notices to the media and public.

The accommodation of traffic shall at all times comply with the requirements of the Traffic Management Plan prepared by the *Contractor* and approved by the *Project Manager*.

### **B1503 TEMPORARY TRAFFIC -CONTROL FACILITIES**

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

"The *Contractor* shall provide, erect and maintain the necessary traffic-control devices, road signs, channelization devices, barricades, warning devices and road markings (hereinafter referred to as traffic-control devices) in accordance with these special provisions and as shown on the drawings and in the SARTSM and remove them when no longer required. It shall be incumbent upon the *contractor* to see to it that the abovementioned traffic-control devices are present where required at all times and are functioning properly."

## **2 SERIES 2000: DRAINAGE**

### **SECTION B2100: DRAINS**

#### **B2101 SCOPE**

*Amend the first paragraph to read:*

"This section covers all work both rehabilitative and new work in connection with the excavation and construction of open drains, subsoil drainage and banks and dykes at the locations and to the sizes, shapes, grades and dimensions as shown on the drawings or as directed by the engineers, and the test flushing of subsoil drains."

The *Contractor's* designer must provide detailed project specifications for road reconstruction or heavy rehabilitation.

### **SECTION B2300: CONCRETE KERBING, CONCRETE CHANNELING, CHUTES AND DOWNPIPES AND CONCETE LINING FOR OPEN DRAINS**

#### **B2301 SCOPE**

*Add the following to this clause:*

"This section also covers the replacement of damaged concrete kerbing, channelling and lining."

#### **B2304 CONSTRUCTION**

*Add the following subclause:*

"(iv) Removal of existing kerb and channel

Where shown on the drawings and/or indicated by the engineer, the existing kerb and channel shall be removed and transported to spoil as directed."

The *Contractor's* designer shall provide detailed project specifications for road reconstruction or heavy rehabilitation.

### **3 SERIES 3000 EARTHWORKS AND PAVEMENT LAYERS OF GRAVEL OR CRUSHED STONE**

The *Contractor's* designer shall provide detailed project specifications for road reconstruction or heavy rehabilitation for this series.

#### **B3804 PLANT AND EQUIPMENT**

(a) Milling equipment

*Add the following.*

"No payment shall be made for moving the milling machine on the site."

#### **B3805 CONSTRUCTION**

(b) Milling

(c) Asphalt

*Add the following paragraph:*

"The material originating from the milling of the existing asphalt layers shall become the property of the *Contractor* and the disposal thereof to an approved dump site shall be the responsibility of the *Contractor*. The cost for disposing of the milled material, inclusive of loading and haulage, shall be deemed to be included in the tendered rate for the milling of the asphalt layers."

(vi) General

*Add the following.*

"Where milling is to be done at existing structures, care shall be exercised to avoid damage to concrete elements, expansion joints, nosings to expansion joints, manholes, catch pits, etc. Damage caused to any element forming part of the permanent works shall be repaired at the *Contractor's* cost.

The floor of the milled excavation shall be cleaned out of all loose material by brooming. The exposed floor of the excavation shall be lightly sprayed with water to identify cracks. The engineer shall be given the opportunity to inspect the milled surface for cracks and loose patches and any cracks or loose patches shall be repaired in accordance with the relevant sections of the specification."

## **4 SERIES 4000: ASPHALT PAVEMENTS AND SEALS**

### **SECTION B4100: PRIME COAT**

#### **B4102 MATERIALS**

(a) Aggregate for blinding

*Add the following sentence:*

"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 0,8 l/m<sup>2</sup>. Unless directed otherwise by the engineer or indicated on the drawings, the edges of the primed surface shall be 150 mm wider than the edges of the surfacing."

*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 subclause 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 engineer. The engineer 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 from specified spray rate at spraying temperature. %	Payment reduction factor of tendered rate.
8,0	1.0
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 engineer 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 screened 4,75 mm 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 engineer, 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."

**5 SERIES 5000: ANCILLARY ROADWORKS****SECTION B5600: ROAD SIGNS****5601 SCOPE**

*Replace "South African Road Traffic Signs Manual" in the second paragraph with:*

"SADC Road Traffic Signs Manual"

**B5603 MANUFACTURING OF ROAD SIGN BOARDS AND SUPPORTS**

(a) Road signboards

*Add the following:*

"The *Contractor* shall make every effort to ensure that signboards are correct in all respect and before dispatching the boards from the manufacturer's factory shall provide the engineer

with a 100 mm x 150 mm colour photograph of each sign face for approval of the correctness of the legend. Such approval will not imply final acceptance of the board. If the *Contractor* is in any doubt as to the correctness of the sign detail, the sign designer shall be contacted for verification."

(a)(ii) Steel profile road signboards

*Add the following*

"Chromadek section shall be assembled in accordance with the details of Standard Plans SP-B-12- Sheets 4 and 5 and SP-B-4-Sheets 33E and 34E.

Where the letter or legends cross the horizontal joints of the sign panels, the letter shall be cut on the joint and both ends folded around the radius

Retro-reflective material to adjoining Chromadek panels on a sign shall be practical visual match of the specified colour."

## **B5604 ROAD SIGN FACES AND PAINTING**

*Add the following subclause:*

"(e) Application of retro-reflective material

All sign faces shall be faced with retro-reflective material. Painted front sign faces shall not be used.

Where applied to Chromadek sections, retro-reflective material shall be applied as specified for aluminium section in clause 5603(d) of the Standard Specification, and of clause B5603(a)(ii) of this project specification."

## **B5605 STORAGE AND HANDLING**

*Add the following:*

"The following shall not be allowed on the sign face:

- Drilling of holes, except for the fastening of overlays
  - Application of any form of adhesive
  - Cleaning with any chemicals that are not specifically approved by the manufacturer of the retroreflective material.
- Covering the sign face with an impermeable material that does not allow free circulation of air."

## **B5606 ERECTING ROAD SIGNS**

(c) Erection

*Add the following:*

"After erection the signboard shall be thoroughly cleaned with a cleaning agent approved by the retroreflective material's manufacturer.

All vegetation obstructing the new or replaced sign board shall be removed and disposed of as instructed by the engineer."

## **B5608 DISMANTLING, STORING AND RE-ERECTING EXISTING ROAD SIGNS**

*Add the following:*

"Existing overhead and ground mounted road signs that are being replaced by new signs shall be dismantled and disposed of by the *Contractor*. Where possible the dismantling of the signs shall not be before the replacement sign is erected and displayed. Where dismantling of the sign is required before erection of the replacement sign, the dismantling shall not take place until immediately before work is to commence on the replacement, and the replacement shall be completed and the new sign displayed as soon as possible thereafter (within 72 hours).

Dismantling shall include sign panels and ground mounted sign supports.

Ground mounted sign supports shall be cut off just below ground level. Material excavated for removal of buried poles shall be replaced, and any depression made good using excess material from excavation for new signs.

Pay items are provided in the Pricing Schedule. Payment will differentiate between different types of sign panels."

## **SECTION B5700: ROAD MARKINGS**

### **B5701 SCOPE**

*Replace "South African Road Traffic Signs Manual" in the second paragraph with:*

"SADC Road Traffic Signs Manual"

### **B5702 MATERIALS**

(b) Roadstuds

*Replace the second sentence with the following:*

"All square roadstuds shall have a footprint of 100 mm x 100 mm and a height of 20 mm. Round roadstuds shall be 100 mm in diameter and 20 mm in height. Only non metallic

products with glass as reflective material shall be used. Shank road studs shall be used on the outside slow lane shoulders."

### **B5706 Setting out the road markings**

*Add the following:*

"Where road markings are to be replaced after milling/overlay seal, it is essential that all existing barrier lines and other road marking lines be accurately referenced before commencement of milling or other operations which will obliterate the existing road markings. The position of barrier lines shall be re-assessed on site by the engineer before the *Contractor* commences with the road marking."

### **B5707 APPLYING THE PAINT**

*Replace the last paragraph with the following:*

"The center-line shall be painted immediately after 2,0 km of continuous road has received a new asphalt layer, or 4 km of continuous road has received a new seal surfacing or where, in the opinion of the engineer, conditions are unsafe to traffic the road without markings.

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."



**Compiled By:**

A handwritten signature in black ink, appearing to read "Anwar Rodrigues", written over a horizontal line.

Signature

Name: Anwar Rodrigues

Designation: Engineer

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Date

**Reviewed By:**

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