



**National
Research
Foundation**

REQUEST FOR QUOTATIONS

RFQ DESCRIPTION:		LOSBERG RFI MONITORING STATION FOUNDATION CONSTRUCTION (RE-ADVERTISEMENT)	
RFQ NUMBER:		SARAO RFQ/SRFI/3004/2024	
ADVERTISEMENT DATE:		Thursday, 8 August 2024	
COMPULSORY BRIEFING MEETING:		Monday, 19 August 2024 at 10.00AM To register in advance for the briefing session, click on the following link: https://ska.zoom.us/meeting/register/tJlrceChqTkjGdRz_k6eRzUeuN_cfKavSAVh After registering, bidders will receive a confirmation email containing information about joining the meeting	
CLOSING DATE:		Monday, 26 August 2024	
CLOSING TIME:		12.00PM	
BIDS SUBMITTED TO:		anwuli@sarao.ac.za	
PRICE & PREFERENCE POINTS SYSTEM:		80/20	
Bidding procedure enquiries may be directed to:		Technical enquiries may be directed to:	
Contact person	Anwuli Okecha (SCM)	Contact person	C. Stewart Pr.Tech.Eng
E- Mail address	anwuli@sarao.ac.za	E- Mail address	cstewart@sarao.ac.za
Telephone	021 506 7415	Telephone	021 506 7435
Note: SARAO staff work remotely intermittently, and therefore any enquiries relating to this Request for Quotations must be directed to the email addresses provided above			

SUPPLIER INFORMATION – SBD 1

Name of Bidder Name:

Street Address:

Telephone Number

Code

Number

Cell Phone Number

Code

Number

Facsimile Number

Code

Number

E-Mail Address

VAT Registration Number

Tax
Compliance
Status

Tax
Compliance
System PIN

OR

Central Supplier
Database No.

MAAA

B-BBEE Status
Level Verification
Certificate

Tick Applicable Box.
☐ Yes ☐ No

B-BBEE Status
Level Sworn
Affidavit

Tick Applicable Box.
☐ Yes ☐ No

[A B-BBEE status level verification certificate/sworn affidavit (for EMEs & QSEs) must be submitted in order to qualify for preference points for B-BBEE – also refer to the SBD 6.1]

Are you the accredited
representative in South
Africa for the
goods/services/works
offered?

☐ Yes
☐ No
[If yes
enclose
proof]

Are you a foreign-
based supplier for
the
goods/services/work
s offered?

☐ Yes ☐ No
[If yes, answer the
questionnaire below]

Is the entity a resident of the Republic of South Africa (RSA)?

☐ Yes ☐ No

Does the entity have a branch in the RSA?

☐ Yes ☐ No

Does the entity have a permanent establishment in the RSA?

☐ Yes ☐ No

Does the entity have any source of income in the RSA?

☐ Yes ☐ No

Is the entity liable in the RSA for any form of taxation?

☐ Yes ☐ No

If the answer is “No” to all of the above, then it is not a requirement to register for a tax compliance status system pin code from the South African Revenue Service (SARS).

1. INTRODUCTION TO THE NRF

The National Research Foundation Act as amended, Act 19 of 2018, establishes the National Research Foundation (“NRF”) as the juristic legal entity that will contract with the awarded bidder. Please visit the NRF website (<https://www.nrf.ac.za>) for more information.

2. BACKGROUND TO SARAO

The South African Radio Astronomy Observatory (SARAO, formerly in part SKA SA) is the business unit of the National Research Foundation (NRF) that houses and operates South Africa’s national radio telescope shared facilities, including the MeerKAT, KAT-7, and Hartbeeshoek 26-m radio telescopes.

As a member of the international effort to build the Square Kilometre Array (SKA), which will be the world’s largest radio telescope, South Africa (through the NRF’s business units) is responsible for the construction and operation of the MeerKAT precursor telescope, for hosting the SKA Mid Frequency telescope, and for implementation of the African VLBI Network.

SARAO has offices based in Johannesburg and Cape Town, as well as the radio-quiet SKA host site in the Karoo, 90km from Carnarvon in the Northern Cape, which hosts the Square Kilometre Array mid-frequency telescopes, MeerKAT, and KAT-7 radio telescope installations, as well as a number of guest instruments, including the HERA telescope.

3. PROJECT BACKGROUND

In radio astronomy, radio telescopes are mainly used for observations which are affected by Radio Frequency Interference (RFI). Telescope arrays are often built in radio-quiet reserves away from human habitation as is the case with the MeerKAT and Square Kilometre Array (SKA) projects. However, with the projects still under construction, the infrastructure and equipment related to the construction work may increase the risk of RFI through transient RFI with the potential to degrade astronomical observations. Transient RFI is generally broadband and highly intermittent (Czech, 2019).

One of the approaches to mitigate the RFI is to use fixed and mobile RFI monitoring stations. The stations operate independent of the main telescope arrays and continuously monitor a wide bandwidth in all directions. Therefore, early detection and identification of RFI emitting devices and equipment can be beneficial in dealing with the source.

The proposed location of the RFI monitoring station is atop Losberg hill located northwest of the Karoo Array Processing Building (KAPB) on the Karoo site, approximately 90 km from Carnarvon in the Northern Cape.



Figure 1: On site location (Source: Google Earth)

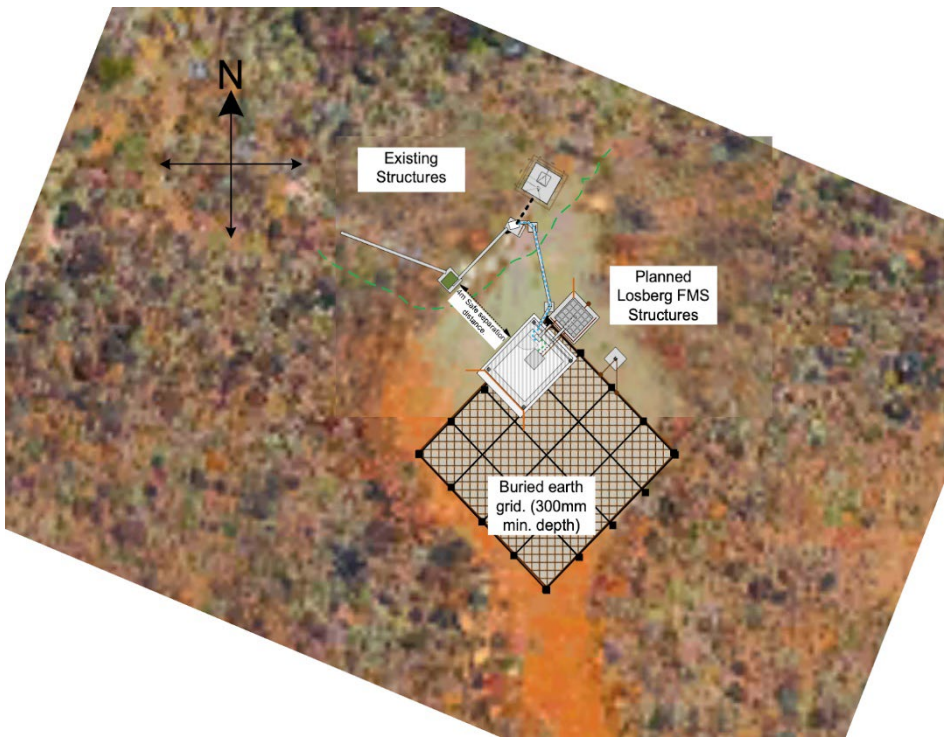


Figure 2: Location of Planned vs Existing Losberg Structures

4. SERVICE SPECIFICATIONS

4.1 Scope

This Contractor is to construct 3 new concrete slabs on which the proposed new RFI monitoring equipment will be installed (**Refer to Annexure A – Foundation Slab and Layout Details**).

4.1.1 Extent of services

The extent of the services comprises the following:

- Survey
 - A topographical surveyor is required to set out the exact positions of the corners of each of the foundations;
 - The areas will then be measured and verified for correct width and heights;
- Site Clearance
 - The proposed area of work is to be cleared and topsoil removed.
- Excavation
 - The area is to be excavated for the proposed new soil improvement layer as shown on DWG L0100-0000-014 to the required depth;
- Layerworks
 - The insitu layer is to be ripped and recompact, at a depth of 200mm, to 90% MOD AASHTO and thereafter 2 x 150 mm thick G5 quality material layers are to be laid and compacted to 95% MOD AASHTO in accordance with SANS1200 Part D.
- Blinding
 - A blinding layer is to be cast, 10MPa concrete to a depth of 10mm, to assist as per the Engineers instruction only;
- Install formwork
 - The formwork should be designed to ensure specified dimensional tolerances are in accordance with SANS 1200 Part G;
- Install reinforcement
 - Reinforcement should be installed as per the Engineer's drawings;
- Fastening method
 - Setting out/ placement to be in accordance with the Mechanical/ RFI Engineers specifications;
- Casting concrete (class 25/19 concrete)
 - 25Mpa concrete with 19mm aggregate should be used;
 - 6 cubes are to be cast per pour (7 and 28 days);
 - Slump tests are to be done on batched concrete;

- Cure concrete and allow for a minimum 7 days curing period before loading the structure.
- Backfill
 - Allow for importing of material (G8 quality) to backfill against new foundation structure as per Engineer's instruction.

4.2 Technical Specifications

4.2.1 Structural

- All concrete work to be in accordance with SANS 1200 Part G.
- All earthworks to be in accordance with SANS 1200 Part D.
- Reference to be made to Engineer's drawing M2952-0001-000 Losberg Foundation Layout.
- No concrete to be cast without Engineer's written instruction.

4.2.2 General

- Restricted access to site via rocky terrain track. Use of 4x4 vehicles are recommended for access to site.
- If the pad construction begins after the earth grid has been installed around the area set out for the environmental shelter, only hand excavation from a depth of 200mm to 300mm will be allowed to avoid tampering with the earth grid.
- The area is predominantly covered with rocks and boulders. This should be taken into consideration in case further excavation is required, and also setting out storage areas for tools and materials.
- All equipment needs to be RFI tested (refer to item 2.2.3 below).
- Noting that the site has been identified as a National Key Point, the respective security checks and clearances will need to be obtained in order to work on site.

4.2.3 Radio Frequency Interference (RFI) Requirements

The following RFI requirements shall be adhered to by the Contractor for the duration of the contract whilst on site at the Losberg Facility:

- No petrol vehicles or engines shall be used on site (**only diesel vehicles allowed**).
- No devices with wireless communication shall be used. This includes, but is not limited to, any device which utilises Bluetooth or Wi-Fi.
- The contractor shall provide the SARAO RFI team with a list of devices (Manufacturer, model and serial number) of all tools, vehicles and equipment they plan to use.

- All equipment and vehicles shall need RFI permits before work can commence. The SARAO RFI team can provide testing for the vehicles and equipment, if needed.
- It is the responsibility of the contractor to make sure that their quote allows for the admin time needed to get the RFI requirements in order.

4.3 Location of Site/ Delivery:

SKA SA Losberg Support Base

South Africa

Coordinates: **30°44'01"S**

21°24'50"E

4.4 Deliverables

Respondent to this RFQ must comply with all requirements as specified within this document.

The following documents are to be submitted:

- The priced BOQ is to be submitted, noting all scope of work specifications within this document.
- A construction schedule/ programme is to be provided and must include all required resources.

4.5 Timelines

The commencement dates for the first contact session/ kick-off meeting will be confirmed, following the contract award to the successful bidder.

- Contract Award and Project Initiation – 2 weeks
- Construction – 8 weeks
- Close-out – 1 week

4.6 Contract Terms

SARAO reserves the right to terminate the contract and use another service provider at any time, if required services are not delivered.

Invoices must be submitted to SARAO for payment after successful completion of each activity, approval by the SARAO representative as identified in the pricing schedule. No advance payments will be granted.

4.7 Occupational Health and Safety

The following is to be noted regarding the Project OHS requirements.

- SARAO will provide a health and safety specification document, which is a legal compliance document drawn up in terms of the OHS Act and is therefore binding.
- All Contractors entering a Contract with Client shall, as a minimum, comply with the Occupational Health & Safety Act and Regulations (Act 85 of 1993).
- A current, up-to-date copy of the OHS Act and Construction Regulations must be always available on site.
- Compensation for Occupational Injuries & Diseases Act (Act 130 of 1993). The Principal Contractor will be required to submit a letter of Registration and "good standing" from the compensation insurer before being awarded the Contract.
- All Contractors shall comply with the "Integration Labour Law Act" and regulations.
- All relevant Municipal bylaws and National Building Regulations.
- The Immigrations Act 2002, as amended, shall further ensure that no illegal aliens are employed on the construction site.
- New construction Regulations 2014 were promulgated on August 7, 2014.

Attachments : Annexure A – Foundation Slab and Layout Details

5. EVALUATION METHOD

Bids will be evaluated in three stages as follows -

STAGE 1 – ADMINISTRATIVE COMPLIANCE

All returnable documents indicated as mandatory must be completed or submitted.

Returnable Schedule	Document/	Measurement Methodology	Mandatory/ Optional)
Proof of CIDB Registration (1GB)		Proof of bidder's registration with CIDB in the class 1GB	Mandatory
SBD 1 – Invitation to Bid		Has the bidder completed and signed the SBD 1 Invitation to Bid form? Has the bidder provided its CSD number or/and a detailed CSD report?	Mandatory
SBD 3.1 – Pricing Schedule		Has the bidder submitted its price offer for the services offered?	Mandatory
SBD 4 – Bidder's Disclosure		Has the bidder completed and signed the SBD 4 form? Has the bidder made any disclosure which would preclude it from responding to this RFQ?	Mandatory
SBD 6.1 – Price and Preference Points Claim Form		Has the bidder completed and signed the SBD 6.1 form?	Mandatory
SBD 1 Form – Bid Signature		Has the bidder confirmed that its bid is validity submitted? Has the bidder signed the SBD1 form?	Mandatory
BBBEE certificate, or sworn affidavit detailing annual turnover and level of black ownership, in the case of EMEs and QSEs		Has the bidder submitted a valid B-BBEE certificate or sworn affidavit in order to claim preference points?	Mandatory (if points for preference claimed by the bidder)

STAGE 2 – FUNCTIONALITY CRITERIA

Bidders must submit documentation in order to satisfy the functionality criteria listed below, and claim points. **The minimum score for functionality is 75 points out of a possible 100. Bidders that fail to achieve a minimum score of 75 points will be disqualified.**

No.	Selection criteria	Sub-scores	Weighting (100 total)
1.	The bidder must provide evidence of all projects worked on in the past five (5) years that are similar to that required in this scope of work, namely construction of concrete structures or general experience in the concrete - built environment		45
	No. of relevant projects the bidder has worked on in the last 5 years		
	<u>Extensive experience</u> in delivering projects of a similar nature. In the last five (5) years the bidder has worked on <u>more than ten (10) projects</u> of a similar scope to this project	45	
	<u>Adequate experience</u> in delivering projects of a similar nature. In the last five (5) years the bidder has worked on <u>more than five (5) projects, but less than 10 projects</u> of a similar scope to this project	30	
	The bidder has <u>average experience</u> in delivering projects of a similar nature. In the last five (5) years the professional has worked on <u>less than five (5) projects</u> of a similar scope to this project	15	
	The bidder has <u>limited experience</u> in delivering projects of a similar nature. In the last five (5) years the professional has worked on <u>less than two (2) projects</u> of a similar scope to this project	5	
2.	Qualifications, professional affiliations and experience of the Site Foreman well as his / her experience working on similar projects - Submit CVs of personnel		35
2.1	Experience:		
	Site foreman has extensive experience (More than 10 years) in delivering similar projects (i.e., construction of concrete structures or general experience in the concrete - built environment)	35	
	Site foreman has adequate experience (less than 10 years but more than 5 years) in delivering similar projects (i.e., construction of concrete structures or general experience in the concrete - built environment)	25	
	Site foreman has average experience (less than 5 years but more than 1 year) in delivering similar projects (i.e., construction of concrete structures or general experience in the concrete - built environment)	15	
	Site foreman has no experience in delivering similar projects (i.e., construction of concrete structures or general experience in the concrete - built environment)	0	
4.	Construction Programme		
4.1	A detailed construction programme		20

	The bidder <u>provided</u> a detailed construction programme of works for the project	20	
	The bidder <u>did not provide</u> construction programme of works for the project	0	
		Total	100

STAGE 3 – PRICE AND PREFERENCE

The RFQ will be evaluated on the 80/20 preference points system in terms of the Preferential Procurement Regulations, 2022.

6. PRICING SCHEDULE – SBD 3.1

PRICING INSTRUCTIONS

1. Bidders to note that the 'Schedule of Quantities' does not allow for separate costing of preliminary and general items. All preliminary and general costs must be included in the rate for each item priced as described in the 'Schedule of Quantities'.
2. Bidders should note that the 'Schedule of Quantities' does not allow for separate costing of labour and transport and is to be factored into pricing of line items.
3. Total cost should include VAT and all disbursements.

Reference to be made to attached:

1. Drawing: M2952-0001-000

ITEM	REF	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
	SANS	<u>SECTION A:</u>				
	1200 A	GENERAL				
A1.1	PS8.3.1	Fixed Establishment Cost	Sum	1		
		Compliance with RFI, Environmental Management Specifications and Health & Safety and 2003 Construction Regulations	Sum	1		
	PS8.4	TIME RELATED ESTABLISHMENT COSTS				
A1.2	PS8.4.1	Time related establishment costs	Sum	1		
		PRIME COST SUMS				
A1.3	PS8.6.1	Testing of Materials by Engineer				
		Testing of Materials by the Engineer				
A1.4		Contractor's overheads, profit etc. on (a)				
TOTAL CARRIED FORWARD						

ITEM	REF	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
TOTAL BROUGHT FORWARD						
	SANS	<u>SECTION B:</u>				
	1200 G	CONCRETE STRUCTURAL				
		<u>Reference drg no.M2952-0001-000</u>				

	8.4	Concrete				
B3.1	PSG	Blinding layer 15mm thick, 10MPa/19mm	m³	1		
B3.2	8.4.1	Prescribed mix concrete, 25MPa/19mm in accordance with project specification, for:				
B3.2.1		a) Foundation slabs	m³	20		
	8.2	Formwork				
B3.3	8.2.2	Smooth vertical to edge of foundation slab	m²	15		
B3.4	8.2.6	Box-out holes though slab, small other than circular of area over 0.1m² and up to and including 0.5m²	no.	1		
	8.3.1	Reinforcement				
B3.5		a) High Tensile steel bars of all diameters	t	0,5		
	8.4.4	Unformed surface finishes				
B3.6		Steel floated finish to foundation slabs	m²	30		
TOTAL CARRIED FORWARD						

SUMMARY OF BILL OF QUANTITIES

SECTION A	DESCRIPTION	AMOUNT
	SECTION A	
A1	GENERAL	
B	SECTION B	
B1	SITE CLEARANCE	
B2	EARTHWORKS	
B3	CONCRETE STRUCTURAL	
	SUB TOTAL	
	V A T @ 15 %	
	TOTAL CARRIED TO FORM OF OFFER	

7. BIDDING CONDITIONS

The following conditions will apply to this request for quotations:

1. Price(s) quoted must be valid for 30 days from date of your offer.
2. Price(s) quoted must be firm and must be inclusive of VAT, if applicable.
3. In order to claim points for specific goal, bidders are required to submit:
 - (i) proof of B-BBEE status level of contributor; or
 - (ii) for EMEs, a sworn affidavit confirming their annual total revenue of R10 million or less and level of black ownership; or
 - (iii) for QSEs, a sworn affidavit confirming their annual total revenue of between R10 million and R50 million and level of black ownership; or a B-BBEE level verification certificate.
4. **No award will be made to a service provider who is not registered on CSD.** To register, use the following link - <https://secure.csd.gov.za/>
5. SARAO reserves the right to withdraw or cancel any invitation to quote and re-advertise it; or to accept a part of it. SARAO does not bind itself to accept the lowest quotation.
6. This request for quotations is subject to the Preferential Procurement Policy Framework Act, 2000, the Preferential Procurement Regulations, 2022, the National Treasury General Conditions of Contract (GCC) and, if applicable, any other special conditions of contract.
7. Payment will be effected within 30 days of receipt and acceptance of the goods and the supplier's invoice.

SBD 4 BIDDER'S DISCLOSURE

1.	PURPOSE OF THE FORM		
1.1	Any person (natural or juristic) may make an offer or offers in terms of this invitation to bid. In line with the principles of transparency, accountability, impartiality, and ethics as enshrined in the Constitution of the Republic of South Africa and further expressed in various pieces of legislation, it is required for the bidder to make this declaration in respect of the details required hereunder. Where a person/s are listed in the Register for Tender Defaulters and / or the List of Restricted Suppliers, that person will automatically be disqualified from the bid process.		
2.	BIDDER'S DECLARATION		
2.1	Is the bidder, or any of its directors / trustees / shareholders / members / partners or any person having a controlling interest ¹ in the enterprise, employed by the State?		YES / NO
2.1.1	If so, furnish particulars of the names, individual identity numbers, and, if applicable, state employee numbers of sole proprietor/ directors / trustees / shareholders / members/ partners or any person having a controlling interest in the enterprise, in table below -		
	Full Name	Identity Number	Name of State Institution
2.2	Do you, or any person connected with the bidder, have a relationship with any person employed by the procuring entity?		YES / NO
2.2.1	If so, furnish particulars:		
2.3	Does the bidder, or any of its directors / trustees / shareholders / members / partners or any person having a controlling interest in the enterprise have any interest in any other related enterprise whether or not they are bidding for this contract?		YES / NO
2.3.1	If so, furnish particulars:		

¹ The power, by one person or a group of persons holding the majority of the equity of an enterprise, alternatively, the person/s having the deciding vote or power to influence or to direct the course and decisions of the enterprise.

3.	DECLARATION
I, the undersigned, (name)..... in submitting the accompanying bid, do hereby make the following statements that I certify to be true and complete in every respect -	
3.1	I have read and understand the contents of this disclosure;
3.2	I understand that the accompanying bid will be disqualified if this disclosure is found not to be true and complete in every respect;
3.3	The bidder has arrived at the accompanying bid independently from, and without consultation, communication, agreement or arrangement with any competitor. However, communication between partners in a joint venture or consortium ² will not be construed as collusive bidding.
3.4	In addition, there have been no consultations, communications, agreements or arrangements with any competitor regarding the quality, quantity, specifications, prices, including methods, factors or formulas used to calculate prices, market allocation, the intention or decision to submit or not to submit the bid, bidding with the intention not to win the bid and conditions or delivery particulars of the products or services to which this bid invitation relates.
3.5	There have been no consultations, communications, agreements or arrangements made by the bidder with any official of the procuring institution in relation to this procurement process prior to and during the bidding process except to provide clarification on the bid submitted where so required by the institution; and the bidder was not involved in the drafting of the specifications or terms of reference for this bid.
3.6	I am aware that, in addition and without prejudice to any other remedy provided to combat any restrictive practices related to bids and contracts, bids that are suspicious will be reported to the Competition Commission for investigation and possible imposition of administrative penalties in terms of section 59 of the Competition Act No 89 of 1998 and or may be reported to the National Prosecuting Authority (NPA) for criminal investigation and or may be restricted from conducting business with the public sector for a period not exceeding ten (10) years in terms of the Prevention and Combating of Corrupt Activities Act No 12 of 2004 or any other applicable legislation.
CERTIFICATION	

² Joint venture or Consortium means an association of persons for the purpose of combining their expertise, property, capital, efforts, skill and knowledge in an activity for the execution of a contract.

I CERTIFY THAT THE INFORMATION FURNISHED IN PARAGRAPHS 1, 2 AND 3 ABOVE IS CORRECT.

I ACCEPT THAT THE STATE MAY REJECT MY BID OR ACT AGAINST ME IN TERMS OF PARAGRAPH 6 OF PFMA SCM INSTRUCTION 03 OF 2021/22 ON PREVENTING AND COMBATING ABUSE IN THE SUPPLY CHAIN MANAGEMENT SYSTEM SHOULD THIS DECLARATION PROVE TO BE FALSE.

.....
Date

.....
Signature

.....
Position

.....
Name of Bidder

SBD 6.1 PREFERENCE POINTS CLAIM FORM IN TERMS OF THE PREFERENTIAL PROCUREMENT REGULATIONS 2022

This preference form must form part of all tenders invited. It contains general information and serves as a claim form for preference points for specific goals.

NB: BEFORE COMPLETING THIS FORM, TENDERERS MUST STUDY THE GENERAL CONDITIONS, DEFINITIONS AND DIRECTIVES APPLICABLE IN RESPECT OF THE TENDER AND PREFERENTIAL PROCUREMENT REGULATIONS, 2022

1. GENERAL CONDITIONS

1.1 The following preference point systems are applicable to invitations to tender:

- the 80/20 system for requirements with a Rand value of up to R50 000 000 (all applicable taxes included); and
- the 90/10 system for requirements with a Rand value above R50 000 000 (all applicable taxes included).

1.2 The applicable preference point system for this tender is the 80/20 preference point system.

1.3 Points for this tender (even in the case of a tender for income-generating contracts) shall be awarded for:

- (a) Price; and
- (b) Specific Goals.

1.4 The maximum points for this tender are allocated as follows:

	POINTS
PRICE	80
SPECIFIC GOALS	20
Total points for Price and SPECIFIC GOALS	100

1.5 Failure on the part of a tenderer to submit proof or documentation required in terms of this tender to claim points for specific goals with the tender, will be interpreted to mean that preference points for specific goals are not claimed.

1.6 The organ of state reserves the right to require of a tenderer, either before a tender is adjudicated or at any time subsequently, to substantiate any claim in regard to preferences, in any manner required by the organ of state.

2. DEFINITIONS

- (a) **“tender”** means a written offer in the form determined by an organ of state in response to an invitation to provide goods or services through price quotations, competitive tendering process or any other method envisaged in legislation;
- (b) **“price”** means an amount of money tendered for goods or services, and includes all applicable taxes less all unconditional discounts;
- (c) **“rand value”** means the total estimated value of a contract in Rand, calculated at the time of bid invitation, and includes all applicable taxes;
- (d) **“tender for income-generating contracts”** means a written offer in the form determined by an organ of state in response to an invitation for the origination of income-generating

contracts through any method envisaged in legislation that will result in a legal agreement between the organ of state and a third party that produces revenue for the organ of state, and includes, but is not limited to, leasing and disposal of assets and concession contracts, excluding direct sales and disposal of assets through public auctions; and

- (e) **“the Act”** means the Preferential Procurement Policy Framework Act, 2000 (Act No. 5 of 2000).

3. FORMULAE FOR PROCUREMENT OF GOODS AND SERVICES

3.1. POINTS AWARDED FOR PRICE

3.1.1 THE 80/20 OR 90/10 PREFERENCE POINT SYSTEMS

A maximum of 80 or 90 points is allocated for price on the following basis:

$$P_s = 80 \left(1 - \frac{P_t - P_{min}}{P_{min}} \right) \quad \text{or} \quad P_s = 90 \left(1 - \frac{P_t - P_{min}}{P_{min}} \right)$$

80/20 or 90/10

Where

P_s = Points scored for price of tender under consideration

P_t = Price of tender under consideration

P_{min} = Price of lowest acceptable tender

4. POINTS AWARDED FOR SPECIFIC GOALS

Table 1: Specific goals for the tender and points claimed are indicated per the table below and is based on B-BBEE Status Level of Contribution of the Bidder.

Note to tenderers: The tenderer must indicate how they claim points for each preference point system.

B-BBEE Status Level of Contribution	Number of points allocated (80/20 system) (between R2 000 and R50 000 000)	Number of points claimed (80/20 system) (To be completed by the tenderer)
1	20	
2	18	
3	14	
4	12	
5	8	
6	6	
7	4	
8	2	
Non-compliant contributor	0	

DECLARATION WITH REGARD TO COMPANY/FIRM

4.1. Name of company/firm.....

4.2. Company registration number:

4.3. TYPE OF COMPANY/ FIRM

- | | |
|---|---|
| ☐ Partnership/Joint Venture / Consortium | ☐ Personal Liability Company |
| ☐ One-person business/sole propriety | ☐ (Pty) Limited |
| ☐ Close corporation | ☐ Non-Profit Company |
| ☐ Public Company | ☐ State Owned Company |

[TICK APPLICABLE BOX]

4.4. I, the undersigned, who is duly authorised to do so on behalf of the company/firm, certify that the points claimed, based on the specific goals as advised in the tender, qualifies the company/ firm for the preference(s) shown and I acknowledge that:

- i) The information furnished is true and correct;
- ii) The preference points claimed are in accordance with the General Conditions as indicated in paragraph 1 of this form;
- iii) In the event of a contract being awarded as a result of points claimed as shown in paragraphs 1.4 and 4.2, the contractor may be required to furnish documentary proof to the satisfaction of the organ of state that the claims are correct;
- iv) If the specific goals have been claimed or obtained on a fraudulent basis or any of the conditions of contract have not been fulfilled, the organ of state may, in addition to any other remedy it may have –
 - (a) disqualify the person from the tendering process;
 - (b) recover costs, losses or damages it has incurred or suffered as a result of that person's conduct;
 - (c) cancel the contract and claim any damages which it has suffered as a result of having to make less favourable arrangements due to such cancellation;
 - (d) recommend that the tenderer or contractor, its shareholders and directors, or only the shareholders and directors who acted on a fraudulent basis, be restricted from obtaining business from any organ of state for a period not exceeding 10 years, after the *audi alteram partem* (hear the other side) rule has been applied; and
 - (e) forward the matter for criminal prosecution, if deemed necessary.

..... SIGNATURE(S) OF TENDERER(S) SURNAME AND NAME: DATE: ADDRESS:
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CONDITIONS OF CONTRACT

The Conditions of Contract are the General Conditions of Contract for Construction Works (2015 3rd Edition), (GCC 2015) published by the South African Institution of Civil Engineering. Copies of these conditions of contract may be obtained from the South African Institution of Civil Engineering (Tel: 011-805-5947, Fax: 011-805-5971, E-mail: civilinfo@saice.org.za).

The Contract Data (including variations and additions) shall amplify, modify, or supersede, the GCC 2015 to the extent specified below, and shall take precedence and shall govern.

Each item of data given below is cross-referenced to the clause in the GCC 2015 to which it mainly applies.

The General Conditions refer to the Particular Conditions and Special Conditions contained in the Contract Data), which, together with these conditions, collectively describe the risks, liabilities and obligations of the contracting parties and the procedures for the administration of the Contract.

The Contract Data (Particular Conditions and Special Conditions) shall have precedence in interpreting any ambiguity or inconsistency between it and the general conditions of contract.

The General Conditions shall be read in conjunction with the variations, amendments and additions in the Particular Conditions and Special Conditions below. Each data item given below is cross-referenced to the Clause or Sub-Clause in the General Conditions to which it mainly applies.

CONTRACT DATA

DATA TO BE PROVIDED BY THE EMPLOYER

1.1.1.13	The Defects Liability Period, from the date of the Certificate of Completion:	1 Year
1.1.1.14	The time for achieving Practical Completion, from the Commencement Date is:	12 Months The period as stated in 5.3.2, and the 7 days referred to in 5.3.3, are included in the above time for achieving Practical Completion. The special non-working days as stated in 5.8.1 are excluded from the above time for achieving Practical Completion.
1.1.1.14	The Works are to be completed in portions as set out in the Scope of Work. The time for achieving Practical Completion of the portions is as follows: The whole of the Works shall be completed within:	12 Months
1.1.1.15	The Employer is:	South African Radio Astronomy Observatory (SARAO)
1.2.1.2	The address of the Employer is:	South African Radio Astronomy Observatory (SARAO) 2 Fir Street, Black River Park (North Gate entrance) Observatory, Cape Town, 7925
1.1.1.16	The name of the Employer's Agent is:	Mr. C. Stewart Pr.Tech. Eng E-Mail: cstewart@sarao.ac.za
1.2.1.2	The address of the Employer' Agent is:	South African Radio Astronomy Observatory (SARAO) 2 Fir Street, Black River Park (North Gate entrance) Observatory, Cape Town, 7925
1.1.1.26	The Pricing Strategy is by	Re-measurement Contract.
3.2.3	The Employer's Agent shall obtain the specific approval of the Employer before executing any of his functions or duties according to the following Clauses of the General Conditions of Contract:	approval in order to authorise any expenditure in excess of the Tender Sum

4.11.1	Competent Employees	To carry out and complete the works, the Contractor shall employ a competent Site Agent and Foreman as part of the key staff. It is a requirement for the Contractor's Site Agent and Foreman to each have a minimum relevant experience as indicated in the functionality requirements including experience on projects of a similar nature. The CV's of the Site Agent and the Foreman should be submitted to the Employer's Agent's Representative for acceptance.
5.3.1	The documentation required before commencement with Works execution are:	• Health and Safety Plan (refer to Clause 4.3) • Initial Programme (refer to Clause 5.6) • Security (refer to Clause 6.2) • Insurance (refer to Clause 8.6) • CV(s) of Key Site Staff (Contract Manager, Site Agent and Foreman (refer to Clause 4.11.1))
5.3.2	The time to submit the documentation required before commencement with Works is:	14 Days.
5.3.3	Add the following paragraph:	"If a construction work permit, in terms of Clause 3(1) of the Construction Regulations (2014), is applicable, the instruction to commence carrying out of the works may only be issued once the construction work permit has been obtained by the Employer's Agent. If a construction work permit is applicable, the contractor shall allow for a minimum period of 7 days, after the submission (or re-submission) of the documentation referred to in Clause 5.3.1., for the issuing of the construction work permit."
5.4.2	Access to the Site	The access and possession of Site shall not be exclusive to the Contractor but as set out in the Site Information.
5.8.1	Non-working times	The non-working days are Sundays. The special non-working days are: • All statutory holidays as declared by National or Regional Government. • The year-end break: • Commencing on the first working day after 15 December. • Work resumes on the first working day after 5 January of the next year. Delete the words "sunset and sunrise" and replace with "17:00 and 07:00".
5.12.2.2	Abnormal Climatic Conditions (Rain Delays)	The numbers of days per month, on which work is expected not to be possible as a result of rainfall, for which the Contractor shall make provision, is given in the table below. During the execution of the Works, the Employer's Agent's Representative

		will certify a day lost due to rainfall only if at least 75% of the work force and plant on site could not work during that specific working day. Extension of time as a result of rainfall shall be calculated monthly being equal to the number days certified by the Employer's Agent's Representative as lost due to rainfall, less the number of days allowed for as in table below, which could result in a negative figure for certain months. The total extension of time for which the Contractor may apply, shall be the cumulative algebraic sum of the monthly extensions. Should the sum thus obtained be negative, the extension of time shall be taken as NIL. Average Rainfall for Carnarvon, NC: <table><tr><th>Month</th><th>Rainfall Days</th><th>Average Rainfall (mm)</th></tr><tr><td>Jan</td><td>6.9</td><td>48.46</td></tr><tr><td>Feb</td><td>7.39</td><td>46.16</td></tr><tr><td>Mar</td><td>5.06</td><td>29.67</td></tr><tr><td>Apr</td><td>5.06</td><td>29.59</td></tr><tr><td>May</td><td>2.24</td><td>11.93</td></tr><tr><td>Jun</td><td>0.59</td><td>4.45</td></tr><tr><td>Jul</td><td>0.78</td><td>3.84</td></tr><tr><td>Aug</td><td>1.17</td><td>4.71</td></tr><tr><td>Sept</td><td>1.66</td><td>9.62</td></tr><tr><td>Oct</td><td>1.17</td><td>5.81</td></tr><tr><td>Nov</td><td>2.14</td><td>11.06</td></tr><tr><td>Dec</td><td>5.16</td><td>29.51</td></tr></table>	Month	Rainfall Days	Average Rainfall (mm)	Jan	6.9	48.46	Feb	7.39	46.16	Mar	5.06	29.67	Apr	5.06	29.59	May	2.24	11.93	Jun	0.59	4.45	Jul	0.78	3.84	Aug	1.17	4.71	Sept	1.66	9.62	Oct	1.17	5.81	Nov	2.14	11.06	Dec	5.16	29.51
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5.13.1	The penalty for delay in failing to complete the Works is:	R 2,000.00 (per Day)																																							
5.14.1	Practical Completion	The requirements for achieving Practical Completion will be determined by the Employer's Agent (in consultation with the Contractor) and recorded in the minutes of the first Site Meeting / Handover Meeting. (Refer to 1.1.1.24 for a generic definition.) The requirements are to be regularly reviewed with respect to any variations to the Contract.																																							
5.16.3	The latent defect liability period is:	10 Years																																							
6.2.1	Security (Performance Guarantee):	Delete the word "selected" and replace it with "stated". The liability of the Performance Guarantee shall be as per the following table: <table><tr><th>Value of Contract (incl. VAT)</th><th>Performance Guarantee Required</th></tr><tr><td>Less than or equal to R 1m</td><td>Nil</td></tr><tr><td>Greater than R 1m and less than or equal to R 10m</td><td>5% of the Contract Sum</td></tr></table>	Value of Contract (incl. VAT)	Performance Guarantee Required	Less than or equal to R 1m	Nil	Greater than R 1m and less than or equal to R 10m	5% of the Contract Sum																																	
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		Greater than R 10m	10% of the Contract Sum	
6.5.1.2.3	The percentage allowance to cover overhead charges for daywork are as follows:	80% of the gross remuneration of workmen and foremen actually engaged in the daywork; 20% on the net cost of materials actually used in the completed work. No allowance will be made for work done, or for materials and equipment for which daywork rates have been quoted at tender stage.		
6.8.2	Contract Price Adjustment Factor	No escalation will be applied under this Contract as the project period is less than year.		
6.8.3	Variation in the cost of the special material(s)	No variations will be applied as no special materials will be used under the Contract.		
6.10.1.5	The percentage advance on materials not yet built into the Permanent Works is: The percentage advance on Plant not yet supplied to Site:	80% Not Required		
6.10.3	Retention Money:	Delete the word "selected". The percentage retention on the amounts due to the Contractor is 10%. The limit of "retention money" is 5% of the Contract Sum. Should the Contract Price exceed the Contract Sum then the limit of "retention money" is 5% of the Contract Price. Interest will not be paid on retention withheld by the Employer.		
8.6.1.1.2	The value of Plant and materials supplied by the Employer to be included in the insurance sum:	Not Required		
8.6.1.1.3	The amount to cover professional fees for repairing damage and loss to be included in the insurance sum:	Not Required.		
8.6.1.2	SASRIA Coupon Policy	SASRIA Coupon Policy for Special Risks to be issued in joint names of SARAO and Contractor for the full value of the works (including VAT).		
8.6.1.3	The limit of indemnity for liability insurance:	R 10 000 000.00		
8.6.1.5	Third Party Insurance (Public Liability)	Minimum amount for any one occurrence, unlimited as to the number of occurrences, for the period of the contract, inclusive of the maintenance period: R 1 500 000.00.		

	Insurance of Works	• Consequential loss to be covered by policy: Yes • Liability section of policy to be extended to cover blasting: R 1 000 000.00 • Maximum excess per claim or series of claims arising out of any one occurrence: R 20 000.00 • Minimum amount for additional removal of debris (no damage): Nil. • Minimum amount for temporary storage of materials off site, excluding Contractor's own premises: Nil. • Minimum amount for transit of materials to site: Nil.										
8.6.5	Approval by Employer:	At the end of the sub-clause, add the following paragraph: "Except where otherwise provided in the Special Conditions of Contract, the insurance cover effected by the Contractor in terms of this clause shall not carry a first loss amount greater than those set out below: <table><tr><td>Contract Price</td><td>First Loss</td></tr><tr><td>Less than R 100,000</td><td>R 5,000</td></tr><tr><td>R 100,000 to R 500,000</td><td>R 10,000</td></tr><tr><td>R 500,000 to R 1,000,000</td><td>R 20,000</td></tr><tr><td>R 1,000,000 to R 2,000,000</td><td>R 30,000</td></tr></table> The insurance policy shall contain a specific provision whereby cancellation of the policy prior to the end of the period referred to in Cause 8.2.1 cannot take place without the prior written approval of the Employer.	Contract Price	First Loss	Less than R 100,000	R 5,000	R 100,000 to R 500,000	R 10,000	R 500,000 to R 1,000,000	R 20,000	R 1,000,000 to R 2,000,000	R 30,000
Contract Price	First Loss											
Less than R 100,000	R 5,000											
R 100,000 to R 500,000	R 10,000											
R 500,000 to R 1,000,000	R 20,000											
R 1,000,000 to R 2,000,000	R 30,000											
10.7.1	Arbitration	Failing ad-hoc adjudication, the determination of disputes shall be by arbitration.										

PROJECT SPECIFICATIONS

The Project Specifications included in this document define the systems and materials to be used for the construction of the structures.

This Standard Specification shall be read in conjunction with the Bills of Quantities, Project Specifications and Drawings, in which the exact extent of the work will be identified.

All rules, regulations, by-laws, codes and standards as specified in the Standard Specifications shall apply unless otherwise specified in the Project Specification.

Standardized Specification

Although not bound in nor issued with this document, the following standardized Specifications for Civil Engineering Construction, as amended by the Project Specification, form part of this document and, notwithstanding Subclause 2.2 of SABS 1200A, the edition specified below shall apply:

- ▶ SANS 1200 A : General
- ▶ SANS 1200 C : Site Clearance
- ▶ SANS 1200 D : Earthworks
- ▶ SANS 1200 G : Concrete (Structural)

Should any requirements of the Project Specification conflict with any requirement of the specifications listed above, the requirement of the Project Specification shall prevail.

Project Specification

PSA GENERAL (SABS 1200A)

PSA 2.2 APPLICABLE EDITION OF STANDARDS

Add at the beginning of Sub-Clause 2.2: "Unless a specific edition is specified"

PSA 2.3 DEFINITIONS (Sub-Clause 2.3)

Add the following definition at the bottom of the list of definitions under the heading "a) General":

"Commercial source: A source for the supply of materials or services chosen by the Contractor and for which he assumes full responsibility for the quality and supply thereof.

PSA 2.8 ITEMS IN SCHEDULE OF QUANTITIES (Sub-Clause 2.8)

PSA 2.8.1 Principle

In the fourth line of Sub-Clause 2.8.1 after the word "specification", add "or in the measurement and payment clause of the standard or particular specification or section or project specification".

PSA 8 MEASUREMENT AND PAYMENT

PSA 8.1 METHOD OF MEASUREMENT, ALL SECTIONS (Sub-Clause 8.1.1.)

In the second line of Sub-Clause 8.1.1, after the words "standardized specification or" add: "in the measurement and payment clause of the standard specification or".

PSA 8.2 PAYMENT (Clause 8.2)

Delete Clauses 8.2.1, 8.3 and 8.4 and replace with the following:

PSA 8.3.1 FIXED ESTABLISHMENT COSTS

The Contractor shall tender a lump sum in the Schedule of Quantities to cover his fixed establishment costs. The amount tendered and paid shall be full compensation to the Contractor for:

- (i) The establishment of his organisation and equipment on the site, the transfer of all personnel, equipment tools, office, ablution and storage facilities to the site, and the removal of all the abovementioned items on completion of the works.
- (ii) Effecting of all insurances, indemnities and guarantees required in terms of the Conditions of Contract or Tender where applicable.
- (iii) Compliance with all other general conditions and requirements that are not specifically measured elsewhere for payment in these Contract Documents.

Payment shall be effected as follows:

- (i) Seventy-five percent (75%) of the lump sum tendered shall be paid when the Contractor's stores, offices, etc. are substantially complete, provided that sufficient plant and labour to commence construction at the programmed rate has arrived at the site of the Contract and is in working order.
- (ii) Twenty-five percent (25%) in the final certificate of completion. The final certificate of completion will only be issued when the Contractor has cleared the entire site to the satisfaction of the Engineer and removed all the plant, offices and stores that might have been used for the duration of the Contract and has made available to the Engineer the "As-Built" drawings, as called for in the scope of work specifications.

Only the tendered amount shall be paid under this item, which in no way shall be affected by modifications of the Contract Amount.

<u>Item</u>	<u>Unit</u>
Fixed establishment costs	Lump Sum

PSA 8.4 TIME-RELATED ESTABLISHMENT

The Contractor shall tender a lump sum in the Schedule of Quantities to cover his time-related establishment costs. The amount tendered and paid shall be full compensation to the Contractor for:

- (i) The maintenance of his whole organisation as established for this Contract.
- (ii) The provision of security personnel if deemed necessary.
- (iii) The maintenance of all insurances, indemnities and guarantees required in terms of the Conditions of Contract or Tender where applicable.

- (iv) Compliance with all general conditions and requirements, which are not specifically, measured elsewhere for payment in these Contract Documents.

The Contractor shall tender a lump sum for the abovementioned items.

Payment of the lump sum shall be made monthly in compliance with method laid down in Sub-Clause 8.2.2 of SABS 1200:A.

<u>Item</u>	<u>Unit</u>
Time related establishment costs	Lump Sum
PSA 8.4.1 Adjusted Payment for Time-Related Establishment	
The payment to the Contractor for Time-Related Establishment shall be adjusted in accordance with the following formula in the event of the Contract being extended by means of a variation order: $\text{Sum of Tendered amounts for Time-related Items} \times \frac{\text{Extended contract period as authorised by Variation Order}}{\text{Tender contract period}}$	

The abovementioned adjustment of the payment for Time-Related Items shall be made in the Completion Payment Certificate and shall be the only payment for additional Time-Related costs irrespective of the actual period required to complete the Contract including its authorised extensions.

PSA 8.6 PRIME COST ITEMS (Clause 8.6)

PSA 8.6.1 Testing of Materials

The Engineer reserves the right to carry out any test he deems necessary using commercial laboratories to ensure compliance of the materials supplied for use in the works with the requirements of the applicable SABS 1200 specification, or to ensure that the standard of workmanship meets the requirements of the Specification.

In the event of these check tests not meeting the requirements of the Specification, the cost of such tests shall be to the Contractor's account. If the tests meet with the requirements of the Specification, the Contractor will be required to pay the account of the laboratory concerned, but such payments will be recoverable under the provisional sum allowed for in the Schedule of Quantities. The Contractor's tendered mark-up must allow for arranging the necessary testing and for payment, if applicable, through the contract.

<u>Item</u>	<u>Unit</u>
Testing of Materials by the Engineer	P.C. Sum

PSD EARTHWORKS (SANS 1200 D)

PSD3 Materials

PSD3-1 Classes of excavation (Subclause 3.1.2)

Notwithstanding the provisions of Subclause 3.1.2 the materials excavated, other than hard rock, will not be classified for the purposes of measurement and payment. The unit rate for excavation shall cover the cost of excavation in all materials with the only extra-over items payable being those for excavation in hard rock.

PSD5 Construction

PSD5-1 Disposal of material (Subclause 5.2.2.3)

All surplus and unsuitable excavated material, if any, shall be removed from the site by the Contractor and disposed of at the disposal site specified in PS5-4.

PSD5-2 Dust nuisance (Subclause 5.1.4.1)

Dust shall be minimized during construction by watering or other approved means.

PSD7 Testing

PSD7-1 Density testing

The Contractor shall be responsible for carrying out his own control density tests (minimum 4 per 500 square meters per layer) using "Troxler" (subject to PSDM7-1) or sand replacement tests. These test results shall be submitted to the Engineer within 24 hours after having been taken.

PSD8 Measurement and payment

PSD8-1 Extra-over payment for excavation classification

No extra-over payment will be made for excavation in material classified in terms of Subclause 3.1.2 as intermediate excavation and boulder excavation Class A and Class B. The tendered rate for excavation in all materials shall include for the cost of such excavation.

PSD8-2 Excavation using labour intensive methods

Except that extra-over payment will only be made for pickable excavation, the terms of subclause 8.3.3 shall mutatis mutandis apply.

PSD8-3 Density testing

The tendered rates for the items requiring compaction shall include for the cost of the Contractor's own control density tests as specified in PSD7-1, as well as any independent laboratory control tests which the Contractor may require.

PSG CONCRETE (STRUCTURAL) (SANS 1200 G)

PSG2 Interpretations

PSG2-1 Definitions. (Subclause 2.3)

Under (a) add:

"Construction joint: a joint required on account of constraints or convenience in the method of construction and that is not a movement, contraction or expansion joint."

PSG2-2 Strength concrete (Subclause 2.4.2)

Mix 20MPa/19mm means strength concrete grade 20MPa with 19mm stone.

PSG2-3 Joints (Subclause 2.4.3)
Notwithstanding Subclause 2.4.3 “designated joints” shall only be joints shown on the drawings or scheduled. Additional joints required by the Contractor because of construction limitations or any other reason, shall be deemed to be “non-designated joints”.

PSG3 Materials

PSG3-1 Cement (Subclause 3.2)

Replace the contents of the sub clause with the following :

"Only CEM I 42,5 (Portland cement) or CEM II/A-V 42,5 (Portland fly ash cement) or CEM II/A-S 42,5 (Portland slag cement) or CEM II/B-S 42,5 (Portland slag cement) according to SANS 50197-1 (SABS ENV 197-1), may be used. The cement may not consist of more than 20% siliceous fly ash **or** 30% granulated blast furnace slag, blended with the OPC (Ordinary Portland Cement). Should the contractor wish to use any other type of cement, he shall obtain the engineer's prior written approval (see 8.1.3.2 and 8.1.3.3)".

PSG3-2 Storage (Subclause 3.2.3)

Cement shall be used in the order in which it is received.

Unless approved by the Engineer, cement kept in storage for longer than 12 weeks shall not be used in the Works.

Any cement that contains lumps that cannot easily be crumbled to powder between the fingers, may not be used.

PSG3-3 Water (Subclause 3.3)

Only potable quality water from an approved source may be used for mixing concrete.

PSG3-4 Aggregate (Subclause 3.4)

The nominal stone size specified in the concrete grade (eg. 30MPa/38mm) shall mean stone conforming to the grading specified in SABS 1083 for the nearest equivalent size, ie. 38mm means stone that complies with SABS 1083 for 37,5mm size.

PSG3-5 Fine aggregate (Subclause 3.4)

The fineness modulus of the sand delivered to the mixer shall lie between 1,7 and 2,8 and the standard deviation of fineness moduli of samples of sand that is delivered to the mixer during one shift shall be not more than 0,10.

PSG3-6 Concrete using reactive aggregates (Subclauses 3.2 and 3.4)

The Contractor shall provide the Engineer with sufficient data to enable him to assess the degree of alkali-aggregate reactivity of the aggregates to be used for concrete.

Where reactive aggregates such as Malmesbury Group aggregates, and certain Table Mountain Formation and other quartzitic aggregates are used for concrete, the

Contractor shall, in order to ensure that the concrete is not subject to alkali-aggregate reaction, design his mixes and/or use cement with a sufficiently low alkali content such that the total equivalent sodium oxide content of the concrete is less than 2,8 kg/m³.

(NOTE: The equivalent sodium oxide content (alkali content) is measured as (Na₂O + 0,658 K₂O).

For cement it is expressed as a percentage by mass, for concrete it is expressed in kg/m³).

In the case of other aggregates that are less reactive the Engineer will determine the type and degree of precautionary measure to be adopted.

Before casting any concrete the Contractor shall provide acceptable evidence that the requirements of this clause are being met.

PSG3-7 Use of plums. (Subclause 3.4.2)

The use of plums will not be permitted.

PSG3-8 Admixtures. (Subclause 3.5.1)

The use of admixtures will be subject to the approval of the Engineer. The information listed in Subclause 3.5.1 shall be provided.

PSG4 Plant

PSG4-1 Mixing plant (Subclause 4.3)

Standby mixers of adequate capacity and with an independent power unit shall be maintained on the site for immediate use in the event of breakdown of the regular mixers or failure of the power supply.

PSG4-2 Vibrators (Subclause 4.4)

Standby vibrators of adequate capacity and with an independent power unit shall be maintained on the site for immediate use in the event of breakdown of the regular vibrators or failure of the power supply.

PSG4-3 Formwork – Fillets and chamfers (Subclause 4.5.1)

All exposed external angles in concrete work shall have 20mm x 20mm chamfers unless otherwise specified or ordered, but the top edge of a slab that is to receive an applied finish shall not be chamfered.

Internal corners in concrete work need not have fillets unless such fillets have been specified on the drawings or ordered by the Engineer.

PSG5 Construction

PSG5-1 Reinforcement

PSG5-1.1 Fixing (Subclause 5.1.2)

Fixing of reinforcing bars by welding and heating of bars will not be permitted.

PSG5-1.2 Spacers

Spacers of approved design include approved plastic or other proprietary spacers, or purpose made precast mortar blocks.

Where mortar blocks are used they shall be properly shaped so as not to slip out of position and shall be made of the same mix as the mortar of the concrete in which they are to be placed. The mortar shall be well compacted by approved means into the moulds to result in blocks with a density of at least 2300 kg/m³ and which are free from honeycombing. They shall be cured in water for at least 7 days. The wire ties in the blocks shall be galvanized. Mortar blocks which have not been manufactured and cured strictly in accordance with these requirements or which are in any other way considered unsatisfactory by the Engineer, will be rejected and shall be removed from the Site.

PSG5-1.3 Cover (Subclause 5.1.3)

In Subclause 5.1.3(a) amend the words “..... or stirrup” to read: “bar, secondary reinforcement, tie, stirrup, tying-wire knots or wire ends”.

Add to Subclause 5.1.3: “Tying wire may not encroach on the specified minimum cover by more than a single strand thickness”.

PSG5-2 Concrete

PSG5-2.1 Exposure condition & Durability

The exposure conditions for concrete are classified as "moderate"

Add the following values to table 5:

"The maximum water/cement ratio for moderate sections, general reinforced concrete, exterior portions of mass concrete, as well as for internal concrete in buildings under conditions of moderate exposure, is 0,67.

The maximum water/cement ratio for concrete slabs on the ground under moderate conditions, is 0.55".

Notwithstanding the aforementioned, the cement content may under no circumstances be less than :

- Structural concrete of ≥ 25 MPa - 265 kg/m³
- Exposed concrete, trafficable surfaces and Surface beds - 280 kg/m³

PSG5-2.2 Strength concrete (Subclause 5.5.1.7)

All concrete for the works shall be considered to be strength concrete in terms of Subclause 5.5.1.7. The concrete mix design for strength concrete must be prepared in an approved laboratory and the results of actual test mixes must be submitted for approval together with 7-day and 28-day strength test results. No concrete shall be cast until the mix designs have been approved by the Engineer. The Engineer may call for revised mix designs at any stage during the Contract.

PSG5-2.3 Batching (Subclause 5.5.2)

Batching of strength concrete shall be by mass.

PSG5-2.4 Concrete from a central concrete production facility (Subclauses 5.5.3.2 and 7.3)

Concrete from a central concrete production facility other than on the Site will be permitted and test results obtained by such a production facility as part of its quality control system are acceptable for evaluation in terms of Subclause 7.3. The test results must be submitted for every batch of concrete cast.

PSG5-3 Curing (Subclause 5.5.8)

Should a curing compound be allowed by the Engineer then it shall be a resin based curing compound. Curing of columns, shafts and walls shall be done by either retaining the formwork for the required period of time or covering with plastic sheeting. On lesser shafts and walls the Engineer may allow a curing compound for curing.

PSG5-4 Concrete surfaces (Subclause 5.5.10)

PSG5-4.1 Wood-floated finish

Where wood-floating is ordered or scheduled, the surface shall first be given a finish as specified in Subclause 5.5.210.1 and, after the concrete has hardened sufficiently, it shall be wood-floated, either by hand or machine, only sufficiently to produce a uniform surface free from screeding marks.

PSG5-4.2 Steel-floated finish

Where steel-floating is specified or scheduled, the surface shall be treated as specified in PSG5-4.1 except that, when the moisture film has disappeared and the concrete has hardened sufficiently

to prevent laitance from being worked to the surface, the screeded surface shall be steel-trowelled under firm pressure to produce a dense, smooth, uniform surface free from trowel marks.

PSG5-5 Defects (Subclause 5.5.14)

All defects shall be repaired as soon as possible after the formwork has been removed and the Engineer has inspected the concrete. A statement of the method to be used for each repair shall be submitted to the Engineer for his approval before any work is carried out. The Engineer may prohibit the further placing of concrete in the particular area concerned until he is satisfied that the repair has been satisfactorily executed.

PSG5-6 Casting in and grouting of structural steel column holding down bolts

All holding down bolts and other details necessary for the construction of the holding down bolt pockets or the fixing of the bolts, (including templates) will be provided by the structural steel contractor. The Contractor shall cast in the bolts, as ordered. No

bolts shall be actually cast into the concrete until set up by the Contractor and approved by the Engineer.

After the structural columns have been erected, aligned and leveled by the structural steel contractor, the Contractor shall grout up the baseplates solidly with non-shrink grout, mixed and placed in accordance with the manufacturer's instructions.

PSG5-7 Construction of surface beds

PSG5-7.1 Concrete

Concrete shall be composed of properly graded aggregates up to a blend of 19/38mm maximum size to give cube crushing results as specified. The sand used for surface bed, hardstand and roadway concrete shall be "Perseverance" washed concrete crusher sand (or similar approved).

The maximum water / cement ratio shall be 0,55 and the maximum cement content shall not exceed 330 kg/m³.

The slump range shall be 50 – 70 mm.

The floors shall generally be cast in alternate strips and subsequently be cut into panels as described below. Casting of large floor panels prior to saw-cutting into smaller panels may also be permitted, provided that details are agreed with the Engineer prior to construction of the floor.

Concrete shall be compacted by vibration, using a vibrating-beam or poker-vibrators.

The ground on which the concrete is to be placed should be thoroughly moistened (but not such as to form mud or pools of water) prior to placing the concrete.

The practice of using a thin sand layer below the concrete to make up the level of the sub-base will not be permitted.

PSG5-7.2 Surface finishing

Floating and trowelling may not be started until (1) bleeding of the concrete has ceased, (2) bleed water has either evaporated or been removed (eg. with a squeegee) and (3) the concrete has stiffened to a degree that a footprint barely shows.

The use of heat cement driers on surfaces about to be trowelled is prohibited.

Dry shakes, if specified, must be applied in accordance with the manufacturer's instructions. It may not be applied until after the delay period.

Where a power trowelled finish is specified (generally for industrial floors, and cast inside buildings complete with roof and floors, unless otherwise agreed with the Engineer) the surface shall first be power-floated and thereafter power-trowelled to produce a dense, smooth and uniform surface free of all trowel marks.

Where a broom-swept finish is specified (generally for external hardstand areas or roadways) the surface shall first be power-floated to produce a dense surface finish, and thereafter swept transversely (to the direction of the roadway paving) with a stiff bristle broom to produce an approved non-skid finish.

PSG5-7.3 Joints

When partially set, between approximately 7 and 24 hours after casting, the concrete shall be cut 3,5mm wide and to the depth specified on the drawings, with a concrete saw-cutting machine into panels. The timing of the cutting remains the responsibility of the Contractor. Cutting shall not be delayed longer than is necessary to ensure that the joints do not ravel or spall.

Construction joint formwork shall be to the shape(s) as specified on the drawings. The forms shall be of steel or other suitable material which can be set in precise lines and to exact levels and that no spalling of the edges will occur on removal of the forms. Any resultant spalling shall be made good with an approved epoxy repair mortar at the Contractor's expense.

Construction and contraction joints shall, not less than 7 days after casting, be reamed to 6mm wide x 20mm deep, prior to the sealing of the joints.

Joint sealants and backing chords shall be as specified on the drawings and shall be applied in strict accordance with the manufacturer's instructions.

The contact surfaces of contraction joints shall be painted with 2 coats lime wash or other approved bond-breaker.

10mm thick "Jointex" expansion joint filler shall be inserted at all slab edges adjacent to walls and around columns, before casting concrete.

PSG5-7.4 Treatment at junction with existing concrete hardstanding

Where new surface beds are constructed against existing concrete hardstanding/slabs, the edge of the existing concrete shall be sawn straight and a joint formed in accordance with the details shown on the drawings.

PSG5-7.5 Curing

Curing for internal floors shall be by way of plastic sheeting, maintained in position for at least 7 days after the concrete has been cast. Immediately before placing the sheeting the concrete surface shall be lightly sprayed with water.

Curing for external concrete hardstands and roads shall be by an approved curing compound. The curing compound should comply with ASTM C309, except that the water loss as determined by the water-retention test should not exceed 0,04 g/m² in 72 hours.

PSG5-7.6 Cracking and Warping

Concrete panels that crack or warp during the time from casting until the end of the Defects Liability period shall be repaired by the Contractor at his own expense, unless it can be clearly shown that the defects resulted from overloading of the floor / surface bed. Repair methods shall be as approved by the Engineer and may require the complete removal followed by the replacement of the cracked / warped panel(s).

PSG6 Tolerances**PSG6-1 Degree of Accuracy (Subclause 6.2)**

In general Accuracy II will be acceptable on all concrete elements unless otherwise noted on the drawings or stated in the specifications.

PSG6-2 Surface Beds

Surface beds shall comply with the following tolerances.

- a) Thickness : specified thickness – 5mm; + 20mm.
- b) Flatness shall comply with Concrete Society Technical Report No. 34, for the category as shown on the drawings.
- c) The floor shall not deviate from the designated level by ± 5 mm, subject to the flatness tolerance.
- d) Abrupt changes across construction joints may not exceed 2mm.
- e) Straightness of joints : ± 5 mm either side of a taut line held at points 20m apart on the line of the joint.

PSG8 Measurement and payment**PSG8-1 Reinforcement (Subclause 8.1.2)**

Notwithstanding the provisions of 8.1.2.2 steel reinforcement will be measured by the net mass of all bars with no distinction for the various diameters.

PSG8-2 Joints (Subclause 8.5)

Only designated joints as shown on the drawings will be measured for payment according to the length of each type of joint constructed. The rate shall cover the cost of all materials, labour and plant required to construct each type of joint specified on the drawings, including the cost of all shuttering, treatment of the joint as specified in Subclause 5.5.7.3, the provision of chamfers as specified where concrete is exposed, as well as testing and repairing where necessary.

Non-designated joints will not be measured for payment. The cost of constructing these joints in accordance with Subclause 5.5.7.3 will be held to be included in the rates for the concrete.

PSG8-3 Grouting (Subclause 8.7)

In addition to the requirements of 8.7, the rate shall include the cost of formwork required to contain the grout along edges.

PSG8-4 Formwork**PSG8-4.1 Edges of blinding layer**

No separate payment will be made for formwork to the edge of the blinding layer. The rates tendered for concrete to the blinding layer shall cover the cost of such formwork.

PSG8-4.2 Kickers

Formwork to the edges of kickers will be measured as plane (or circular) vertical (not as narrow widths).

- PSG8-5 Unformed surface finishes (Subclause 8.4.4)
The rates for unformed surface finishes shall cover the cost of providing the respective surface finish as specified.
- PSG8-6 Holding down bolts
Fixing of holding down bolts will be measured by number. The rate shall cover the cost of all things necessary to ensure that the bolts are effectively and rigidly held in position during casting, complete with sleeved pockets, all as detailed on the drawings.
- PSG8-7 Concrete coatings
Concrete coatings will be measured by area.

The tendered rate shall cover the cost of all materials, labour, plant and equipment required to prepare the concrete surface and to apply the coating system, in accordance with the manufacturer's written specifications.

BID SIGNATURE (SBD 1)

I, the bidder, warrant by signature as having read and accepted each page in this document including any annexures attached to this document. I undertake to supply all or any of the goods, works, and services described in this procurement invitation to SSARAO in accordance with the requirements and specifications stipulated in this bid document at the price/s quoted. I confirm that I have satisfied myself as to the correctness and validity of my offer/bid in response to this invitation, covering all my obligations and I accept that any mistakes regarding price(s), rate(s), and calculations are at my own risk. My offer remains binding upon me and open for acceptance by SARAO during the validity period indicated and calculated from the closing time of bid invitation. I accept full responsibility for the proper execution and fulfilment of all obligations and conditions devolving on me in terms of this document as the principal liable for the due fulfilment of the subsequent contract conditions if awarded to me.

I declare that during the bidding period did not have access to any NRF proprietary information or any other matter that may have unfairly placed our bid in a preferential position in relation to any of the other bidder(s).

I confirm that I am duly authorised to sign this offer/ bid response.

NB: Failure to provide / or comply with any of the above particulars may render the bid invalid.

Signature of bidder: