



**RW10395627/21 TECHNICAL SPECIFICATIONS  
THE CONSTRUCTION OF THE STOCKPILE AREA AND REHABILITATION  
OF DRYING BEDS AT PANFONTEIN**

**TECHNICAL SPECIFICATIONS**

## **SPECIFICATIONS**

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## **PART 1 – GENERAL SPECIFICATION**

### **General**

The Standard Specification for all associated civil work shall be the SABS 1200 – Standardized Specification for Civil Engineering Construction.

The Standardized Specifications applicable to this Contract are listed in the Project Specification.

These Specifications are not issued with this volume but are available at the Contractor's expense from: SA Bureau of Standards, Private Bag X191, Pretoria, 0001.

### **Scope**

This Project Specification is set out in two sections:

Section A: PROJECT SPECIFICATION covers a general description of the project, the facilities available and the requirements to be met.

Section B: VARIATIONS AND ADDITIONS TO THE STANDARDISED SPECIFICATIONS covers variations to the standardized specifications and particular specifications which are applicable to the contract.

### **Status**

Should any requirement of the Project Specification conflict with any requirement of the standardized or particular specifications, the requirements of the Project Specifications shall prevail.

## **PART 2: PROJECT SPECIFICATION – SECTION A**

### **PS 1 DESCRIPTION OF THE CONTRACT**

#### PS 1.1 Scope of Contract

Water Treatment Residue (WTR) generated from Rand Water's Zuikerbosch Water Treatment Works and Vereeniging Water Treatment Works is pumped to the Panfontein disposal site which is South East of Vereeniging. Water treatment residue is then thickened and pumped via sprayers onto drying beds for drying and settlement. The supernatant from the thickening process is decanted and returned to Zuikerbosch Pumping Station via the canal.

Panfontein has 90 existing drying beds used for WTR disposal over the site. The depth of the beds varies between 1.5m and 4m.

Panfontein is running out of space to store Water Treatment Residue.

To increase the capacity at Panfontein the following two task will be undertaken under this project at Panfontein:

#### **Task 1: Sacrificial Beds**

The purpose of this task is to remove WTR from drying beds and place it on a sacrificial bed. During operation beds are not compacted and the available space not fully utilized. This emptied bed will create much needed space for new WTR while fully utilizing the space on the sacrificial bed.

The following activities are to be undertaken during construction:

- Site establishment
- Identify and mark the existing services e.g. pipeline work, chambers and WTR spray infrastructure
- Refurbish/replace all secondary WTR reticulation network and its respective sprayers, if necessary, to be determined by the Engineer's representative on site.
- Clear and dispose of all vegetation within the identified drying beds
- Excavate sludge, ready to be hauled away from the affected drying beds
- Refurbish drying beds walls as identified by Contractor and approved by resident Engineer, if necessary, to be determined by the Engineer's representative on site.
- Reinstatement of access roads between beds, if necessary, to be determined by the Engineer's representative on site.
- Reinstatement of decanting towers, including installation of decanting slates and access bridge, if necessary, to be determined by the Engineer's representative on site.
- Load of haul of sludge to designated areas within the Panfontein Sludge Disposal Site
- General levelling of all spoiled sites
- Site de-establishment

#### **Task 2: Stockpile Area**

The purpose of this task is to build a 4,9m high stockpile area. Semi-dry and dry water treatment residue will be removed from the drying beds and placed in the stockpile area. This will also further create much needed space on the drying beds.

The following activities are to be undertaken during construction:

- Site establishment
- Clear and Grub

- Survey and setting out of the works.
- Excavate for wall footprint
- Construct 4.9m high stockpile wall
- Excavate for storm drains.
- Construct precast 4m v-drains.
- Construct outlet collection points and discharge pipelines to canal or return water dams.
- Line the embankments and stockpile area with 1.5mm HDPE liner and anchor where necessary
- Removal of WTR and placement in stockpile area
- Close of stockpile area
- Shape WTR for storm water
- Site de-establishment

The Contractor's obligations under the contract include provision of all labour, materials, plant, temporary work and extras, whether of a temporary or permanent nature required for such construction and completion as far as the necessity for providing the same is specified in or to be inferred from the contract.

#### PS 1.2 Duration of the Contract

It is expected that the contract will have the duration of 18 months. The Contractor shall undertake to commence work on site within 14 days after appointment.

## **PS 2 SUBCONTRACTING**

Should the Contractor wish to appoint subcontractors, each subcontractor must have a CIDB contractor grading designation governed by his field of expertise and value of work to be carried out. However, this does not imply a contract between the Employer and the Subcontractor, or a responsibility or liability on the part of the Employer to the Subcontractor. The employer holds the Contractor responsible for the work and any other effect that may result from this contract whether undertaken by the Subcontractor or the Contractor himself.

## **PS 3 DESCRIPTION OF THE SITE**

### PS 3.1 Site Location

The site of the work is located at Rand Water's Panfontein Site, Three Rivers, Gauteng.

### PS 3.2 Site Boundaries

The Contractor shall confine his construction activities to within the boundaries of the site as determined by the Engineer and Rand Water. The contractor shall not extend his activities outside these boundaries unless the Engineer has specifically authorized the extension in writing.

## **PS 4 CONSTRUCTION PROGRAMME**

The contractor is required to furnish a realistic construction programme showing the order of procedure and methods which he proposes to use in executing the Works within 14 days from the date of delivery of the letter of acceptance.

The contractor shall submit an updated copy of the programme at each site meeting clearly indicating actual versus scheduled progress.

## **PS 5 SITE MEETINGS**

The Contractor shall attend site meetings with representatives of Rand Water and the Engineer at dates and times determined by Rand Water.

## **PS 6 PROTECTION OF WORK**

The contractor shall in particular keep free from water those portions of the site as are necessary to allow the Works to be carried out in dry conditions.

The Contractor is to ensure all work is undertaken without disruption to Panfontein operations.

The Engineer may take or order the Contractor to take additional precautions where he is not satisfied with the Contractor's arrangements. The contractor shall not be relieved of his responsibility by reason of the Engineer taking or ordering additional precautions, or by reason of the engineer failing to do so. All expenditure incurred by Rand Water in taking any additional precautions or otherwise in remedying the default of the Contractor and making good of the Works shall be recovered from the moneys due to the Contractor.

## **PS 7 FEATURES REQUIRING SPECIAL ATTENTION**

### PS 7.1 Existing Features

Care must be taken that no damage to the nearby existing buildings and related infrastructure located at Panfontein.

Should existing buildings and related infrastructure or services be damaged due to the contractor's negligence, the cost of repairs will be for the contractor's account.

### PS 7.2 Quality Plan

The Contractor will be required to submit a detailed integrated construction and quality plan to undertake the Works to the Engineer or the Engineer's representative for approval. A Method Statement of how the work will be undertaken must be submitted to the Engineer or the Engineer's representative for approval, prior to commencing with the work.

## **PS 11 APPLICABLE STANDARDIZED SPECIFICATIONS**

Although not bound in or issued with this document, the following SABS 1200 Standardized Specification for Civil Engineering Construction as approved by the Council of the South African Bureau of Standards shall apply to this Contract. The Contractor shall be in possession of these Standardized Specifications and their related SABS 0120 Code of Practice which apply equally and shall keep a copy of each on site for reference by him and the Engineer for the duration of the Contract.

For "Workmen's Compensation Act" read "Compensation for Occupational Injuries and Diseases Act, 1993 (Act No.130 of 1993)" wherever it appears. For "Machinery and Occupational Safety Act" and "Mines and Works Act" read "Occupational Health and Safety Act, 1993 (Act 85 of 1993)" wherever they appear.

For "maintenance period" read "Defects Liability Period" in terms of Clause 53.1 of the General Conditions of Contract for Construction Works 2004, wherever it appears.

SABS 1200A	- 1986	:	General
SABS 1200AD	- 1984	:	General (Small Dams)
SABS 1200 C	- 1980 (as amended 1982)	:	Site Clearance
SABS 1200 D	- 1982 (as amended 1983)	:	Earthworks
SABS 1200 DB	- 1982	:	Earthworks (Pipe Trenches)
SABS 1200 DE	- 1984	:	Small Earth Dams
SABS 1200 DK	- 1995	:	Gabions and Pitching
SABS 1200 DM	- 1981	:	Earthworks (Roads, Subgrade)

SABS 1200 GA - 1982	:	Concrete (Small Works)
SABS 1200 ME - 1981	:	Subbase

Copies of SABS 1200 Standardized Specifications are available from the South African Bureau of Standards, Private Bag X191, Pretoria, 0001.

## **PS 12 APPLICABLE TECHNICAL SPECIFICATIONS**

No Rand Water Technical Specifications shall apply to this Contract.

## SECTION B : VARIATIONS AND ADDITIONS TO THE STANDARDIZED SPECIFICATIONS

### PSA GENERAL (SABS 1200A-1986)

### PSA5 CONSTRUCTION

#### PSA5.1 SURVEY

##### PSA5.1.1 Setting out of the Works

The Contractor is responsible for the setting out of the Works from the information given on the drawings or from information provided by the Engineer. The Contractor is to place pegs (of adequate type and in sufficient quantity) as basic control points, appropriate to the nature of the Works.

Benchmarks that are to be disturbed by the temporary or permanent works must be referenced by the Contractor, prior to the disturbing thereof, at the Contractor's cost.

If at any time during the progress of the Works, any error shall appear or arise in the position, levels, dimensions or alignment of any part of the Works, the Contractor, on being required to do so by the Engineer, shall at his own expense rectify such error to the satisfaction of the Engineer.

#### PSA5.5 DEALING WITH WATER ON THE WORKS

The Contractor's attention is drawn to the fact that, apart from normal dealing with stormwater and seepage water which may influence the construction of the temporary or permanent Works, special arrangements and de-watering measures will have to be made to control and/or remove water for the protection of excavations.

#### PSA5.9 WORKMAN'S COMPENSATION ACT

All labour employed on the Site shall be covered by the Workmen's Compensation Act. The Contractor shall pay in full, such amounts, as are due in terms of the Act, including the payment of the necessary levies.

The manner in which Workman's Compensation will be handled, shall be resolved by the Contractor with all the relevant parties at the commencement of the Contract.

### PSC SITE CLEARANCE (SANS 1200 C)

#### PSC3 MATERIALS

##### PSC3.1 DISPOSAL OF MATERIAL AND DEBRIS

Material obtained from clearing of surface vegetation shall be disposed of by the Contractor in a manner and to a registered landfill of the Contractor's choice. The burning on Site of vegetation and debris will not be permitted.

##### PSC3.2 1.5mm HDPE Liner

The HDPE liner must have a tensile strength such that the applied tensile loads do not exceed 3%, which includes light traffic loads such as bobcats and other equipment for placement, levelling and compaction

**PSC5 CONSTRUCTION**

**PSC5.1 AREAS TO BE CLEARED AND GRUBBED**

Site clearance shall only be done after receipt by the Contractor of the Engineer's written approval to that effect on areas designated by the Engineer. Site clearance prior to bulk excavation shall only be performed on areas designated by the Engineer on a plan and in writing. The area to be cleared shall be the minimum area required for the execution of the Works but shall include areas identified for the stockpiling of excavated materials and topsoil.

**PSD EARTHWORKS (SANS 1200 D)**

**PSD5.2.2.3 Disposal and spoil site(s) (Sub-clause 5.2.2.3)**

Except when it is required and designated by the Engineer that surplus and unsuitable material from excavations shall be disposed of on the Site, such material shall be disposed of to Spoil Sites.

**PSD6 TOLERANCES**

**PSD6.1 POSITION, DIMENSIONS AND LEVELS FOR BULK EARTHWORKS**

Except that finished levels shall comply with Sub-clause 6.1(b)(3) for Degree of Accuracy II, a degree of accuracy III shall be applicable to bulk earthworks.

**PSD7.2 Testing Procedure**

A minimum of 3 moisture/density tests are to be carried out on any layer works. The Engineer reserves the right to call for the calibration of the nuclear device against sand replacement tests at his discretion. In the event of any dispute the sand replacement method shall be the only recognised method of density testing.

## PART 5 - SITE RULES & REGULATIONS

- 5.1 Existing Services  
Exact positions of existing services must be confirmed on site prior to commencement of excavations. Care must be taken by the contractor not to damage any services.
- 5.2 Accommodation  
No housing is available. The contractor shall make his own arrangements to house his employees outside of the boundaries of the site and transport them to the works. The Contractor shall ensure that he complies with all the laws and regulations applicable to labour, accommodation and amenities and shall make his own arrangements with the authorities to house his employees.
- 5.3 Sanitation  
The Contractor shall provide latrine accommodation on the site in the form of chemical toilets for the use of persons employed on the works. All latrine accommodation provided shall be efficient, sanitary, non-offensive and all sanitary fees payable to any local authority shall be paid by the Contractor.
- 5.4 Water  
A sufficient supply of water will be provided by Rand Water, free of charge, from one convenient point near the site. The Contractor shall make his own arrangements for the distribution of the water.
- 5.5 Compressed Air  
No compressed air is available on the site.
- 5.6 Electricity  
Electricity is available on the site. The Contractor shall make his own arrangements for the supply of electricity to the working area subject to the approval of the Engineer.
- The site power cable rating and installation shall comply with SABS0142.
- 5.7 Roads  
The Contractor shall provide and maintain, at his cost, any temporary access roads, deviations, gangways and drains as may be necessary for the proper execution of the Works and shall confine his transport to these roads and the roads indicated by the Engineer.
- 5.8 Security  
The site is subject to strict security control and the contractor and his staff shall comply fully with any requirements imposed by Rand Water's security personnel. Permits, issued by the Station Manager of the applicable station, are required for admission to the site and before starting work on site, the Contractor shall make arrangements with the Engineer for the issue of the permits for himself and his employees. For purposes of identification, all personnel will be required to carry their identity documents and shall present these on request. The Contractor and his employees will be confined to the site and action will be taken against anyone outside the prescribed areas.

5.9 Buildings and Structures

Care should be taken not to damage the existing structures. The contractor shall bear the cost of repair of existing infrastructure damaged due to his activities.

5.10 Possession of Site

The engineer's representative will issue a Site Access Certificate to the Contractor prior to site establishment by the Contractor. This will be done after the Station Manager of the applicable station is satisfied that all the contractor's staff that will be working on site has acquainted themselves with and attended all compulsory site safety induction courses presented at the applicable station. Proof of contractor staff attending these courses shall be kept, on site, by the Contractor and shall be presented to the Engineer or any Rand Water representative on request.

### **PART 3: DRAWINGS**

The following drawings shall form part and be read as part of the Contract:

RA23900\_000 – Drawing register

Sacrificial Beds drawing numbers:

- i. R027538/05 General arrangement
- ii. R027538/06 Reinforcement details and bending schedule
- iii. R027538/07 Drying Beds site plan
- iv. 11807 Walls and drying beds details
- v. 11809 details of drying beds drainage
- vi. RA22597 Access bridge

Stockpiling drawing numbers:

- i. RA23900\_001 - EXISTING SITE
- ii. RA23900\_002 – Dry sludge Stockpile Phase 1
- iii. RA23900\_003 - Dry sludge Stockpile Phase 2
- iv. RA23900\_004 - Dry sludge Stockpile Phase 3
- v. RA23900\_005 – Site Layout for Dry sludge Stockpile Area Cross Sections
- vi. RA23900\_006 – Cross Section Sheet 1
- vii. RA23900\_007 - Cross Section Sheet 2
- viii. RA23900\_008 - Cross Section Sheet 3
- ix. RA23900\_009 – Sections and Details

Note that these drawings are for tender purposes only.