

## Annexure C3.2 Scope of works

### 1. Scope of Works

#### a) Objectives

Rand Water Zuikerbosch Pumping Station is looking for a contractor to install a security fence on their property. A 2.4m high concrete palisade with barb wire shall be installed at the fishing spot. It shall be installed 1.5m – 2m away from the existing fence at the fishing spot. The fence shall be installed to the appropriate quality standards, to avoid premature collapse/failure of the fence.

The length of the fence to be installed is 450 m. The scope of the contractor shall cover the following:

- Excavation
- Concrete plinths
- Fence installation
- Backfilling
- Carting away of excess material

Rand Water is looking for competent contractor with a minimum 2SQ CIDB grade and complete the work in a duration of 3 months. The contractor must submit a quotation that is inclusive of preliminary, and generals (P&Gs) fixed and time related. The quotation must be in the form of a BOQ, which clearly breaks down the rates of 'supply' and 'installation'.

#### b) Contractor's Obligations

- (i) The contractor must submit the following documents before commencement of any works for review and approval by the client:
  - Safety file
  - Detailed Method Statement
  - Quality Control Plan
  - Program of works
- (ii) The Contractor must supply employees with all relevant Personal Protective Gear and ensure that employees wear the necessary PPE (Personal Protective Equipment). The fence is going to be installed proximity to the river, the contractor should consider that when doing risk assessment.
- (iii) Contractor to clean site and remove all rubble resulting from the contractors' completed work.
- (iv) The Contractor to take full responsibility for the security of his Tools & Equipment and storage thereof.
- (v) The Contractor is to ensure that all work is completed on time and according to the specification.

### 2. Specifications

#### Prefabricated Concrete Elements

#### a) Workmanship and Finish in general

- All concrete elements shall be manufactured from sound concrete and free from structural defects.
- All concrete elements shall have an off-shutter finish on three sides, with the fourth side having a wood floated finish. A minimum cover of 12mm as per SABS 1372-1983 is maintained in all concrete elements.

- b) Shape and Dimensions
  - All elements shall retain the required shape and be true to the respective and specified dimensions as indicated in paragraph (f), (g), (h).
- c) Performance Requirements (Strength)
  - The required concrete compressive strength in all prefabricated elements shall be a minimum of 30 MPa at 28 days, determined in accordance with SANS 5836.
- d) Curing

All concrete elements shall be cured in accordance with the recommendations given in SANS 5836.
- e) Reinforcement
  - All steel for reinforcements in prefabricated elements shall be high yield steel with a minimum characteristic strength of 410 MPa and shall in general comply with SABS 920 and SABS 4482.
  - All reinforcing steel wires shall be free of rust, loose scale, flux, grease, or oil substances.
- f) Post
  - The posts shall be 3.0m long and slotted, as per drawing, to take the horizontal load bearing rails.
  - The back section is 140mm wide tapering to the front to 80mm. The thickness of the post shall be 225mm. Posts shall be spaced at 2.0m centre in a concrete foundation. The top of the post shall be angled at 45°.
  - Each post shall contain four 4mm x 2900 mm long carbon steel bars with high yield strength.
- g) Pales or Paling
  - The pales are 2.4m long and with two 10mm holes to take 8mm carriage type bolts. The back section shall be 100mm wide tapering to the front to 80mm. The thickness of the pales shall be 75mm. Pales shall be spaced at  $\pm 200$ mm centres and a total of 9 pales installed per 2-meter section.
  - Each pale must contain four 4mm x 2350mm long carbon steel bars with high yield strength. The top and bottom of the pales are angled at 45°.
- h) Rails or Cross Beams
  - The rails shall be 1.98m long with nine x 10mm holes to take carriage 8mm type bolts. The rails shall be 150mm wide and 80mm deep. They shall slide into the posts and be grouted into posts with 2 to 1 sand/cement mix.
  - Each rail contains four 4mm x 1900mm long carbon steel bars with high yield strength.
- i) Fasteners
  - All nuts, bolts and washers used for the erection of the fence shall be mild steel. Electrogalvanized (zinc and chrome) fasteners can be supplied as alternative.
  - All bolt holes are filled with cement mortar and therefore negating the need for electrogalvanized fasteners. The grout should comprise of a 2 to 1 sand/cement mix.
- j) Erection
  - Each post must be embedded in a concrete foundation hole of 450mm x 450mm and a depth of 600mm.
  - Foundation shall be a minimum of 15Mpa at 28 days.
- k) Excavation
  - All excavations shall be compacted to achieve a firm base for foundations.
  - The sizes specified in paragraph (j) are for firm soils and it may be necessary to increase these sizes for softer yielding soils.
- l) Backfill
  - Backfilling after the foundations to reach the natural ground level.