

## **NOTICE 11/2019**

### **SUPPLY AND ERECT PRE-CAST CONCRETE PALISADE FENCING WITHIN THE KOUGA MUNICIPAL AREA**

#### **1. STANDARD TYPE FENCE**

##### **1.1 Pre-fabricated Concrete Elements**

###### **1.1.1 Workmanship and finish General**

All concrete elements shall be manufactured from sound concrete, free of structural defects, complying with a sample previously submitted to the Client for approval. All elements shall have off-shutter finish on three sides, with the fourth side having a wood floated finish.

###### **1.1.2 Shape & Dimension**

All elements shall retain the required shape and be true to the respective and specified dimensions.

###### **1.1.3 Performance Requirements (Strength):**

The required concrete compressive strength in all pre-stressed elements shall be a minimum of 30 MPa at 28 days, determined in accordance with SANS method 863.

###### **1.1.4 Curing**

All concrete elements shall be cured in accordance with the recommendations given SANS method 863.

###### **1.1.5 Reinforcement**

All steel used for reinforcements in pre-fabricated element shall be yield steel with minimum characteristics strength of 410 MPa, and shall be free of rust, loose scale, flux, grease or oil substances and shall in general comply with SANS 920 and BS 4482.

###### **1.1.6 Pre-Stressing Steel**

All wires shall be of the crimped variety and shall be free of rust, loose scale, flux, grease or oil substances and shall in general comply with BS 5896.

## 1.2 **Post**

- 1.2.1 The poles shall be 3.0m long and sotted, to take the horizontal load bearing rails.  
The front edge shall be curved.  
The back section shall be 100mm wide tapering to the front to 60mm.  
The thickness of the post shall be 165 mm.  
Posts shall be spaced at 2.0m centre.
- 1.2.2 The posts shall be pre-stressed with 4 x 4mm wire graded 1550/1700 MPa, stressed to 75% of the U.T.S. (Ultimate Tensile Strength).  
Pre-stressed wires shall be cut at the surface level and sealed.  
The top and bottom of the post shall be angled at 45°.

## 1.3 **Poles**

- 1.3.1 The poles shall be 2.4m long with two 10mm holes to take 8mm carriage type bolts.  
The front edges shall be curved.  
The back section shall be 70mm wide tapering to the front to 60mm.  
The thickness of the poles shall be 55mm.  
Poles are spaced at  $\pm 160$ mm centres.
- 1.3.2 The poles shall be pre-stressed with two 4mm wires grade 1550 / 1700 MPa, stressed to 75% of the U.T.S. (Ultimate Tensile Strength).  
Pre-stressed wires shall be cut at surface level and sealed.  
The top and bottom of the poles shall be angled at 45°.

## 1.4 **Rails**

- 1.4.1 The rails shall be 1.98m long with nine x 10mm holes to take carriage 8mm type bolts.  
The rails shall be 125mm wide and 55mm deep.  
All rails are to be grouted into posts.
- 1.4.2 The rails shall be pre-stressed with four 4mm wires graded 1550 / 1700 MPa, stressed to 75% of the U.T.S. (Ultimate Tensile Strength). Pre-stressed wire shall be cut at surface level.

## 1.5 **Bolts**

- 1.5.1 All bolts used for the erection of the fence shall have their ends burred over. The holes shall be filled with cement mortar.
- 1.5.2 All nuts, bolts and washers used for the erection of the fence shall be electro-galvanized (Zinc and chrome passivated).

## 1.6 **Erection**

- 1.6.1 Each post shall be embedded to full depth in concrete in a foundation hole of at least 460mm and a depth of 600mm.
- 1.6.2 The sizes specified in par. 1.6.1 are for firm soils and it may be necessary to increase these sizes for softer yielding soils according to the engineer's instruction.
- 1.6.3 Foundation shall be a minimum of 15 MPa at 28 days.

## 2. **INDUSTRIAL TYPE FENCE**

### 2.1 **Pre-Fabricated Concrete Elements:**

#### 2.1.1 Workmanship and Finish in General

All concrete elements shall be manufactured from sound concrete, free of structural defects, complying with a sample previous submitted to the Client for approval. All elements shall have off-shutter finish on three sides. With the fourth side having a wood floated finish.

#### 2.1.2 **Shape & Dimension:**

All elements shall retain the required shape and be true to the respective and specified dimensions.

#### 2.1.3 Performance Requirements (Strength):

The required concrete compressive strength in all-pre-fabricated pre-stressed elements shall be a minimum of 30 MPa at 28 days, determined in accordance with SANS method 863.

#### 2.1.4 **Curing:**

All concrete elements shall be cured in accordance with the recommendations given in SANS method 863.

#### 2.1.5 **Reinforcement:**

All steel used for reinforcements in pre-fabricated element shall be high yield steel with minimum characteristics strength of 410 MPa, and shall be free of rust, loose scale, flux, grease or oil substances and shall in general comply with SANS 920 and BS 4486.

#### 2.1.6 **Pre-Stressing Steel:**

All wires shall be of the crimped variety and shall be free of rust, loose scale, flux, grease or oil substances and shall in general comply with BS 5896.

### 2.2 **Post**

- 2.2.1 The post shall be 3.0m long and slotted, as per drawing, to take the horizontal loadbearing rails. The front edge shall be curved. The back section shall be 140mm wide tapering to the front to 80mm. The thickness of the post shall be 225mm.

**Posts shall be spaced at 2.0m centre.**

- 2.2.2 The posts shall be pre-stressed with 4 x 4mm wire graded 1550/1700 MPa, stressed to 75% of the U.T.S. (Ultimate Tensile Strength).  
Pre-stressed wires shall be cut at the surface level and sealed.  
The top of the post shall be angled at 45°.

## 2.3 Poles

- 2.3.1 The poles shall be 2.4m long 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 poles shall be 75mm.  
Poles are spaced at  $\pm 190$ mm centres.

- 2.3.2 The poles shall be pre-stressed with two 4mm wires grade 1550 / 1700 MPa, stressed to 75% of the U.T.S. (Ultimate Tensile Strength).  
Pre-stressed wires shall be cut at surface level and sealed.

## 2.4 Rails

- 2.4.1 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  
All rails are to be grouted into posts.
- 2.4.2 The rails shall be pre-stressed with four 4mm wires graded 1550 / 1700 MPa, stressed to 75% of the U.T.S. (Ultimate Tensile strength).  
Pre-stressed wire shall be cut at surface level.

## 2.5 Bolts

- 2.5.1 All bolts used for the erection of the fence shall have their ends burred over.  
The holes shall be filled with cement mortar.
- 2.5.2 All nuts, bolts and washers used for the erection of the fence shall be electro galvanized (Zinc and chrome passivated).

## 2.6 Erection

- 2.6.1 Each post shall be embedded to full depth in concrete in a foundation hole of at least 460mm x 460mm and a depth of 600mm.
- 2.6.2 The sizes specified in par. 6.1 are for firm soils and it may be necessary to increase these sizes for softer yielding soils according to the engineer's instructions.
- 2.6.3 Foundation shall be a minimum of 15 MPa at 28 days.

### 3.1 **Flat Wrap Razor Wire**

- 3.1.1 Razor wire support anchors are to consist of 30 x 30 x 3.0mm angle iron sections 800mm length.

The anchors are to be bolted to each concrete post using two M8 galvanized bolts and with total length of 520mm protruding above the top of the concrete post in order to receive the flat wrap razor wire. Three 4mm holes are to be drilled to each anchor in order to receive the straining wires.

- 3.1.2 Three 3.15mm straining wires are to be weaved through the flat wrap razor wire and anchor to secure the razor wire above the concrete palisade.

Flat wrap razor wire is to consist of galvanized wire and razors, with medium blade profiles in loops of 500mm diameter fixed to top of concrete palisade fence.

- 3.1.3 Flat wrap razor wire direction should be outbound.