

10 months	3,5 cents
11 months	3 cents
12 months	2,75 cents
14 months	2,5 cents
15 months	2,25 cents
16 months	2 cents
18 months	1,75 cents
20 months	1,5 cents
21 months	1,5 cents
24 months	1,25 cents
30 months	1 cent
36 months	1 cent
42 months	1 cent

**PENALTY PER DAY ROUNDED OFF AS FOLLOWS**

R0 – R500	Nearest R5
R501 - R1 000	Nearest R10
R1001 – R5 000	Nearest R50
R5 001 and above	Nearest R100

**Example:**

Estimated contract value	=	R2 500 000 (Excluding VAT)
Construction period	=	10 months
	=	R2 500 000 X (0, 0275/100)
	=	R687-50/day
Therefore, rounded off		
To the nearest R10-00	=	R690-00/day which shall lapse until the due
completion of work.		

### **GENERAL LABOUR**

It is an explicit condition of this bid that only persons normally reside in the locality of the works (local labour) may be employed on the contract. Provided, however, that should adequate and appropriate labour not be available within the locality, other labour may be employed subject to satisfactory proof being provided that every reasonable endeavor has been made to employ labour from the immediate locality. The contractor shall identify the local community leaders to negotiate with them regarding the utilisation of local labour in the construction process. In this regard, the contractor shall furthermore give preference, wherever possible to the employment of single heads of households, women, and youth. The contractor shall in general maximise the involvement of the local community.



## ANNEXURE A: PERIMETER BARRIER AND ACCESS

### 1. BOUNDARY WALL & FENCE:

#### 1.1 External clear zones

Any vegetation in the immediate vicinity of the perimeter causing visual obstruction in terms of security observation must be cut back on a regular basis or removed to avoid any scaling.

#### 1.2 Around street boundaries at the entrance to CSC See Annexure 1 & 12

Accommodation such as the CSC or high risk facilities adjacent to a street, should be screened from public and street view with a double skin fence to secure the area from external attacks but still have visibility to the external areas. Provide a fence with a total height of minimum 3000mm consisting of the following items:

##### 1.3.1 Brick wall

- **Minimum brick specification:** Face brick with satin finish manufactured from burnt clay in terracotta colour or similar approved to match and tie-in with existing structures.
- Foundation wall to be minimum 340mm deep with reinforced concrete strip foundation below to achieve minimum depth of 570mm.
- Wall to be built in between mild steel posts used for the fence spaced 3390mm c/c. Posts to be built into concrete foundation, 600mm deep. The post to be 3000mm above natural ground level. Spacing of posts as per manufacturer's specifications.
- Brick wall to be built 620mm high with brick on edge roller course on top. The wall to be built in stretcher bond with recessed mortar joints, provide brick force in every brick course.
- The fence and support post to be built flush with external face of the wall, the wall must not have a foot hold to the street/ public side. Refer to Annexure 12 for detail drawing.
- Provide minimum 50mmØ uPVC weep holes spaced maximum 600mm c/c to the bottom of the wall to accommodate storm water flow-off.
- *In-situ* concrete foundations as specified by a registered *structural engineer*.
- The perimeter wall must be designed by a registered *architect* with lateral support columns and expansion joints, all in compliance with the minimum standards and regulation of SANS10400, part: K, table 17.

### 1.2.2 Fence

- Provide an 1800mm(h) x 3305(w) double skin fencing panel consisting of carbon hardened and galvanised steel mesh panels and support posts with security spikes and flat wrap razor wire on top. Mesh to be installed above wall.
- Support posts to project 600mm above the top edge of the steel mesh panels as support for the high tensile steel flat wrap razor wire. Overall height to be minimum 3000mm.
- Support post to be 85mm front face, tapering to 45mm with depth of 85mm. Post shall include locking recess mechanism to secure panel. Post to be space 3390mm c/c.
- The fence and support post to be built flush with external face of the wall, the wall must not have a foot hold to the street/ public side. Refer to Annexure 12 for detail drawing.
- Fence panel to have 70° flanges along the sides, 90° flange along the top and 30° flange along the bottom.
- The panel facing the street must be in a horizontal position and the internal panel to be in a vertical position to reduce the aperture size of the panel.
- Fence panels to be clamber proof with see-through capabilities and have a top coat finish of marine fusion bond coat in dove grey colour or as per approved colour.
- Mesh strands to be 3mm diameter minimum, cut resistant and with an aperture not exceeding 12 x 12mm.
- Provide 100mm electro-galvanised, 2mm thick, toughened steel spikes on top of fence.
- Provide minimum 600mm high galvanized high tensile steel flat wrap razor wire on top of fence to achieve a minimum total height of 3000mm.

The products specified must be manufactured and installed in accordance with the manufacturers specifications and should carry at least a SABS or higher standards certificate.

### 1.3 Around street boundaries (Not facing CSC entrance) See Annexure 1 & 13

General accommodation such as offices, parking etc. adjacent to a street, should be screened from public and street view a single skin fence. Provide a fence with a total height of minimum 3000mm consisting of the following items:

#### 1.3.1 Brick wall

- **Minimum brick specification:** Face brick with satin finish manufactured from burnt clay in terracotta colour or similar approved to match and tie-in with existing structures.
- Foundation wall to be minimum 340mm deep with reinforced concrete strip foundation below to achieve minimum depth of 570mm.
- Wall to be built in between mild steel posts used for the fence spaced 3390mm c/c. Posts to be built into concrete foundation, 600mm deep. The post to be 3000mm above natural ground level. Spacing of posts as per manufacturer's specifications.

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- Brick wall to be built 620mm high with brick on edge roller course on top. The wall to be built in stretcher bond with recessed mortar joints, provide brick force in every brick course.
- The fence and support post to be built flush with external face of the wall, the wall must not have a foot hold to the street/ public side. Refer to Annexure 12 for detail drawing.
- Provide minimum 50mmØ uPVC weep holes spaced maximum 600mm c/c to the bottom of the wall to accommodate storm water flow-off.
- *In-situ* concrete foundations as specified by a registered *structural engineer*.
- The perimeter wall must be designed by a registered *architect* with lateral support columns and expansion joints, all in compliance with the minimum standards and regulation of SANS10400, part: K, table 17.

### 1.3.2 Fence

- Provide an 1800mm(h) x 3305mm(w) single skin fencing panel consisting of carbon hardened and galvanised steel mesh panels and support posts with security spikes and flat wrap razor wire on top. Mesh to be installed above wall.
- Support posts to project 600mm above the top edge of the steel mesh panels as support for the high tensile steel flat wrap razor wire. Overall height to be minimum 3000mm above natural ground line.
- Support post to be 85mm front face, tapering to 45mm with depth of 85mm. Post shall include locking recess mechanism to secure panel. Post to be space 3390mm c/c.
- The fence and support post to be built flush with external face of the wall, the wall must not have a foot hold to the street/ public side. Refer to Annexure 12 for detail drawing.
- Fence panel to have 70° flanges along the sides, 90° flange along the top and 30° flange along the bottom.
- The panel facing the street must be in a horizontal position and the internal panel to be in a vertical position to reduce the aperture size of the panel.
- Fence panels to be clamber proof with see-through capabilities and have a top coat finish of marine fusion bond coat in dove grey colour or as per approved colour.
- Mesh strands to be 3 mm diameter minimum, cut resistant and with an aperture not exceeding 12 x 75 mm.
- Provide 100mm electro-galvanised, 2mm thick, toughened steel spikes on top of fence.
- Provide minimum 600mm high galvanized high tensile steel flat wrap razor wire on top of fence to achieve a minimum total height of 3000mm.

The products specified must be manufactured and installed in accordance with the manufacturers specifications and should carry at least a SABS or higher standards certificate.

#### 1.4 Boundaries to adjacent sites

See Annexure 1 & 4

**Minimum brick specification:** Face brick with satin finish manufactured from burnt clay in terracotta colour or similar approved to match and tie-in with existing structures.

Provide a 2465mm high face brick wall built in stretcher bond with recessed mortar joints, provide brick force every fourth brick course. Foundation wall to be minimum 340mm deep with reinforced concrete strip foundation below to achieve minimum depth of 570mm. The perimeter wall must be designed by a registered *architect* with lateral support columns and expansion joints, all in compliance with the minimum standards and regulation of SANS10400, part: K, table 17. Provide a brick on edge roller course to the top of the wall and lateral support columns. The wall must be secured with 100mm electro-galvanised, 2mm thick, toughened steel security spikes on top of roller course. Provide minimum 600mm high galvanized high tensile steel flat wrap razor wire on top of wall to achieve a minimum total height of 3000mm. Provide minimum 50mmØ uPVC weep holes spaced maximum 600mm c/c to the bottom of the wall to accommodate storm water flow-off. *In-situ* concrete foundations as specified by a registered *structural engineer*.

At facilities with an extremely high security risk, alternative building materials and techniques should be sourced to provide a more durable and secured perimeter wall at adjacent sites and holding facilities.

#### 1.5 Holding facilities

See Annexure 1 & 4

**Minimum brick specification:** Face brick with satin finish manufactured from burnt clay in terracotta colour or similar approved to match and tie-in with existing structures.

Accommodation such as cell blocks adjacent to a street, should be screened from public and street view with a 2465mm high face brick wall built in stretcher bond with recessed mortar joints, provide brick force every fourth brick course. Foundation wall to be minimum 340mm deep with reinforced concrete strip foundation below to achieve minimum depth of 570mm. The perimeter wall must be designed by a registered *architect* with lateral support columns and expansion joints, all in compliance with the minimum standards and regulation of SANS10400, part: K, table 17. Provide a brick on edge roller course to the top of the wall and lateral support columns. The wall must be secured with 100mm electro-galvanised, 2mm thick, toughened steel security spikes on top of roller course. Provide minimum 600mm high galvanized high tensile steel flat wrap razor wire on top of wall to achieve a minimum total height of 3000mm. Provide minimum 50mmØ uPVC weep holes spaced maximum 600mm c/c to the bottom of the wall to accommodate storm water flow-off. *In-situ* concrete foundations as specified by a registered *structural engineer*.

At facilities with an extremely high security risk, alternative building materials and techniques should be sourced to provide a more durable and secured perimeter wall at adjacent sites and holding facilities.

## 1.6 Signage wall

See Annexure 1 & 8

**Minimum brick specification:** Face brick with satin finish manufactured from burnt clay in terracotta colour or similar approved to match and tie-in with existing structures.

Provide a 2465mm high face brick wall built in stretcher bond with recessed mortar joints, provide brick force every fourth brick course. Foundation wall to be minimum 340mm deep with reinforced concrete strip foundation below to achieve minimum depth of 570mm. The perimeter wall must be designed by a registered *architect* with lateral support columns and expansion joints, all in compliance with the minimum standards and regulation of SANS10400, part: K, table 17. Provide a brick on edge roller course to the top of the wall and lateral support columns. The wall must be secured with 100mm electro-galvanised, 2mm thick, toughened steel security spikes on top of roller course. Provide minimum 600mm high galvanized high tensile steel flat wrap razor wire on top of wall to achieve a minimum total height of 3000mm. Provide minimum 50mmØ uPVC weep holes to the bottom of the wall to accommodate storm water flow-off. *In-situ* concrete foundations as specified by a registered *structural engineer*.

## 2 Pedestrian Access

See Annexure 2

### 2.1 Pedestrian Gate

The pedestrian access gate shall be manufactured from the same materials used for perimeter fencing on street boundaries. Gate opening to be 1200mm minimum wide x 2400mm high with 600mm high galvanized high tensile steel flat wrap razor wire on top of gate to achieve a minimum total height of 3000mm. Provide an electronic magnetic locking system controlled from the guard kiosk/ CSC with the option of a manual heavy duty padlock lock in case of emergencies. Gate to be fitted with self-closing mechanism for optimal security.

Pedestrian gate to be constructed from:

- Main from of gate to be constructed from 50mm x 76mm Mild steel
- Infill fencing panel to be the same material as the perimeter fence facing the street.
- Gate to be fitted with 3 x heavy duty barrel hinges space equally on the height of the gate.
- Gate to be fitted with heavy duty locking mechanism to manually lock the gate
- Provide an electronic magnetic locking system controlled from the guard kiosk/ CSC
- Intercom to be installed and be controlled from the guard kiosk/ CSC

### 2.2 Intercom system shall be an industrial/ robust type system with a brushed aluminium casing, the system shall consist of the following:

- One way camera control from kiosk. The external unit shall have a camera fitted within the unit with a *LCD* screen at the kiosk for visual identification.
- 2 Way voice communication.
- Control unit to be installed and controlled within the guard kiosk.

- Control unit to be installed in the CSC if no kiosk are provided at the police station.
- Control unit at guard kiosk to have expandable function to operate motorized gate together with the pedestrian gate.
- The intercom unit at the pedestrian gate shall have a call button with voice communication abilities to the guard kiosk.

### **3 Vehicle access gates** **See Annexure 1 & 9**

#### **3.1 Vehicle Gate**

A motorized sliding gate to be provided for vehicle access with a minimum width of 5000mm. The access gate shall be manufactured from the same materials used for perimeter fencing on street boundaries. Gate to be the same height as the perimeter fence with minimum 600mm high galvanized high tensile steel flat wrap razor wire on top of gate to achieve a minimum total height of 3000mm. Provide that the gate must be lockable with a heavy duty padlock from inside the premises.

Vehicle Gate to be fitted with:

- 80mmØ industrial type V-Wheel. Additional wheels to be fitted to gate when exceeding the gate weight of 1100kg.
- The main frame of the gate to be constructed from 76mm x 50mm Mild steel tubing painted and finished as per perimeter fence support poles
- Gate to be fitted with a 76mm x 50mm Mild steel vertical support. Gate to be fitted with support for every 2500m in length to prevent sagging of main frame.
- All material required for gate to function as a sliding gate shall be included for example: to rail rollers, support post etc.
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#### **3.2 Sliding gate track** for the gate shall consist of:

- 152 x 152mm Mild steel H-Section beam cast in reinforced concrete foundation.
- The mild steel H-Section beam to be levelled prior to casting the beam in concrete.
- 20 x 3mm Mild steel flat bar lugs to be welded along the length of the beam at maximum 600mm c/c. Lugs to be cut minimum 150mm lengths.
- 20mmØ Mild steel solid round bar welded on top of mild steel H-Section beam to ease opening the gate manually and take strain off gate motor.

#### **3.3 Sliding gate motor** shall be an industrial type motor to withstand weight of a 1000kg gate, daily operation of 750 opening and closing cycles with battery backup.

Provide a 220mm face brick wall 2460mm (H) x 1200mm (W) at the side of the gate motor. An isolator box, with sliding panel to be built into wall for all connect to and from the gate motor. The wall shall also provide security to the motor to prevent any tampering. Refer to Annexure 9 for complete specifications.

A combination of access controlled booms and spikes must be installed at the vehicle entrances.

**Intercom system** at vehicle entrance gate shall be an industrial/ robust type system with a brushed aluminium casing, the system shall consist of the following:

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- One way camera control from kiosk/ CSC. The external unit shall have a camera fitted within the unit with a *LCD* screen at the kiosk for visual identification.
- 2 Way voice communication.
- Control unit to be installed and controlled within the guard kiosk.
- Control unit to be installed in the CSC if no kiosk are provided at the police station.
- Control unit at guard kiosk to have expandable function to operate motorized gate together with the pedestrian gate.
- The intercom unit at the pedestrian gate shall have a call button with voice communication abilities to the guard kiosk.



## ANNEXURE B: BURGLAR PROOFING SPECIFICATION

### 1. Burglar Proofing

#### See Annexure 10

All windows at a police station must be fitted with high quality burglar proofing. The burglar proofing to be installed to the inside of the building, inside the opening of the window. The burglar proofing to consist of the following:

- 30 x 6mm Mild steel flat bar frame.
- 12mmØ Mild steel round bar welded to frame in a vertical position spaced maximum 100mm c/c.
- Vertical round bars to be supported with 30 x 6mm mild steel flat bar welded to each round bar and side of the frame. The support bar to be welded to round bar using the face area of the flat bar. Provide horizontal support bar maximum every 1000mm in height. Space horizontal support equally.
- Frame fixed to inside of window opening with M10 bolts with tack welds on every bolt.
- The vertical frame to be fixed to wall with bolts spaced maximum every 300mm c/c.
- The horizontal frame to be fixed to wall with bolts spaced maximum every 350mm c/c.

The burglar proofing must comply with the SANS 10400 regulations. All exposed metal at inland areas must be treated against rust, apply primer coat and final coat/s prior to installation. The *architect* to match existing colour scheme used at the police station.

Exposed metal at coastal and high humidity areas must receive hot dip galvanized treatment, primer coat and final coat/s prior to installation.



## ANNEXURE C: GRENADE SCREEN SPECIFICATION

### 1. Grenade screens

#### See Annexure 11

All street facing windows at a police station to be fitted with high quality grenade screen. The grenade screen to be installed to the outside of the windows. All sides of the grenade screen to be 100mm wider than the window opening except the top to be 200mm higher than the window opening. The burglar proofing to consist of the following:

- 25 x 25 x 2.5mm Mild steel angle frame as per Annexure 11.
- Frame to be fitted with galvanised welded wire mesh.
- Wire mesh to be 2.5mm thick welded wires with an aperture size of 25 x 50mm.
- Mesh to be fixed to frame by clamping the mesh between the inside of mild steel angle frame with a 3 x 16mm mild steel flat bar. The mild steel flat bar to be fixed to main frame with 3mm stainless steel bolt and nut. See detail on Annexure 11.
- Frame to be fixed to wall with 125 x 100 x 5mm mild steel base plate with 10mmØ hole for M10 bolt. Base plate to be welded to frame. All bolts to be tack welded for security.
- Provided vertically a fixing base plate minimum every 900mm and horizontally minimum every 600mm.
- Frame to be supported with two back to back 3 x 30mm mild steel flat bars horizontally every 900mm of additional height. Wire mesh to fitted between flat bar as per Annexure 11.
- Frame to be supported with two back to back 3 x 30mm mild steel flat bars vertically minimum every 600mm of additional width. Wire mesh to fitted between flat bar as per Annexure 11.

The grenade screen must comply with the SANS 10400 regulations. All exposed metal at inland areas must receive treatment against rust, primer coat and final coat/s prior to installation. The *architect* to match existing colour scheme used at the police station.

Exposed metal at coastal and high humidity areas must receive hot dip galvanized treatment, primer coat and final coat/s prior to installation.



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## **ANNEXURE D: EXTERNAL WALL SIGNAGE SPECIFICATION**

### **1. Wall Signage at Pedestrian Entrance See Annexure 8**

Provide an 1100 x 1100mm square photographically etched SAPS CREST emblem against the brickwork boundary wall adjacent to the pedestrian entrance. Crest to be fixed against wall with chemical bond (Epoxy) and masonry anchors (Rawl bolts).

The name of the station as well as "SAPS" to be fixed against the same wall under the crest with chemical bond (Epoxy) and pins, flush to brick surface. Lettering to be laser cut from 3 mm thick aluminium and finished with baked enamel in colour: White. Letter to be 150mm high.

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## **ANNEXURE E: FLAG POLE SPECIFICATION**

### **1. Flag poles See Annexure 5 & 6**

Two (x2) ground mounted swivel flagpoles manufactured from aluminium to be supplied at a police station inside the premises and in close proximity of the main public (pedestrian) entrance, with specifications as follows:

- Total height to be 9000mm.
- 4.2 mm wall thickness for top 4000mm pipe section.
- 4.2 mm wall thickness for bottom 5000mm pipe section.
- Two aluminium channels 201mm x 50mm x 8mm thick, complete with each 9000mm swivel flagpole footing.
- All material to be aluminium allo 6061T guaranteed except pulleys, ropes and bolts and nuts.
- The following items must be included and supplied with the aluminium 9000mm flag pole:
  - Aluminium caps and cleats.
  - 5mm Nylon ropes in colour: White.
  - Galvanised pulleys, bolts and nuts.
  - All requirements must function as a unit.

### **2. Minimum safety distance:**

- Flag poles to be minimum 1000mm from any boundary wall.
- Flag poles to be minimum 2000mm from any ground floor build and 3000mm from any multi storey building.
- The minimum distance between two flag poles to be 3000mm.

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## ANNEXURE F: PAVING AND KERB SPECIFICATION

### 1. Paving

The area to be paved will be scarified to a depth of 150 mm where good soil conditions exists. Poor soil conditions to be scarified, backfilled and compacted according to *civil engineer's* specifications. The soil / base will be stabilized to its optimum moisture content and then compacted with a vibrating roller (*Bomac*), whichever is deemed more appropriate for the paved area. The base course is to be approved by a registered *civil engineer* prior to being treated with a weed killer similar or equal to HYVARX at the rate of 4 g/m<sup>2</sup> spread on a 45mm thick loose layer of bedding sand (compacted to 30mm).

The sand shall be sharp and well graded, slit or clay content not exceeding 3% with 85% or more passing a 2.36mm sieve. The sand must be levelled using a straight edge or other suitable means. The sand surface must not be disturbed or walked upon before placing the paving bricks.

Approved 80 mm thick, interlocking, 30 MPa road stones with chamfered edges are to be laid in herringbone pattern (or pattern to match existing road surfaces) and compacted with a plate vibrator until the desired line level is achieved, where after the sweeping of sand into joints and additional passes of the plate vibrator is made until the joints are filled. The filling sand shall be finer than those used for bedding and should completely pass a 1.18mm sieve, 90% or more being retained on a 0.75mm sieve.

The top of the sub-base shall be so constructed that surface water cannot pond and shall have a longitudinal fall of at least 1% and a transverse fall of at least 2%. The level after compaction shall be the designated level of the top of the sub-base.

Note (A). Deviation of the top of sub-base layer from the designated level: plus, minus 10mm. (c) Thickness from 30mm compacted sand bedding layer.

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2. **Kerb stones** to be figure 3 pre-casted concrete kerbs stones and installed as follows:  
The line of installation will be scarified to a depth of 150mm. The soil / base will be stabilized to its optimum moisture content and then compacted with a vibrating roller (*Bomac*), whichever is deemed more appropriate for the area. The base course is to be approved by a registered *civil engineer* prior to being treated with a weed killer similar or equal to HYVARX at the rate of 4 g/m<sup>2</sup> spread on a 45mm thick loose layer of bedding sand (compacted to 30mm).

The sand must be levelled using a straight edge or other suitable means. The sand surface must not be disturbed or walked upon before placing the kerb stones in line with the approved layout drawings. At the back of every joint where two kerb stones meet, pre-mixed cement needs to be lumped in order to provide lateral support. The back (Straight edge of the kerb must be filled and compacted with soil, level with the top end of the kerb stone. The finished paved surface shall be maximum 20mm below the chamfer line on the front (paved) side of the kerb stone. Joints where kerb stones meet shall not exceed 20mm and must be filled with mortar and stroked flush with the edges of the kerb stones.

## **Annexures**

Annexure 1 -	Flagpole 1/2
Annexure 2 -	Flagpole 2/2
Annexure 3 -	Sliding Gate Elevation
Annexure 4 -	Pedestrian Gate & Sliding Gate Plan
Annexure 5 -	Double Mesh Perimeter Fence
Annexure 6 -	Single Mesh Perimeter Fence
Annexure 7 -	Perimeter Wall Detail
Annexure 8 -	Grenade & Burglar Proofing Detail
Annexure 9 -	Single Wall Detail
Annexure 10 -	Perimeter Lighting Detail 1
Annexure 11 -	Perimeter Lighting Detail 2
Annexure 12 -	Perimeter Lighting Detail 3
Annexure 13 -	Generator/Water Tank Yard Floor Plan
Annexure 14 -	Generator/Water Tank Yard Section

## **Definitions**

### *AFFL*

Above finished floor level

### *Agrément Certificate*

Argrement South Africa is an independent organisation that evaluates the fitness for the purpose of non-standardised building and construction products and systems by applying performance based criteria in its assessment procedure.

### *Architect*

A professional architect registered in terms of the Architectural Profession Act 2000 (Act No. 44 of 2000)

### *AZ150 Coating*

AZ150 indicates the coat weight of 150g/m<sup>2</sup> per double side.

### *Building professional*

A qualified Architect, Electrical Engineer, Mechanical Engineer, Civil/Structural Engineer or Quantity Surveyor who is registered in terms of the relevant professions act.

### *CCTV*

Closed circuit television

### *C/C*

Centre to Centre

### *CSC*

Community service centre

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*Fire engineer*

A professional fire engineer registered with the *Fire Engineer Association of South Africa* (FEASA) as well as the *Engineering Council of South Africa* (ECSA), capable of performing rational fire safety design within the built environment.

*DPO*

Data Protection Officer

*GRP*

Glass Fibre Reinforced

*Heritage building*

A building older than 60 years with significant historical value, protected under the National Heritage Resources Act (No. 25 of 1999).

*'In-situ'*

On site

*IP*

Ingress Protection

*LCD*

Liquid Crystal Display

*LED*

Light - Emitting Diode

*Mechanical engineer*

A professional Mechanical engineer registered in terms of the Engineering Profession Act 2000 (Act No. 46 of 2000)

*Mpa*

Mega pascal – Unit to measure pressure ranges and ratings of hydraulic systems.

*PVC*

Polyvinyl Acrylic

*SAHRA*

The *South African Heritage Resources Agency* is a statutory organization established in terms of the National Heritage Resources Act (No. 25 of 1999) as the national body responsible for the protection of South Africa's cultural heritage resources, represented through provincial offices.

*SABS*

South African Bureau of Standards

*SANS*

South African National Standards

**SAPS**  
South African Police Service

**Structural engineer**  
A professional Structural engineer registered in terms of the Engineering Profession Act 2000 (Act No. 46 of 2000)

**TMS**  
Technical Management Services Division of the South African Police Service

**uPVC**  
Un-plasticized Polyvinyl Chloride

**Watt**  
Unit of measuring power, equivalent to one joule per second, corresponding to the rate of consumption of energy in an electrical circuit.

#### **4 Legislation**

- **SANS 10400**  
Compliance with the requirements of the SANS 10400 document will be deemed to be compliance with the requirements of part A of the National Building Regulations, issued in terms of the National Building Regulations and Building Standards Act, 1977 (Act No. 103 of 1977).



**SOUTH AFRICAN POLICE SERVICE**

# **SAPS ALTERNATIVE BUILDINGS**

**Water Integrated Services and Storage**

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## **1. PURPOSE**

The purpose of this specification is to secure the supply, delivery, installation and commissioning of the integrated water services system for SAPS' alternative buildings.

## **2. DISCUSSION**

The system would consist of two water tanks connected in series with pipes between them, fed from the municipal or the borehole supply. These tanks should be able to supply the entire building(s) (facility). The tanks will be equipped with level control mechanisms to prevent them from overflowing. From the tanks the water is pumped with a 4 bar energy efficient pump through the reticulation system to the building.

Provision should be made for expanding water tanks capacity for future building's expansions by additional tanks.

## **3. CONCRETE PLINTH**

Tanks must be placed on a concrete base constructed with four layers of face bricks above the foundation. The concrete inside the brick layers must be of adequate strength to approximately accommodate 8 x 5000 liters tanks including future installations (minimum 20 MPa) and properly constructed to prevent structural defects.

Furthermore a galvanized palisade fence must be constructed right around the concrete base plinth with an IBR rooftop to protect equipment against adverse weather conditions.

## **4. PRICE COMPONENTS**

- Two Jojo tanks of 5000 litres with ball valves or similar mechanism.
- 4 Bar Energy Efficient Water Pump.
- Pipes, accessories and isolating valve for maintenance purposes
- Delivery costs to respective sites.
- Construction of appropriate concrete plinth for the tanks as per Architectural Drawings.
- Installation of the galvanized Palisade fence around the concrete plinth.
- Construction of the IBR rooftop around the plinth.

## **5. PRICING**

The bidder shall ensure that his bid will make full provision for all requirements stated within this specification document and construction details provided by means of annexures to the specification documents.

The bid will be all inclusive of a fully functional and certified integrated water network installation, fed from the municipal supply and connected to the reticulation network established by the alternative accommodation contractor.

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**SOUTH AFRICAN POLICE SERVICE**

**SURVEY, DRILLING, SUPPLY, DELIVERY  
INSTALLATION & COMMISSIONING OF A  
NEW BOREHOLE**

**ALTERNATIVE BUILDINGS**

**COMPILED BY: SAPS, FACILITY, PROGRAMME AND PROJECT,  
MANAGEMENT, PRETORIA**

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## ANNEXURE H: BOREHOLE PROVISION

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### **SPECIFICATION: SURVEY, DRILLING, SUPPLY, DELIVERY, INSTALLATION AND COMMISSIONING OF A NEW BOREHOLE FOR SAPS' ALTERNATIVE BUILDINGS**

#### **1. INTENT**

This specification calls for the survey, drilling, supply, delivery, installation and commissioning of a new borehole for SAPS' alternative buildings.

#### **1.1 Hydrocensus and Surveying of the Site**

The contractor will conduct a hydrocensus and geophysical survey of the site to determine the area that has sufficient water to provide the consumers during dry and rainy seasons; this will include identifying servitudes running on the proposed drilling area. The contractor should also provide the proper yield, drawdown and step tests.

#### **1.2 Drilling of the new borehole**

The consultant will arrange for the drilling of the borehole upon determination of the suitable area, this will include supplying new borehole pump. The PVC casing, gravel pack, bentonite seal, concrete plinth and marker plate.

#### **1.3 Equipment and materials**

All necessary machinery, equipment and materials to carry out the drilling, test pumping, headwork construction, etc. as specified are to be mobilised for the Works. Test pumping equipment should be independent from the drilling rig(s). Prior to mobilisation the Supervisor will verify the specifications and state of repairs of all major items of plant and transport, and shall have the right to order the removal and/or replacement of any items which in his opinion is insufficient or in unsatisfactory condition. Acceptance by the Supervisor of the Contractor's proposed plant and transport does not, however, relieve the Contractor of his obligations under this Contract, in case such plant and transport accepted by the Supervisor fails to successfully complete the required Works.

All machinery, equipment and materials to carry out the said Works shall be handled, transported and stored in accordance with the manufacturers' recommendations to minimize deteriorations.

#### **1.4 Supervision of the Works**

The execution of the works is to be supervised by the employer's appointed Supervisor.

#### **1.5 Borehole depth and diameter**

The contractor shall drill to the total appropriate depth depending on the geological formation and to the diameter that shall allow minimum borehole nominal diameter (103) at the completion of the borehole including casing installation. In any case the minimum drilled depth should be 40m and maximum 100m, on average 60m depth.

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## ANNEXURE H: BOREHOLE PROVISION

### 1.6 Hydraulic testing and chemical analysis of the newly drilled borehole

The consultant shall be required to undertake the hydraulic testing and the chemical testing of the borehole and compliance compared to SANAS 241:2006(edition 6.1) drinking water standards since the water will be used for domestic purposes by consumers. The analysis should be performed by a SANAS accredited laboratory.

### 1.7 Borehole Pump Testing

The contractor is required to test newly drilled boreholes which have not yet been equipped. The type of borehole test methods required include:

- Slug Test
- Calibration Discharge Test
- Stepped Discharge Test
- Constant Discharge Test
- Recovery Test

### 1.8 Borehole Pump Specification

The contractor shall also include the quotation for the supply, delivery, installation and commissioning of one (1) Borehole Pump for SAPS' alternative buildings.

SAPS' Alternative Buildings: Quantity 01		
Pump	Specified	Specified by Contractor
Medium pumped	Ground Water (Clean)	Specified
Pump Duty	Specified	Specified
Flow		
Static Head	33 m	
Efficiency		
Minimum yield for borehole	3600l/h	
Borehole depth (depends)	Refer to paragraph 1.5	
Motor	Specified	Specified
Rated Power	1.5 KW	
Rated Voltage	380V	
Frequency	50HZ	

The pump must be equipped with the following

- Phase angle protection
- Overvoltage protection
- Phase lost protection
- Dry run protection
- Float switches to switch off when the tank is empty (Start/Stop).

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## ANNEXURE H: BOREHOLE PROVISION

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### 1.9 Borehole monitoring and other equipment

The borehole pumping plant must be provided with equipment to monitor pump, borehole and aquifer performance. The main components required are:

- Water meter
- Hour meter
- Water level depth measuring device –a conduit pipe (20-25mm diameter) next to the riser in the borehole through which a measuring cable can be lowered is preferred, however an electrical transducer or pressure pipe is an alternative.
- Operational equipment

The following operational equipment are required:

- Non return valve, to prevent backflow into borehole.
- Isolating valve, to prevent backflow into the borehole. Only allowed for positive displacement pumps if a pressure relief valve is installed upstream of the valve.
- Scour valve.
- Valves placed to enable removal/replacement of meter in exceptional circumstances.
- Pressure release valve upstream of all isolating valves.
- Pressure cut out switch with manual control and pressure cut out switch with 1 to 2 hour timed reset in auto control.
- Delivery pressure gauge.
- Low water level in borehole cut out relay with manual control and low water level in borehole cut out relay with 1 to 2 hr. timed reset in auto control (if electrically operated).

### 1.10 Summary of the scope of Works

- Site visit for testing of the ground and perform a Geohydrology survey.
- Establish co-ordinates of new borehole and produce a Geohydrological report.
- Drill, supply, install, test and commission the borehole.
- Supply and install the pump.
- Water volumetric flow test and analysis for quality.
- Test borehole workability, commission and handover.
- Minimum yield of Borehole to be 3600l per hour

Contractor to submit all material and equipment data sheets for employer to accept before any works may commence.

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## ANNEXURE I PERIMETER LIGHTING SPECIFICATION

### Street perimeter lighting (see through fences)

Zela LED luminaires of 37 Watt power rating are used for the fenced street side (front) perimeter. The luminaires will be SABS certified and are available in symmetrical and a-symmetrical lighting distribution configuration. LED light source will be of cool white type. Luminaires will be constructed from high pressure die-cast aluminium with powder coated finish and high impact acrylic protector. The luminaires will have an IP rating of at least IP66, have integrated thermal protection and available with internal photocell.

Where building on the premises are within a distance of 12 m from the perimeter structure bulkhead lighting on external building walls will provide lighting towards the perimeter. If bulkhead lighting is deemed as not being sufficient, perimeter lighting will also be provided in such areas to complement the existing lighting.

The fenced section of the perimeter will be lit with a-symmetrical lighting. A-symmetrical configuration as per drawing details.

Luminaires will be mounted at a height of 2.325 m (top of luminaire) on glass fibre reinforced (GRP) poles and with a 6.780 m spacing. Post tops will be positioned on the inside of the perimeter and approximately 1 m from the fence. Poles will have the following features:

- Non-conductive
- Low inertia
- High bending strength
- Vandal resistant
- SANS 1749 compliant finishing coat
- Available with an access opening with a cover manufactured from glass filled nylon, impregnated in the same colour as the surface coat
- Cable entry
- Circuit breaker protection

### Internal site perimeter lighting (see through fences)

Zela LED luminaires of 37 Watt power rating are used for the internal site perimeter fence. The luminaires will be SABS certified and are available in symmetrical and a-symmetrical lighting distribution configuration. LED light source will be of cool white type. Luminaires will be constructed from high pressure die-cast aluminium with grey powder coated finish and high impact acrylic protector. The luminaires will have an IP rating of at least IP66 and have integrated thermal protection.

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The fenced section of the internal site perimeter will be lit with a-symmetrical lighting.

Luminaires will be mounted at a height of 2.325 m (top of luminaire) on glass fibre reinforced (GRP) poles and with a 6.780 m spacing. Post tops will be positioned on the "outside" of the satellite station internal site perimeter and approximately 1 m from the fence.

Two 25 mm diameter PVC conduits will be installed from the underside of the generator termination cabinet to within the closest post top luminaire as per detailed construction drawing for post top lighting (see Annexure .... for trenching and construction details). The conduits will lie in parallel in the trench towards the internal perimeter fence and continue 1 m past the perimeter fence position with one conduit then turning in the trench towards the northern post top luminaire and the other conduit turning in the trench towards the southern post top luminaire.

Two 2.5 mm<sup>2</sup> two core plus earth electrical cables will be terminated in the termination block within the service opening of the post top. The supply line conduit will not be terminated in the post top gland plate. The individual conduit routes to the next post tops in opposite directions will be mounted to the internal gland plate. Two 2.5 mm<sup>2</sup> two core plus earth electrical cables will diverge from this point.

Two 2.5 mm<sup>2</sup> two core plus earth electrical cabling will be used for the circuit. One 10 A 6 kA circuit breaker will be installed in the generator cabinet supplying the entire satellite station perimeter lighting. Both 2.5 mm<sup>2</sup> two core plus earth electrical cables will be connected to the 10 A 6 kA circuit breaker.

### **Walled perimeter lighting**

BEKA Series 21 LED luminaires of 20 Watt power rating are used on the internal wall surface for the walled perimeter sections. The luminaires will be SABS certified. The LED light source will be of cool white type. Luminaires will be constructed from high pressure die-cast aluminium with grey powder coated finish (same as Zela powder coated finish) and high impact acrylic protector. The luminaires will have an IP rating of at least IP65.

Series 21 luminaires will be mounted on the internal side of the perimeter wall and at a height of 2160 mm (top of luminaire). Spacing will nominally be 6.4 m between luminaires.

The SAPS version of the Zela luminaire will be mounted on the external wall next to the pedestrian entrance as per drawing details. The SAPS version has a blue diffuser and is of 19 Watt power rating for the specific purpose of indicating the public entrance to the premises. The SAPS blue version will also be of a-symmetrical lighting configuration.

### **Public entrance and signage wall lighting**

**See Annexure 8**

External façade right next to the pedestrian access gate shall be supplied with 1 x 19 Watt wall mounted Zela LED luminaire. The SAPS blue version will also be of a-symmetrical configuration. The luminaire shall be the SAPS version. The SAPS version has a blue protector for the specific purpose of indicating the public entrance of a police station. The luminaire shall be installed on an OEM galvanised wall mounted bracket.

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A 37 Watt, cool white, Zela LED with a-symmetrical configuration to be wall mounted in the middle of the signage wall right above the SAPS emblem. The luminaire shall be installed on OEM galvanised wall mounted bracket to provide sufficient lighting on signage.

Where the signage wall is extended to also form an external perimeter wall along the length of the external parking area 37 Watt, cool white, Zela LED luminaires with a-symmetrical light distribution will be mounted on OEM wall mount brackets on the external façade. Spacing of these luminaries will be as indicated on the signage wall detailed drawing (Annexure .....). A-symmetrical configuration as per drawing details.

Where external signage wall lighting is extended to provide lighting on the external public parking bays the internal bulkhead lighting will be spaced equal to the external luminaries. The 63 mm diameter round draw boxes for the external luminaries will be installed at a height of 2080 mm to ensure the luminaries will be at the correct height once installed on the wall mount pedestals.

The 63 mm diameter round draw boxes for the equally spaced bulkheads on the internal wall surface will be installed at a height of 2160 mm to ensure the luminaries will be at the correct height, as specified in the "walled perimeter lighting" section of this specification.

### **Generator yard lighting**

Four 19 Watt, cool white, RoughGuard LED luminaries to be mounted to the underside of the indicated roof trusses as per detailed generator yard drawing. The luminaires will SABS certified. The LED light source will be of cool white type. Luminaires will be constructed from high pressure die-cast marine grade aluminium with grey powder coated finish and high impact polycarbonate diffuser. The luminaires will have an IP rating of at least IP65. Luminaries will be ordered as "manufactured without side entries and through wiring". The luminaries will be installed slightly off centre to allow use of the rear entry cabling position.

An industrial grade weatherproof (IP66) rotary type light switch (enclosed isolator) with synthetic body construction (WACO ERA L1944 – 75 mm x 75 mm x 60 mm) will be installed at a height of 1200 mm from floor surface as per detailed generator yard drawing.

25 mm diameter PVC conduit will be installed from the underside of the generator termination cabinet to the inside edge of a generator yard fence post. The conduit route will run continuously up the perimeter fence post and be connected into the rotary type light switch by means of a 25 mm PVC male adaptor. The conduit route will continue upwards to a 25 mm PVC T-junction from the rotary type light switch and reticulate to the four undercover luminaries as per detailed generator yard drawing as well as the four undercover luminaries as per detailed water storage yard drawing.

The conduit route along the length of the generator yard perimeter fence post and along the trusses will be mounted by means of raised saddles every 400 mm.

Galvanised posidrive screws will be used for mounting all conduit saddles, rotary type light switches and luminaries.

1.5 mm<sup>2</sup> two core plus earth electrical cabling will be used for the circuit. A single 10 A 6 kA circuit breaker will be installed in the generator cabinet supplying both the generator yard lighting as well as the undercover carport lighting.

### **Water storage yard lighting**

Four 19 Watt, cool white, RoughGuard LED luminaires to be mounted to the underside of the indicated roof trusses as per detailed generator yard drawing. The luminaires will SABS certified. The LED light source will be of cool white type. Luminaires will be constructed from high pressure die-cast marine grade aluminium with grey powder coated finish and high impact polycarbonate diffuser. The luminaires will have an IP rating of at least IP65. Luminaires will be ordered as "manufactured without side entries and through wiring". The luminaires will be installed slightly off centre to allow use of the rear entry cabling position.

### **Undercover carport lighting**

Three 19 Watt, cool white, RoughGuard LED luminaires to be mounted to the underside of the indicated roof trusses as per detailed generator yard drawing. The luminaires will SABS certified. The LED light source will be of cool white type. Luminaires will be constructed from high pressure die-cast marine grade aluminium with grey powder coated finish and high impact polycarbonate diffuser. The luminaires will have an IP rating of at least IP65. Luminaires will be ordered as "manufactured without side entries and through wiring". The luminaires will be installed slightly off centre to allow use of the rear entry cabling position.

A single luminaire will be mounted in the centre of each two undercover carport parking bays.

Undercover carport luminaires will be switched by means of a National NS116 photocell mounted as per detailed site layout drawing. The photocell will be installed within a rectangular bulkhead type light fitting in a position not exposed to direct sunlight. No Sprague will be allowed in the entire installation.

A 25 mm diameter PVC conduit will be installed from the underside of the generator termination cabinet to the inside edge of the closest carport post to the generator yard. The conduit route will run continuously up the carport post and be connected into the photocell bulkhead body by means of a 25 mm PVC male adaptor. The conduit route will continue onwards from the photocell bulkhead body and reticulate to the three carport luminaires as per detailed site layout drawing. 25 mm PVC T-junctions will provide branch offs to the first two carport luminaires, with a 25 mm PVC short radius elbow providing entry into the last carport luminary.

The conduit route along the length of the carport post and along the trusses will be mounted by means of raised saddles every 400 mm.

Galvanised posidrive screws will be used for mounting all conduit saddles, photocell bulkhead and luminaires.

1.5 mm<sup>2</sup> two core plus earth electrical cabling will be used for the circuit. One 10 A 6 kA circuit breaker will be installed in the generator cabinet supplying both the generator/water storage yard lighting as well as the undercover carport lighting.

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## **General**

Conduits installed in trench to generator yard position will stand up at least 600 mm above natural ground level and will be plugged to prevent ingress of soil. The conduit upstand position are to be exactly as per drawing details. Measurements will be indicated on the satellite station site layout.

For construction of the satellite station perimeter lighting the contractor will install all draw boxes, conduits, weather resistant slide lid boxes wall mount pedestals, electrical cabling and luminaires as described in this specification and indicated on the detailed construction drawings. These installations are inclusive of the trenches, conduit, cabling and luminaires indicated in the cells off loading yard.

The contractor's scope of work will also include the installation of weather resistant slide lid box, 30 A 50 mm x 100 mm isolator and associated conduit from the back of and under the short side wall next to the vehicle entrance for gate motor.

For construction of the larger site perimeter lighting the contractor will install all draw boxes, conduits and weather resistant slide lid boxes as indicated on the on the site layout drawing. Draw wires are to be installed in ALL conduit in the walled perimeter sections of the larger site. No photocells, wall mount pedestals, electrical cabling, post tops or luminaires to be installed on the greater site portion.

The contractor will not be responsible for construction of the indicated manholes and 110 mm diameter sleeves indicated on the satellite station site drawing.



# **SOUTH AFRICAN POLICE SERVICE**

## **ANNEXURE J**

### **SUPPLY, INSTALATION & COMMISSIONING OF OUTDOOR STANBY GENERATOR**

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