

19/1/19/1/122 TB(22) Addendum



KLIPRIVER POLICE STATION: CONTRACT: SECURITY UPGRADE



SOUTH AFRICAN POLICE SERVICE

**SUPPLY, INSTALLATION AND COMMISSIONING OF
SECURITY LIGHTS
KLIPRIVER POLICE STATION
GAUTENG PROVINCE**

**COMPILED BY: SAPS, Division: Supply Chain Management
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1. INTRODUCTION

The South African Police Service under Supply Chain Management Division has a requirement to install new security lights and supply electrical cable to motor gate at Klipriver Police Station in Gauteng Province, South Africa, occupied by the South African Police Service (SAPS).

2. SCOPE OF WORKS

The electrical scope of work entails the new installation of perimeter lights, removed existing bulkhead fitting and supply electrical point for new installation of motor vehicle gate.

Exterior lighting

Currently there are no perimeter light fittings, only few wall mounted bulkhead and their lighting level have decrease gradually through the life of installation.

Installation of 40 LED post top luminaires, support by 3,6m poles, should be positioned on the inside of the perimeter approximately 1m from the fence and with a spacing of $\pm 10m$ will provide sufficient lighting.

The lighting control will be operated manually (10A circuit breaker) and automatically (photo-cell) and manually control will override the automatic control.

22 Watt decorative LED post top mounted on the wall with pedestal should be installed for SAPS signage and 22 Watt SAPS blue version of decorative LED post top mounted on the wall with pedestal.

The entrance towards CSC there is existing bulkhead that cause glare, should be removed and install LED bulkhead with IP rating 65 underneath the veranda.

Supply electrical cable to motor gate

There is one entrance gate phasing north side of the building, adjacent to the main road (46 Waterval Street).

From the main Distribution Board (DB) one power point circuit to isolator (contained in weather resistant enclosure) at vehicle gate for installation of gate motor.

The Contractor will provide all equipment, labour, material, and transportation to supply, installation and commissioning as per scope of works that must including all components and sundries, tests, etc. required to bring the installations to the working order intended, compliance and guarantee.

The Contractor shall ensure that he/she is conversant with the technical specification and applicable standards.



3. REGULATIONS, STANDARDS AND REFERENCES

The security lighting installation shall comply with the following specifications:-

- SANS 10142-1: The wiring of premises.
- SANS 10389-2: Exterior Security Lighting
- SANS 475: Luminaires for interior Lighting, Street lighting and Floodlighting
- SANS 121: Hot-dip galvanized coatings on fabricated iron and steel articles
- SANS 1777: Photoelectric lighting control unit for lighting
- SANS 10222-1-5-2: Electrical Security Installation

- SANS 60598-2-5: Floodlights.
- SANS 60947-2: Low voltage switchgear and control gear. Part 2: circuit breakers.
- SANS 10198: The selection, handing and installation of electric power cables rating not exceeding 33KV
- SANS 1186-1: Symbolic safety signs part 1 Standard signs and general requirements
- SANS 791: Unplasticized poly (vinyl chloride)(PVC-U) Sewer and drain pipes and pipe fittings
- SANS 1507: Electric cables with extruded solid dielectric insulation for fixed Installation
- SANS 1029: Miniature substations for rated ac voltages up to and including 24kV
- SANS 62031: LED modules for general lighting – Safety Specifications
- SANS 60598: Luminaires – Part 1: General requirements and tests
- SANS 10400: The application of the National Building Regulations.
- South African Occupational Health and Safety Act (Act 85 of 1993).

4. EXECUTION OF WORKS

The Contractor shall submit to the SAPS Engineer a detailed programme of the works within 5 days from the acceptance of this tender showing the intended method, stages and order of work execution in coordination with the building construction programme, together with the duration he estimated for each and every stage of the Works. The programme shall include at least the following:-

- Dates for the placement of orders for equipment and materials.
- Dates of commencement and completion of every stage of the works in line with the building construction programme.
- Dates of completion, testing and commissioning.
- All luminaires to be connected to emergency power supply.



5. LOW VOLTAGE DISTRIBUTION CABLES

Low voltage distribution cables to be supplied and installed shall comply with SANS1507 Specification for low voltage insulated wire, power and multi-core control cables.

Table 6.1: LV distributor cable length estimate

| Description | Cable length |
|---|--------------|
| Cable, 600/1000 V, 4mm ² , 4 core stranded copper conductor, flame retardant, PVC insulated, bedded and sheathed with galvanised steel wire armoured and include insulated floating earth. | 505 m |
| Supply amoured SWA cable, low voltage, 3 core PVC/SWA SHEATHED, Cu (SANS 1507-3), in ground/ducts/air (2,5mm ²) complete with accessories | 78 m |
| Supply and install flat twin and earth, Cu, PVC insulated white 2.5mm ² | 350 m |

NB: The contractor shall check cable lengths on site and shall order the cables accordingly to ensure that no joints have to be made and that there are no cable off-cuts after the installation of the cables.

6. LOW VOLTAGE TERMINATIONS

All low voltage terminations to be supplied and installed, and shall comply with SANS 10198 specification for LV accessories.

7. CABLE TRENCHING AND INSTALLATIONS

- The Contractor shall ensure that the cable trenches are excavated to the specified depth and that the cables are laid with the specified distances between the cables (See table below). Where the cables cross other services, the clearances as specified in the relevant section shall be maintained. Where the cables cross other services a concrete slab shall be installed above the cable at the point of crossing of the two services.

The following are the cable trench widths and depths and spacing between cables as specified in SANS 009.



Table 8.1: Cable trench depths, width

| Cable Type | Depth below final ground level | Typical Trench Dimensions |
|----------------------------|--------------------------------|---------------------------|
| LV cables | 500 mm | 300 mm |
| Install of pole base plate | 600 mm | 400 mm |

- Where site constraints dictate it is necessary to install services within common trench, it is imperative that the minimum horizontal separation of 600 mm is maintained between Municipal services and any other services.
- The length of the cable that must be excavated at the time must not exceed 300 m, following which a length of cable must be laid, inspected and the cable trench backfilled before further excavations are carried out (i.e. standardize on the drum length).
- Rocks removed from excavations shall not be used for backfilling.
- Cables shall be laid in accordance with manufacturer’s recommendations and SANS 10198.
- Cables shall only be laid in trenches having smooth flat bottom surfaces. Where the surfaces are irregular they shall first be smoothed off before installing the cables.
- Where cables are installed in trenches cut in rock, a 75 mm layer of fine sifted earth must be placed on the bottom of the trench to serve as bedding for the cables. Final depth of the cable shall still be in accordance with the table below.
- All cables shall be installed in straight lines as far as possible and excessive distortion and weaving in the cable length is not accepted.
- After the cable has been installed it must be covered with a 200 mm layer of well-compacted earth. In the case of a trench cut into rock, this layer is to consist of fine sifted earth.
- The soil shall be removed and adequate bedding soil obtained for backfilling.
- Cables, which have been laid, must be energized as soon as possible to limit the possibility of theft of cable.
- The minimum requirements of SANS 10198 shall be complied with, when backfilling cable trenches. Also, adhere to code of practice.
- Danger tape to be installed 300mm below natural ground level in cable trench.

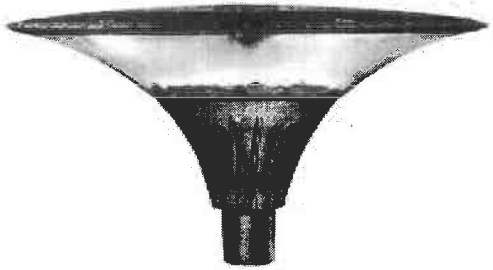
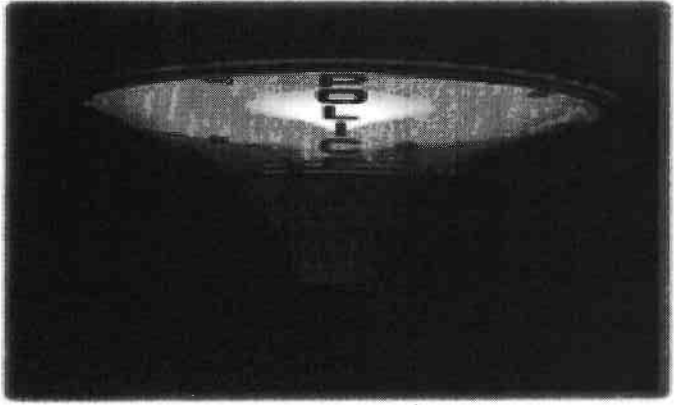


8. CABLE SLEEVE PIPES

- At concrete area, both MV and LV cables shall be laid at a depth of 0.2 m below the concrete floor surface. These cables shall be laid in black corrugated flexible PVC sleeves, 50 mm in outer diameter and must be supplied with pilot strings. The protective sleeves shall comply with SANS 791 specification for flexible protective PVC sleeves. The low voltage cables shall be ramped up and down at reach side of these crossings points accordingly.
- Sleeves must protrude by a minimum of 0.2 m beyond the kerbstone.
- All sleeves must have a draw wire and be suitable sealed at both ends. As a standard each crossing shall consist of sleeves in trefoil configuration.
- The location of the sleeves shall be marked with an 'E' embossed into the kerb at both ends.
- The protective sleeves are to be installed by way of directional operated trenchless technology. Other installation methods are to be approved by the SAPS engineer.

9. TECHNICAL SPECIFICATION FOR LIGHT FITTINGS

A. DECORATIVE LED POST TOP TECHNICAL SPECIFICATION

| | |
|---|--|
|  |  |
| <p>Post Top: 36W LED Post Top Police Light</p> | <p>SAPS 19W LED Post Top Police version (Blue Light)</p> |
| <p>Product Description</p> | <p>Traditional post top luminaire range designed for decorative residential road lighting, and general area lighting where the architecture and surroundings are of a traditional period. The luminaire consists of a spigot base, optical compartment with integral control gear and top cover and is designed to operate LEDs up to 54W. It is also available in a wall bracket version. The cable entry</p> |



grommet can accommodate a connection of 3 x 1.5mm² cabtyre, with an overall diameter of 9mm.

Optical compartment: IP 65

The IP rating is supported by a certified SABS test report.

The top cover is robustly constructed, weatherproof, hailproof, corrosion proof and vandal resistant. Manufactured from glass-filled nylon and firmly secured with a single injection moulded dome nut. It is also coated white on the inside to improve the efficiency of the luminaire. A silicon sponge gasket fixed into a groove to seal the top cover against the diffuser to IP 65.

The spigot base manufactured from high-pressure die-cast aluminium, powder coated for added protection in the colour specified. The luminaire secured to the pole by three M8 stainless steel grub screws.

The high-impact non-discolouring acrylic diffuser bowl hexagonal in shape and smooth on the outside, but has internal prisms to reduce the direct glare component. A drip ridge provided at the bottom edge avoids direct rainwater contact with the gasket.

The control gear incorporated inside the luminaire is mounted on a removable gear tray. The nominal voltage is rated at 198-264V 50Hz single phase. All control gear components are removable and bear the relevant SABS mark. All internal wiring are Teflon[®] coated with protective sleeving to prevent damage by possible abrasion.

All screws, bolts and metal parts are stainless steel or non-corrosive material. Mains connections by means of a suitable screw terminal block with a wire clamping contact. The luminaire power factor corrected to a minimum of 0,9.

The LED version can be retrofitted into an existing non-LED version of the same luminaire and offers optimal photometric performance and high reliability to reduce energy consumption and maintenance. The IP66 LED housing compartment optimizes the thermal operating



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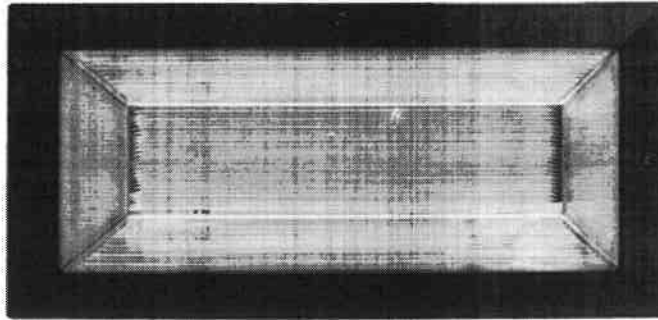
| | environment around the LEDs enabling the long useful lifetime (100 000hrs, L70). | | | | |
|-------------------------------|--|------------------|--------|----------------------------------|-----------|
| Light color | Neutral White (4000K) | | | | |
| Color rendering (Ra) | >70 applicable to LED | | | | |
| Lumen package 37W 54W | 5157lm 7676lm | | | | |
| Description | LEDs | Line Current (A) | Lumen* | Lifetime Residual Flux @ tq 25°C | |
| | | | | @60 000h | @100 000h |
| LED 37W | 16 | 0.16 | 5157 | 90% | 70% |
| LED 54W | 24 | 0.24 | 7676 | | |
| Electronic control Gear | Constant Current LED Driver IP66 | | | | |
| Fixing | Pole Mount – 3 x M8 grub screws Wall Mount – 2 x M8 bolts | | | | |
| Line Voltage | 230VAC | | | | |
| Mains voltage Tolerance (AC) | 230V +3%/-10% | | | | |
| Line frequency | 50Hz | | | | |
| Electrical Safety Class (IEC) | Class I or II | | | | |
| Surge protection | Yes LED: 10kV/10kA | | | | |

Environment

| | |
|---|------------------------|
| Storage temperature | - 40°C to +60°C |
| Operating temperature (Ta) | - 35°C to + 35°C |
| Enclosure Tightness | IP 66 |
| Enclosure Mechanical Withstand Impact | IK 08 |
| Enclosure Mechanical Withstand Vibrations | Modified IEC 60068-2-6 |



B. EXTERIOR LED BULKHEAD



| | |
|----------------------------|--|
| <p>Product Description</p> | <p>The luminaire base and trim ring is manufactured of a high-pressure die-cast marine grade aluminium (EN 1706 AC-44300). The trim ring casting is mounted onto the base casting by means of stainless steel M5 Allen head screws, located outside the lamp compartment. The base and trim are finished with epoxy powder coating.</p> <p>A clear prismatic or opal non-discolouring high impact acrylic injection moulded diffuser is used throughout the range. It shall offer excellent vandal resistance, be highly translucent and shall not discolour even when subjected to the harshest UV environments. A silicon sponge gasket shall be fitted into a special groove in the diffuser to prevent damage to the gasket during installation and to achieve the certified ingress protection rating of IP 65.</p> <p>It shall be designed to operate LEDs from 1095lm (8W) to 2190lm (16W). The luminaire shall be supplied with a 300mm supply lead.</p> |
| <p>Light source</p> | <p>Light Emitting Diode (LED)</p> |
| <p>Colour temperature</p> | <p>LED : Neutral White (4000K)</p> <p>Optional : Warm White (3000K)</p> |

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|-------------------------------|--|
| Materials and finishing | Base – High-pressure die-cast marine grade aluminium (EN 1706 AC-44300) Protector – High impact Acrylic (IK06) |
| Finish | Black - RAL9017 textured finish (Standard) White - RAL9003 textured finish Silver - RAL9023 textured finish Optional : other RAL colours available on request |
| Diffuser | A clear or opal non-discolouring high impact acrylic injection moulded diffuser. |
| Fixing | 4 x Raised mounting holes \varnothing 6 mm (outside lamp compartment) |
| Dimensions (L*W*H) | 341mm x 195mm x 101mm |
| Weight (with gear) | 2.5kg |
| Line Voltage | 230VAC |
| Mains voltage Tolerance (AC) | 198 - 264V |
| LED : | Constant Current Driver |
| Line frequency | 50Hz |
| Electrical Safety Class (IEC) | Class I or II |
| Surge protection | Yes - 10kV/10kA |



10. TESTING AND COMMISSIONING

- All installed equipment shall be commissioned and tested as per the manufacturer's recommendations. The results of all tests must be recorded and submitted to relevant SAPS electrical engineer approval.
- Routine factory tests reports shall accompany all equipment supplied and shall be given to the SAPS Electrical Engineer, prior to the equipment being installed and commissioned.
- Prior to handover, on site final test reports as listed in SANS 1029, SANS 10198 and SANS 10142 for all equipment shall be given to the relevant SAPS electrical engineer.
- Contractor to provide COCs and certificates to SAPS electrical engineer prior to energizing of equipment.

11. CLEANING OF SITE

- After completion of construction activities, the contractor shall remove all his equipment and site facilities from the site and leave the site in a tidy condition. The cost thereof must be included for in the P & G's.

12. PREAMBLES TO SCHEDULE OF QUANTITIES

General – The Schedules of Quantities define the scope of the Engineering Works in terms of the measurement and payment parameters specified. The quantities stated on the schedules of quantities are provisional and are subject to re-measurement upon completion. Bidders shall quote for all equipment and all accessories specified within this document.

13. SCHEDULES OF QUANTITIES

| ITEM | DESCRIPTION | UNIT | QTY | TARRIF /RATE | AMOUNT (R/c) |
|---|---|------|-----|--------------|--------------|
| NOTE: The following work is to be carried out by an approved specialist Supplier: Supply, installation and commissioning security lights: the following systems including all components and sundries, test, etc. Required to bring the installations to the working order intended, compliance and guarantee. | | | | | |
| 1 | Supply amoured SWA cable, low voltage, 4 core PVC/SWA SHEATHED, Cu (SANS 1507-3), in ground/ducts/air (4mm ²) complete with accessories | p/m | 505 | | |

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| | | | | | |
|----|---|-------------------|-----|--|--|
| 2 | Supply PVC insulated, non-sheathed, copper conductor/cable, low voltage single core, stranded (4mm ²) | p/m | 505 | | |
| 3 | Supply armoured SWA cable, low voltage, 3 core PVC/SWA SHEATHED, Cu (SANS 1507-3), in ground/ducts/air (2,5mm ²) complete with accessories | p/m | 78 | | |
| 4 | Supply flat twin and earth, Cu, PVC insulated white 2.5mm ² | p/m | 350 | | |
| 5 | Supply 20 Amp, three pole. 3 kA, circuit breaker | no | 2 | | |
| 6 | Supply 20 Amp, single pole. 3 kA, circuit breaker | no | 1 | | |
| 7 | Supply 15 Amp, single pole. 3 kA, circuit breaker | no | 1 | | |
| 8 | Supply Photocell (Day Switch) 15Amp, complete | no | 2 | | |
| 9 | Supply Surge Protection Device (SPD) three phase | no | 1 | | |
| 10 | Contactor 20A 3 pole 380-400 AC | no | 2 | | |
| 11 | Supply and install Galvanize Pole - 3.6m hot dipped galvanize pole, base plate, backing board & inspection cover with tamper proof screws and 10Amp control Circuit Breaker | no | 40 | | |
| 12 | Excavation depth of 0,5 and width of 0,4m of soft rock/hard rock & backfilling (cable installation) | c ³ /m | 410 | | |
| 13 | Excavation depth of 0,6 and width of 0,5 m of soft rock/hard rock & backfilling (poles installation) | c ³ /m | 40 | | |
| 14 | 25 Mpa concrete plinth | sum | 1 | | |
| 15 | Supply and install electrical warning tape - buried cable | m | 410 | | |

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| | | | | | |
|----|---|-----|----|--|--|
| 16 | Reinstate soft rock, hard rock concrete and paving after cable installation | sum | 1 | | |
| 17 | Supply post top luminaires – 38 watt decorative LED (see specification for LED post top) - IP 66, complete or similar approved | no | 40 | | |
| 18 | Supply pedestal post top luminaires – 22 watt Police blue light version decorative LED (see specification for LED post top) - IP 66, complete or similar approved | no | 1 | | |
| 19 | Decommission, disconnect, strip and store existing wall mounted light fitting | no | 1 | | |
| 20 | Supply exterior 16W LED bulkhead (see specification for LED bulkhead) IP 65 rating, neutral white (4000k), complete or similar approved | no | 2 | | |
| 21 | Supply galvanized conduit rates to include for waste, couplings, saddles, adaptors, inspection box, sets, cold galvanized paint on joint, etc. where applicable. (50 mm) | p/m | 12 | | |
| 22 | Weather surface mounted box, with IP rating 65, isolators 20 Amp double | no | 2 | | |
| 23 | Supply cable sleeve pipes: HDPE sleeves to SANS/SABS specification: 50mm | p/m | 12 | | |
| 24 | Remove rubbish and waste management | sum | 1 | | |
| 25 | Contingency Sum (8%) | sum | 1 | | |
| 26 | Testing and Certification: Certification of Compliance (COC), with regards to all electrical reticulation, connections, wiring, equipment & commissioning as per scope of works | no | 1 | | |
| 27 | Artisan | sum | 1 | | |
| 28 | Semi-Skill | sum | 1 | | |
| 29 | Casual labour | sum | 1 | | |



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| | | | | | |
|---|------------|-----|---|--|--|
| 30 | Travelling | sum | 1 | | |
| SUB-TOTAL | | | | | |
| Add VAT: @ 15% | | | | | |
| TOTAL TENDER PRICE - including VAT @ 15% | | | | | |