TITLE	**SPECIFICATION FOR LED POST TOP LUMINAIRES**	REFERENCE **CP_TSSPEC_015**	REV **7**
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FOREWORD

The work group was appointed by the Distribution Study Committee, which, at the time of approval, comprised of the following members

Zamokuhle Magagula	Secondary Plant: Technical Support
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2016

INTRODUCTION

Post top luminaires are used for the lighting of public thoroughfares and roadways, contributing to road safety as well as public safety. The reliability and safety of these luminaires have a direct impact on levels of customer satisfaction as well as quality of supply.

1. SCOPE

This specification covers City Power's requirements for the manufacture, testing, supply and delivery of post top luminaires in accordance with SANS 60598.

2. NORMATIVE REFERENCES

The following documents contain provisions that, through reference in the text, constitute requirements of this specification. At the time of publication, the editions indicated were valid. All standards and specifications are subject to revision, and parties to agreements based on this specification are encouraged to investigate the possibility of applying the most recent editions of the documents listed below.

ARP 035, *Guidelines for the installation and Maintenance of street lighting*

BS 1490: *Specification for aluminium and aluminium ingots and castings for general engineering purposes.*

ISO 4762: *Hexagon socket head cap screws*

SANS 60598-1, *Luminaires – Part 1: General requirements and tests*

SANS 60598-2-3, *Luminaires – Part 2: Particular requirements – Section 3: Luminaires for road and street lighting*

SANS 529: *Heat-resistant wiring cables*

SANS 1088: *Luminaire entries and spigots*

SANS 1091: *National colour standard*

SANS 475: Luminaires for interior lighting, streetlighting and floodlighting — Performance requirements

SANS 1507: *Electric cables with extruded solid dielectric insulation for fixed installations (300/500 V to 1 900/3 300 V) Part 1 - General and Part 2 – Wiring cables.*

SANS 121, *Hot-dip galvanised coatings on fabricated iron and steel articles – Specifications and test methods*

VC 8011: *Lampholders*

CP_TSSPEC_011, *Specification for discharge lamps*

CP_TSSPEC_073, *Specification for control gear for street lighting*

3. DEFINITIONS AND ABBREVIATIONS

The following definitions and abbreviations shall apply to this specification:

3.1 **HPMV (or MV):** High Pressure Mercury Vapour

3.2 **HPS:** High Pressure Sodium.

3.3 **MH:** Metal Halide

3.4 **/E (suffix):** Elliptical e.g. 100 W HPS/E

3.5 **/T (suffix):** Tubular e.g. 100 W HPS/T

3.6 **CFL :** Compact fluorescent

Note: 3.4 and 3.5 above refer to the type of lamp with which a particular luminaire is designed to be used.

4. REQUIREMENTS

4.1 General construction

4.1.1 The luminaires shall comply with SANS 60598-1, SANS 60598-2-3 and/or SANS 475, and be of the totally enclosed type.

4.1.2 The luminaire should be robustly constructed from marine grade (LM6) die-cast aluminium to prevent undue deterioration in its safe operation or appearance during normal life when operated in climatic conditions prevailing in a tropical country

4.1.2 The luminaire should be designed to enable ease of maintenance and replacement on site of the LED photometric engine without having to remove the whole luminaire, to allow integration of future technological development of the LEDs and power supply

4.1.3 Attachment of the luminaire base casting to its bracket arm should be by means of at least two stainless steel M8 grub screws into stainless steel sockets or any other methods to prevent cathodic corrosion between stainless steel and aluminium. The attachment of the luminaire should be designed to withstand wind speeds of up to 150km/h on the projected surface of the luminaires, without due deflection

4.1.4 The Post Top luminaire shall be certified, in terms of SANS 60598, to operate at an ambient temperature of -15°C to 45°C.

4.1.5 The control gear should be housed within the body of the luminaire in separate gear compartment sealed with a hinged, non-corrosive lid. Covers and other parts that provide protection against electric shock should have adequate mechanical strength and should be reliably secured so that they will not work while in service.

4.1.6 The luminaires shall be designed for use under conditions of heavy atmospheric pollution and exposure to high levels of solar (including ultraviolet) radiation, at a mean altitude of 1 800 m, and shall be certified, in terms of SANS 60598 to operate at ambient temperatures from -15°C to +65˚C. The luminaires will also be exposed to wind, rain, hail and sleet in service.

4.1.7 The luminaires shall have a class protection rating of a minimum of IP 66. This is a minimum rating and preference may be given to designs offering higher IP ratings if it can be proven

that such ratings will provide a material benefit to City Power in terms of extended gear life, increased maintenance intervals, etc.

4.1.8 All ratings must be certified by a test report confirming compliance with SANS 60598-1 as well as clause 5 of this specification. The test report shall be issued by an accredited test authority acceptable to City Power. City Power's sole representatives who shall decide what constitutes acceptable or not shall be the Senior Manager: Public Lighting or the Chairman of the Lighting Work Group of the Distribution Study Committee.

4.1.9 All luminaires offered under this contract shall bear either the SANS 60598 mark, or the IEC 60598 mark.

4.1.10 The luminaires shall consist of a spigot base of 76 mm diameter (in accordance with SABS 1088), a LED compartment with integral control gear (on a removable tray) and a top canopy. The Post Top shall be a LED replacement for existing CFL, HPMV and HPS Post Tops.

4.1.11 The luminaires shall at minimum consume 55% less energy (input power) when compared to the luminaire they are designed to replace

4.1.12 The LED life expectancy shall be 60,000 hours at 80% lumen maintenance.

4.1.13 All luminaires shall be delivered completely assembled with control gear, reflectors (if applicable), bowl (diffuser) and housing.

4.1.14 The luminaires shall be designed such that no maintenance and/or replacement of the LED module, driver and/or any other component shall be required for at least ten years

4.1.15 Due attention shall be paid to accessibility of parts and to other requirements necessary for efficient maintenance and cleaning, where required. If screws are used to secure covers, they shall be held captive when opened

4.1.16 The driver shall be mounted internally and be replaceable with the aid of commonly available hand tools

4.1.17 The LED module or array shall be designed in such a way that the failure of one LED shall not cause additional LED's to switch off.

4.1.18 The luminaires shall be weather-proof, hail-proof, insect-proof, corrosion-proof and resistant to both solar and ultra-violet radiation. In addition, they shall be robustly constructed and resistant to vandalism. All parts and components of the luminaire shall be designed to shed water, and no accumulation of condensation or precipitation shall occur.

4.1.19 The luminaires shall be constructed from durable lightweight materials for which all parts are compatible, and failure or deterioration shall not occur due to electrolytic action or by differential thermal expansion. Luminaires made of DMC (Dough Moulding Compound) shall not be accepted, unless accompanied by comprehensive test reports acceptable to the Senior Manager: Public Lighting certifying that the luminaires have successfully passed approved (by City Power) accelerated ageing tests and that the luminaires have a satisfactory performance history.

Note: Further details on tests can be found under clause 5 of this specification.

4.1.20 The spigot base shall be manufactured from powder coated high pressure die cast aluminium complying with BS 1490. It shall be secured to the pole spigot by means of at least three stainless steel hexagonal head grub screws complying with ISO 4762 (minimum size M8). Stainless steel helicoils are not required. The spigot base shall have a diameter of 76 mm and conform to the requirements of SANS 1088.

4.1.21 Spigot entries shall be designed to fit easily over the existing bottom entry and shall comply with Table 1 of SANS 1088 as follows: For Type 3 luminaires (bottom entry): Nominal size 76 x 75 mm.

4.1.22 All ferrous components shall be hot-dip galvanised in accordance with SANS 121 for heavy duty applications. Small components (clips, screws, bolts, nuts, washers, etc.) shall be manufactured from stainless steel.

4.1.23 The luminaires shall be a colour that is an acceptable match to colour number F48 (cloud grey) of SANS 1091, or any other standard colour that may be required. Painted luminaires shall not be accepted unless the paint finish is guaranteed for a minimum period of 10 (ten) years against peeling or flaking under the service conditions.

4.1.24 The diffuser bowl, which may be round or hexagonal in shape, shall have a means to prevent direct contact by rainwater with the gasket, which shall be permanently fitted into the canopy (e.g. in a tongue and groove arrangement). The gasket shall form a seal when the diffuser is in the closed position, preventing the entry of dust, moisture and insects into the LED compartment. The gasket shall be made from silicon sponge or other material which is not subject to compression or deterioration in service. If any material other than silicon sponge is offered, supporting documentation with respect to its suitability in this application shall be provided.

4.1.25 A similar arrangement to that detailed in clause 4.1.25 above shall be incorporated at the junction between the diffuser and the spigot base.

4.1.26 The diffuser shall be heat-resistant and shall not discolour, even after prolonged exposure to light, both atmospheric and artificial. Diffusers shall be UV-stabilised and bidders shall submit documentation with respect to the properties of the material under service conditions (i.e. depreciation in light transmission over time and material degradation). Diffusers made of polycarbonate shall not be acceptable. However, since advances in material technology are continuously being made, all offers accompanied by the relevant documentation as detailed above will be considered.

Note: For safety reasons, glass is not a suitable material for inclusion into the luminaire. If glass is offered, it shall be treated (usually by heat) such that if subjected to force, no sharp edges capable of causing injury to any person or animal shall result. Upon impact, the glass shall break into granular form with no sharp edges. Full documentation with respect to the properties (performance and safety) of the glass shall be offered, failing which the offer shall be rejected. More information in this regard (including constructional and test requirements) can be found in section 3.6.5 of SANS 60598-2-3.

4.1.27 Diffusers shall not be subject to distortion or warping and shall be capable of being removed for cleaning.

4.1.28 Luminaires shall be fitted with National Electrical Manufacturers Association (NEMA) receptacle/base into which control unit shall be inserted on top of the luminaire for future connection.

4.2 Control Gear

As per ARP035;

The LED lumen properties are usually described as a function of current, but not a function of voltage. The constant voltage source driver cannot guarantee the consistency of the LED brightness and affect the reliability of the LED life and lumen maintenance. Therefore, a constant current source driver is mandatory. Additionally, the predicted lifetime of such an LED control gear should match the lifetime of the LED.

4.2.1. Control gear shall be fully housed within the body of the luminaire and shall be suitable for operation with the specified LED. Under no circumstances shall control gear be mounted above the LED or in a position where it may be adversely affected by the heat generated by the LED. The control gear shall be mounted so that control gear repair or replacement may be carried out without removing the luminaire from its mounting.

4.2.2. In order to minimise the detrimental effect of voltage fluctuations (especially over-voltages) on LED and gear life, all control gear shall be rated at 240 V.

4.2.3. The control gear shall incorporate a thermal switch for protection when exceeding the case temperature.

4.2.4. Electronic control gear for 57W shall comply with:

- Performance acc to EN 60929
- Safety acc to IEC 61347-2-3
- RI suppression acc to EN 55015
- Mains harmonics acc. To EN 61000-3-2
- Immunity acc. To EN 61547

4.3 Electrical Requirements

4.3.1. The internal wiring of the luminaires shall comply with clause 3.10 of SANS 60598-2-3. It shall be flexible and **suitably rated to withstand the voltages and temperatures** encountered in service. All wiring shall comply with the requirements of SABS 1507 and where applicable, SABS 529. The wiring colours shall be as follows: live – red (or brown), neutral – black (or blue) and earth – green/yellow.

4.3.2. The LED module driver(s) should be suitable for operation with the specified rating of the luminaire on a 185 – 265V, 50Hz single phase system. All control gear components should be mounted on a removable gear tray to facilitate ease of maintenance.

4.3.3. The luminaire should incorporate a surge protection device mounted inside the gear compartment to withstand surges of up to 10KV /20kA and should be easily replaceable. The surge protection device shall fail in open circuit mode to protect the luminaire from further surges.

4.3.4. The luminaire shall operate at a power factor of 0.95 or higher and the harmonic distortion levels shall be limited so as to not cause interference on the electrical network.

4.3.5. The power supply or driver compartment shall be so designed that there is sufficient space to permit repairs, replacement of components and reassembly without difficulty and without the removal of the luminaire from its mounting.

4.3.6. The luminaire shall be EMC compliant to the SANS 55015 and SANS 61347-1 standard.

4.3.7. Terminals and electric connections shall comply with clause 3.9 of SANS 60598-2-3. In addition, the luminaire shall incorporate a terminal block mounted in a reasonably accessible position as close to the point of entry as possible. Preference will be given to designs incorporating terminal blocks located in the spigot base so that connection to existing wiring within a pole is easily made without the need to disassemble the luminaire. The material of the terminal block(s) shall be non-tracking and the terminals shall be made of non-corroding material such as brass. Terminals made of aluminium shall not be acceptable.

4.3.8. Any wiring passing through metal shall be suitably grommeted or otherwise protected to avoid abrasion of the insulation, as well as maintaining the integrity of the IP rating.

4.3.9. The luminaire shall be earthed in accordance with clause 3.8 of SANS 60598-2-3.

4.3.10. Metal parts of luminaires which may become alive in the event of an insulation fault and which are not accessible when the luminaire is mounted but which are liable to come into contact with the supporting surface shall be permanently and reliably connected to an earth terminal and shall withstand the test specified in SANS 60598-2-3. An earth terminal shall be provided in all instances, even if the luminaire is fully insulated and even if all conductive parts which could become alive in the event of an insulation fault are not accessible. This is to facilitate future wiring should the luminaire be replaced by one which requires an earth connection

4.3.11. Protection against electric shock (of at least IP 2X) shall be maintained for all methods and positions of installation in normal use. Protection shall also be maintained after removal of all parts which can be removed by hand.

4.3.12. All parts of an earth terminal shall be made of brass or similar corrosion-resistant material and the contact surfaces shall be bare metal and not painted or varnished surfaces.

4.3.13. All earth connections shall be affected by means of suitable lugs. All possibility of electrolytic corrosion shall be avoided.

4.4 Thermal management

4.4.1. The cooling fins should be designed in such a manner to prevent the accumulation of dirt, thus ensuring the continuous effective cooling.

4.4.2. Heat from the LED source should take the shortest path to the exterior by direct conduction or any other reliable form of cooling that will not compromise the useful life of the LEDs.

4.4.3. The printed circuit board (PCBs) should be fitted with temperature sensor that reduces the current to prevent any accidental overheating of the LEDs at higher than rated temperatures.

4.4.4. The Power Supply (driver) should incorporate a thermal switch to prevent exceeding the case temperature for maximum life time of equipment.

4.4.5. Full details of how the luminaire manages its temperature and the effect on lumen maintenance at various operating temperatures shall be supplied shall be provided.

4.5 Photometric Performance

4.5.1 All luminaires are required to provide a symmetrical light distribution. The luminaire efficiency (ratio of luminaire lumens to LED lumens) shall not be less than 0,75 and the light output ratio in the lower hemisphere shall not be less than 0,8 at 85˚. The luminance at this angle must be approximately 4 500 cd/m^2, and the luminous intensity must be approximately 500 cd. The flashed area of the lanterns shall not be less than 0,11 m^2.

4.5.2 The luminaire shall be completely glare free. This shall be achieved by incorporating a symmetrical indirect lighting reflector within the luminaire

4.5.3 The luminaire should incorporate high power LEDs with a colour temperature of between 4 000K to 5 000K., at a colour rendering index Ra ≥ 70. The total system efficiency should be at least 90 lm/W at the specified performance temperature (tq)

4.5.4 The luminaire should maintain at least 70 % of its initial luminous flux (L70) operating at an ambient performance temperature (tq) of 35 °C

4.5.5 Photometric data shall be supplied with each tender. This shall take the form of polar diagrams detailing the light distribution achieved by each luminaire.

4.5.6 The diffuser bowl shall be hexagonal or round in shape and shall be available in either a clear or opal version. The material of the bowl shall be as detailed in clause 4.1.27 e.g. high impact acrylic. Polycarbonate bowls will not be accepted. The diffuser bowl shall be smooth on the outside, but in the case of the clear diffuser bowl shall have internal prisms on the inside in order to reduce direct glare.

4.5.7 Full details of the optical and thermal properties of the diffuser as well as the light transmission depreciation over a period of not less than 10 years shall be provided.

4.5 Guarantee

4.6.1 A guarantee of each integrated solar street lighting luminaire for a minimum period of 10 years from the date of installation shall be provided.

4.6.2 This guarantee is primarily intended to be a material guarantee. This means that if any luminaire is unsuitable for use, or its IP ratings are compromised within a period of ten years from the date of delivery, it shall be replaced free of charge by the manufacturer.

4.6.3 Failure of the luminaire in terms of this clause would entail degradation of the luminaire material (e.g. Dough Molding Compound (DMC) or other polymeric material, or aluminium) by ultraviolet radiation for example, to a point where cracks or holes appear in the luminaire housing (or diffuser), thus compromising the structural integrity and IP rating of the luminaire it shall be replaced free of charge by the manufacturer.

5. TESTS

5.1 The tests for ingress of dust, solid objects and moisture shall be carried out in accordance with SANS 60598-1, SANS 60598-2-3 and SANS/IEC 475. Test reports confirming that the tests have been carried out as prescribed shall be the only acceptable verification of IP ratings.

5.2 The test reports above shall have been issued by SABS or a test authority accredited by SANAS. International test reports (e.g. KEMA) shall be acceptable (at the sole discretion of City Power) provided details of the international accreditation body and details of accreditation are supplied.

5.3 The performance test reports shall include the following:

a) Photometric test

b) Endurance test and thermal test

c) Resistance to corrosion

d) Insulation resistance and electric strength

e) Humidity test

f) Mechanical strength test

g) Electrical test

h) IP rating test

i) Power factor

5.4 The special test reports shall include the following:

a) Colour temperature

b) Luminaire efficacy

5.5 In addition to the tests described above, all luminaires constructed of polymeric material shall be subjected to the test described below. The test is designed to simulate accelerated aging of the polymeric material in luminaires and hence give a reasonable indication of premature failure and life expectancy of luminaires constructed from polymeric materials.

5.6 The test is performed with the luminaire energised for the duration of the test, which is 1 000 hours. The test simulates ultraviolet (solar) radiation, rain, heat and humidity in a recurring 24 hour cycle (see Table 1).

5.7 The solar radiation shall be simulated by either a 2 kW metal halide lamp or a 5 kW xenon arc lamp, adjusted so that an average of 1,5 kW/m^2 is incident on the luminaires under test.

5.8 Rain shall be simulated by nozzles which dispense water (pressurised by a suitable pump) so that, after adjustment, the pressure at the nozzle is about 30 kN/m^2 and the flow rate is 12,5 litres/minute ± 5 %.

5.9 Heat shall be supplied by heating elements so that a temperature of 40 °C is obtained in the chamber.

5.10 Humidity of 98 % shall be obtained by placing a humidifier in the chamber.

5.11 The test chamber shall have dimensions of approximately 3 m × 3 m × 3 m. The configuration shall be determined by agreement between the relevant parties, including City Power.

5.12 The acceptance criteria for the accelerated aging test are as follows:

a. No signs of material degradation.
b. No cracks on any part of the luminaire; and
c. No compromise of any of the IP ratings of the luminaire.

Time (hours in cycle)	**0-2**	**2-4**	**4-6**	**6-8**	**8-10**	**10-12**	**12-14**	**14-16**	**16-18**	**18-20**	**20-22**	**22-24**
Luminaire energised	■	■	■	■	■	■	■	■	■	■	■	■
Rain	■								■	■		
Humidity			■					■				
Heat		■	■	■			■	■			■	■
Solar radiation		■	■		■	■	■				■	■

Table 1: Test cycle

6. SECURITY AND MANAGEMENT SYSTEM

6.1 City Power is committed to enhancing the security of its streetlight luminaires in response to the ongoing challenges of theft and vandalism, which result in significant financial losses. To address this issue, the Municipality will integrate its Smart City Platform into the luminaires, enabling advanced monitoring and security features.

6.2 City Power will provide suppliers with an integrated smart controller, which shall be installed within the driver compartment of the luminaires. This controller will enable smart monitoring capabilities, ensuring real-time surveillance, fault detection, and proactive maintenance.

6.3 The luminaire control gear compartment shall include a designated space for an integrated inline smart controller supplied by City Power.

6.4 The provision within the driver compartment of the luminaire for the smart controller shall be the following dimensions not exceed Length: 140mm, Width: 80mm and Height: 60mm

6.5 The smart controller shall be incorporated during the manufacturing stage. The smart controller shall be securely integrated to ensure that any tampering results in the luminaire becoming inoperative.

6.6 Compliance with all relevant electrical standards and best practices to maintain the integrity and functionality of the luminaire system shall be adhered to.

7. MARKING AND PACKAGING

7.1 Each post top luminaire shall be indelibly marked with the firefly logo of City Power Johannesburg as well as the letters “CPJ” so that there can be no doubt about ownership of the luminaire. The marking shall be easily visible whilst the luminaire is in service.

7.2 Each post top luminaire shall be individually packed in a sturdy cardboard box in order to prevent damage during handling, transportation and storage. The cartons shall be clearly marked with the appropriate description of the luminaire contained therein.

7.3 Each post top luminaire shall be clearly and indelibly marked with the date of manufacture. The marking shall be in a place where it is easily accessible e.g. on the housing of the luminaire.

7.4 Each luminaire shall be accompanied by a comprehensive instruction leaflet containing information as detailed in SANS 60598-2-3.

8. DOCUMENTATIONS

8.1 Test reports from a test authority recognised by City Power with respect to the following tests shall be provided:

a. Type tested in accordance with SABS 1277 or IEC 60598-2-3;

b. IP rating in accordance with the requirements of section 3.13 of SANS 60598-2-3; and

c. Certified data with respect to degradation (optical and thermal) of the material of the housing and diffuser of the luminaire and light transmission depreciation under operational conditions (see clauses 4.2.9 and 4.6.4).

8.2 Full photometric data relating to the luminaire offered shall be supplied (see clause 4.6). This shall include ISO-lux diagrams, utilisation curves, polar curves and/or ISO-candela diagrams. Data shall be expressed, where applicable, in units of cd/klm.

8.3 All offers shall be accompanied by luminous intensity tables in accordance with CIE Publication 27, in an electronic medium (i.e. 1.44 MB “stiffy” discs or 650/700 MB compact discs) in a form compatible with the SABS 098 Road Lighting computer program software. The information on the discs shall have been approved by SABS or a test authority accredited by SANAS.

8.4 The following documentation shall also be provided:

a. All test reports shall be in English

b. If DMC is offered, accelerated aging test reports and proof of satisfactory performance history

c. Data sheets with respect to the grade of aluminium used.

e. If a glass diffuser is provided, full details of the type of glass, safety aspects and tests in accordance and

f. If a gasket material other than silicon sponge is offered, full details of its suitability in this application and supporting documentation shall be provided.

9. TRAINING

The following training courses shall be offered for City Power's staff for free of charge:

a) Correct handling and care of the luminaires; and

b) Correct and safe installation and maintenance of the luminaires.

10. QUALITY ASSURANCE

A quality management system shall be set up in order to assure the quality of the luminaires during Manufacture, installation, removal, transportation and disposal of scrap material/Waste/E-waste. Guidance on the requirements for a quality management system may be found in the following Standards: ISO 9001:2015. The details shall be subject to agreement between the purchaser and Supplier.

11. ENVIRONMENTAL MANAGEMENT

An environmental management plan shall be set up in order to ensure the proper environmental management and compliance of the luminaires is adhered to during manufacture, installation, removal, transportation and disposal of scrap material/Waste/E-waste. Guidance on the requirements for an environmental management system shall be found in ISO 14001:2015 standards. The details shall be subject to agreement between City Power and the Supplier. This is to ensure that the asset created conforms to environmental standards and City Power SHERQ Policy

12. HEALTH AND SAFETY

A health and safety plan shall be set up in order to ensure proper management and compliance of the luminaires during manufacture, installation, removal, transportation and disposal of scrap material/Waste/E-waste. Guidance on the requirements of a health and safety plan shall be found in ISO 45001:2018 standards. The details shall be subject to agreement between City Power and the Supplier.

ANNEXURE A - REVISION INFORMATION

DATE	REV. NO.	NOTES
Nov 02	0	First issue
Feb 2006	1	General editing Reference to SABS 1464 removed Reference to SANS/IEC 60598 (Parts 1 and 2) included More comprehensive testing requirements Increased constructional requirements A and B Schedules amended Addition of clauses relating to training and quality assurance
Feb 2008	2	Include 57W CFL Post Tops A and B Schedules amended
September 2017	3	General editing
December 2019	4	Construction editing
May 2022	5	General editing Amended to LED Post Tops Luminaires
July 2022	6	Removed clause 4.7: Samples

September 2022	7	General
April 2025	8	General

ANNEXURE B – BIBLIOGRAPHY

CP_TSSPEC_014, *Specification for street lighting luminaires*

ANNEXURE C – TECHNICAL SCHEDULES A AND B

ITEM 1 – LED POST TOP LUMINAIRE (70 W HPS/E) SAP 4803 – Equivalence of the 70 W HPS/E streetlight luminaire

Schedule A: Purchaser's specific requirements
Schedule B: Guarantees and technical particulars of equipment offered

Item	Sub-clause of CP_TSSPEC_015	Description		Schedule A	Schedule B
1		Name of manufacturer		Required	
2		Place of manufacture		Required	
3		Manufacturer's reference		Required	
4		Type of luminaire		LED	
5		Standard to which LED luminaire complies		IEC 60598	
6		Streetlight luminaire to be replaced		70W HPS/E	
7		Rated Wattage of the equivalent luminaire		31W maximum	
8		Nominal flux		2790lm (minimum)	
9		Colour temperature		Between 4 000K to 5 000K.	
10		Luminaire efficacy (lm/W)		110lm/W (minimum)	
11		Colour rendering index		70 minimum	
12		Minimum energy saving by LED luminaire compared to 70W HPS/E streetlight		55% minimum	
13		Lumen depreciation of LED luminaire after 60 000 hours of operation		80% of initial lumens	
14		Material of LED luminaire housing		LM 6 die cast aluminium	
15		Does luminaire have a heat sink		Required	
16		Location of LED driver		Inside the luminaire housing	
17		Luminaire IP rating		IP 66 minimum	
18		Size of spigot entry		Diameter of 76 mm	
19	Driver				
19.1		Driver make		Required	
19.2		Voltage range of driver		Required	

19.3		Type of driver or power supply		Required	
19.4		Power factor of the power supply		0.95 lagging (minimum)	
19.5		Operating frequency		50 Hz (input)	
19.6		Transient protection		Required (specify)	
20		Material of spigot base		High pressure die-cast aluminium	
21		Material of protector lens		High impact glass or acrylic	
22		Material of small metal components		Stainless steel	
23		Material of diffuser		Required	
24		Material of canopy		Required	
25		Material of sealing gasket		Required	
26		LED module life span – Operating hours		60000 Hours (minimum)	
27		Driver life span – Operating hours		Required	
28		Luminaire Life Expectancy		14 Years (minimum)	
29		Guarantee period required and offered		10 Years (minimum)	
30		Does ballast comply with this specification	Yes/No	Yes	
31		Does capacitor comply with this specification	Yes/No	Yes	
32		Does ignitor comply with this specification	Yes/No	Yes	
33		Mass of luminaire as delivered	kg	8 (maximum)	
34		Material of terminals		Brass	
35		Does earthing comply with this specification?	Yes/No	Yes	
36		Does the luminaire comply fully with the photometric requirements?	Yes/No	Yes	
37		Does packaging comply with clause 6 of this specification?	Yes/No	Yes	

NOTE: TICKS [✓✗], ASTERISK [*], WORD [NOTED], OR TBA [TO BE ADVISED] SHALL NOT BE ACCEPTED.

Tender Number: _____

Bidder's Authorised Signatory: _____

Name in block letters Signature

Full name of company: _____

TECHNICAL SCHEDULES A AND B

ITEM 1 – LED POST TOP LUMINAIRE (70 W HPS/E) SAP 4803

DEVIATION SCHEDULE

Any deviations offered to this specification shall be listed below with reasons for deviation. In addition, evidence shall be provided that the proposed deviation will at least be more cost-effective than that specified by City Power.

Item	Clause	Proposed deviation

Tender Number: _____

Bidder's Authorised Signatory: _____

Name in block letters Signature

Full name of company: _____

TECHNICAL SCHEDULES A AND B

ITEM 2 – LED POST TOP LUMINAIRE (100 W HPS/E) SAP 4804 – Equivalence of the 100 W HPS/E streetlight luminaire

Schedule A: Purchaser's specific requirements
Schedule B: Guarantees and technical particulars of equipment offered

Item	Sub-clause of CP_TSSPEC_015	Description		Schedule A	Schedule B
1		Name of manufacturer		Required	
2		Place of manufacture		Required	
3		Manufacturer's reference		Required	
4		Type of luminaire		LED	
5		Standard to which LED luminaire complies		IEC 60598	
6		Streetlight luminaire to be replaced		100W HPS/E	
7		Rated Wattage of the equivalent luminaire		45W maximum	
8		Nominal flux		4050lm (minimum)	
9		Colour temperature		Between 4 000K to 5 000K.	
10		Luminaire efficacy (lm/W)		110lm/W (minimum)	
11		Colour rendering index		70 minimum	
12		Minimum energy saving by LED luminaire compared to 100W HPS/E streetlight		55% minimum	
13		Lumen depreciation of LED luminaire after 60 000 hours of operation		80% of initial lumens	
14		Material of LED luminaire housing		LM 6 die cast aluminium	
15		Does luminaire have a heat sink		Required	
16		Location of LED driver		Inside the luminaire housing	
17		Luminaire IP rating		IP 66 minimum	
18		Size of spigot entry		Diameter of 76 mm	
19	Driver				
19.1		Driver make		Required	

19.2		Voltage range of driver		Required	
19.3		Type of driver or power supply		Required	
19.4		Power factor of the power supply		0.95 lagging (minimum)	
19.5		Operating frequency		50 Hz (input)	
19.6		Transient protection		Required (specify)	
20		Material of spigot base		High pressure die-cast aluminium	
21		Material of protector lens		High impact glass or acrylic	
22		Material of small metal components		Stainless steel	
23		Material of diffuser		Required	
24		Material of canopy		Required	
25		Material of sealing gasket		Required	
26		LED module life span – Operating hours		60000 Hours (minimum)	
27		Driver life span – Operating hours		Required	
28		Luminaire Life Expectancy		14 Years (minimum)	
29		Guarantee period required and offered		10 Years (minimum)	
30		Does ballast comply with this specification	Yes/No	Yes	
31		Does capacitor comply with this specification	Yes/No	Yes	
32		Does ignitor comply with this specification	Yes/No	Yes	
33		Mass of luminaire as delivered	kg	8 (maximum)	
34		Material of terminals		Brass	
35		Does earthing comply this specification?	Yes/No	Yes	
36		Does the luminaire comply fully with the photometric requirements?	Yes/No	Yes	
37		Does packaging comply with this specification?	Yes/No	Yes	

NOTE: TICKS [✓✗], ASTERISK [*], WORD [NOTED], OR TBA [TO BE ADVISED] SHALL NOT BE ACCEPTED.

Tender Number: _____

Bidder's Authorised Signatory: _____

Name in block letters Signature

Full name of company: _____

TECHNICAL SCHEDULES A AND B

ITEM 2 – LED POST TOP LUMINAIRE (100 W HPS/E) SAP 4804

DEVIATION SCHEDULE

Any deviations offered to this specification shall be listed below with reasons for deviation. In addition, evidence shall be provided that the proposed deviation will at least be more cost-effective than that specified by City Power.

Item	Clause	Proposed deviation

Tender Number: _____

Bidder's Authorised Signatory: _____

Name in block letters Signature

Full name of company: _____

TECHNICAL SCHEDULES A AND B

ITEM 3 – LED POST TOP LUMINAIRE (125 W HPMV) SAP 4805– Equivalence of the 125 W HPMV streetlight luminaire

Schedule A: Purchaser's specific requirements
Schedule B: Guarantees and technical particulars of equipment offered

Item	Sub-clause of CP_TSSPEC_015	Description		Schedule A	Schedule B
1		Name of manufacturer		Required	
2		Place of manufacture		Required	
3		Manufacturer's reference		Required	
4		Type of luminaire		LED	
5		Standard to which LED luminaire complies		IEC 60598	
6		Streetlight luminaire to be replaced		125W HPMV	
7		Rated Wattage of the equivalent luminaire		56W maximum	
8		Nominal flux		5040lm (minimum)	
9		Colour temperature		Between 4 000K to 5 000K.	
10		Luminaire efficacy (lm/W)		110lm/W (minimum)	
11		Colour rendering index		70 minimum	
12		Minimum energy saving by LED luminaire compared to 125W HPMV streetlight		55% minimum	
13		Lumen depreciation of LED luminaire after 60 000 hours of operation		80% of initial lumens	
14		Material of LED luminaire housing		LM 6 die cast aluminium	
15		Does luminaire have a heat sink		Required	
16		Location of LED driver		Inside the luminaire housing	
17		Luminaire IP rating		IP 66 minimum	
18		Size of spigot entry		Diameter of 76 mm	
19	Driver				
19.1		Driver make		Required	
19.2		Voltage range of driver		Required	

19.3		Type of driver or power supply		Required	
19.4		Power factor of the power supply		0.95 lagging (minimum)	
19.5		Operating frequency		50 Hz (input)	
19.6		Transient protection		Required (specify)	
20		Material of spigot base		High pressure die-cast aluminium	
21		Material of protector lens		High impact glass or acrylic	
22		Material of small metal components		Stainless steel	
23		Material of diffuser		Required	
24		Material of canopy		Required	
25		Material of sealing gasket		Required	
26		LED module life span – Operating hours		60000 Hours (minimum)	
27		Driver life span – Operating hours		Required	
28		Luminaire Life Expectancy		14 Years (minimum)	
29		Guarantee period required and offered		10 Years (minimum)	
30		Does ballast comply with this specification	Yes/No	Yes	
31		Mass of luminaire as delivered	kg	8 (maximum)	
32		Material of terminals		Brass	
33		Does earthing comply with this specification?	Yes/No	Yes	
34		Does the luminaire comply fully with the photometric requirements?	Yes/No	Yes	
35		Does packaging comply with the specification?	Yes/No	Yes	

NOTE: TICKS [✓✗], ASTERISK [*], WORD [NOTED], OR TBA [TO BE ADVISED] SHALL NOT BE ACCEPTED.

Tender Number: _____

Bidder's Authorised Signatory: _____

Name in block letters Signature

Full name of company: _____

TECHNICAL SCHEDULES A AND B

ITEM 3 – LED POST TOP LUMINAIRE (125 W HPMV) SAP 4805

DEVIATION SCHEDULE

Any deviations offered to this specification shall be listed below with reasons for deviation. In addition, evidence shall be provided that the proposed deviation will at least be more cost-effective than that specified by City Power.

Item	Clause	Proposed deviation

Tender Number: _____

Bidder's Authorised Signatory: _____

Name in block letters Signature

Full name of company: _____

TECHNICAL SCHEDULES A AND B

ITEM 4 – LED POST TOP LUMINAIRE (57 W CFL) SAP 4806 – Equivalence of the 57 W CFL streetlight luminaire

Schedule A: Purchaser's specific requirements
Schedule B: Guarantees and technical particulars of equipment offered

Item	Sub-clause of CP_TSSPEC_015	Description		Schedule A	Schedule B
1		Name of manufacturer		Required	
2		Place of manufacture		Required	
3		Manufacturer's reference		Required	
4		Type of luminaire		LED	
5		Standard to which LED luminaire complies		IEC 50698	
6		Streetlight luminaire to be replaced		57W CFL	
7		Rated Wattage of the equivalent luminaire		25W maximum	
8		Nominal flux		2250lm (minimum)	
9		Colour temperature		Between 4 000K to 5 000K.	
10		Luminaire efficacy (lm/W)		110lm/W (minimum)	
11		Colour rendering index		70 minimum	
12		Minimum energy saving by LED luminaire compared to 57W CFL streetlight		55% minimum	
13		Lumen depreciation of LED luminaire after 60 000 hours of operation		80% of initial lumens	
14		Material of LED luminaire housing		LM 6 die cast aluminium	
15		Does luminaire have a heat sink		Required	
16		Location of LED driver		Inside the luminaire housing	
17		Luminaire IP rating		IP 66 minimum	
18		Size of spigot entry		Diameter of 76 mm	
19	Driver				
19.1		Driver make		Required	
19.2		Voltage range of driver		Required	

19.3		Type of driver or power supply		Required	
19.4		Power factor of the power supply		0.95 lagging (minimum)	
19.5		Operating frequency		50 Hz (input)	
19.6		Transient protection		Required (specify)	
20		Material of spigot base		High pressure die-cast aluminium	
21		Material of protector lens		High impact glass or acrylic	
22		Material of small metal components		Stainless steel	
23		Material of diffuser		Required	
24		Material of canopy		Required	
25		Material of sealing gasket		Required	
26		LED module life span – Operating hours		60000 Hours (minimum)	
27		Driver life span – Operating hours		Required	
28		Luminaire Life Expectancy		14 Years (minimum)	
29		Guarantee period required and offered		10 Years (minimum)	
30		Does ballast comply with this specification	Yes/No	Yes	
31		Mass of luminaire as delivered	kg	8 (maximum)	
32		Material of terminals		Brass	
33		Does earthing comply with clause this specification	Yes/No	Yes	
34		Does the luminaire comply fully with the photometric requirements?	Yes/No	Yes	
35		Does packaging comply with this specification?	Yes/No	Yes	

NOTE: TICKS [✓✗], ASTERISK [*], WORD [NOTED], OR TBA [TO BE ADVISED] SHALL NOT BE ACCEPTED.

Tender Number: _____

Bidder's Authorised Signatory: _____

Name in block letters Signature

Full name of company: _____

TECHNICAL SCHEDULES A AND B

ITEM 4 – LED POST TOP LUMINAIRE (57 W CFL) SAP 4804

DEVIATION SCHEDULE

Any deviations offered to this specification shall be listed below with reasons for deviation. In addition, evidence shall be provided that the proposed deviation will at least be more cost-effective than that specified by City Power.

Item	Clause	Proposed deviation

Tender Number: _____

Bidder's Authorised Signatory: _____

Name in block letters Signature

Full name of company: _____

ANNEXURE D - STOCK ITEMS

Material Group: LMR-SL

Item	SAP number	SAP Short Description	SAP Long Description
1	4803	LMR LED PT EQUIV 70W HPS	LED POST TOP LUMINAIRE EQUIVALENCE OF THE 70W HIGH PRESSURE SODIUM LAMP. ITEM SPECIFICATION CP_TSSPEC_015.
2	4804	LMR LED PT EQUIV 100W HPS	LED POST TOP LUMINAIRE EQUIVALENCE OF THE 100W HIGH PRESSURE SODIUM LAMP. ITEM SPECIFICATION CP_TSSPEC_015.
3	4805	LMR LED PT EQUIV 125W HPMV	LED POST TOP LUMINAIRE EQUIVALENCE OF THE 125W HIGH PRESSURE MERCURY VAPOUR LAMP. ITEM SPECIFICATION CP_TSSPEC_015.
4	4806	LMR LED PT EQUIV 57W CFL	LED POST TOP LUMINAIRE EQUIVALENCE OF THE 57W COMPACT FLUORESCENT LAMP. ITEM SPECIFICATION CP_TSSPEC_015.