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TITLE	SPECIFICATION FOR ACCESS CARD PRINTER, RIBBONS, HOLOGRAM AND ACCESS CARDS	REFERENCE	CP_TSSPEC_430	REV	1
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**SPECIFICATION FOR ACCESS CARD
PRINTER, RIBBONS, HOLOGRAM AND
ACCESS CARDS**

REFERENCE

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FOREWORD

This ISS Printer, Ribbons, Hologram and Access Cards specification was prepared by the following Work Group members:

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1. INTRODUCTION

This specification defines the minimum technical, functional, and quality requirements for the procurement, supply, delivery, and support of an Access Card Printing Solution, including access card printers, printer ribbons, hologram overlays, and Contactless Smart Cards. The purpose of this specification is to ensure the secure, reliable, and efficient production of employee, contractor, and visitor identification cards that integrate seamlessly with the organization's access control and security systems. The proposed solution shall provide high-quality card printing, enhanced security features against counterfeiting and unauthorized duplication, and compatibility with existing smart contactless card technologies and access management infrastructure. All equipment and consumables supplied shall be new, of proven quality, and supported by the manufacturer in accordance with industry standards and best practices.

2. SCOPE OF WORKS

The scope of work for this project includes the supply, delivery, installation, configuration, testing, commissioning, and support of an Access Card Printing Solution comprising a Retransfer Double-sided Identification Card Printer, printer ribbons, hologram overlays, blank PVC and access cards. The successful supplier shall provide all hardware, consumables, and accessories required for the secure and efficient production of access control identification cards. The solution shall be fully compatible with the organization's existing access control infrastructure and Smart Contactless Proximity Card technologies.

3. 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 standard are encouraged to investigate the possibility of applying the most recent editions of the documents listed below.

Document number	Document title
CE Marked	CE marking is a mandatory conformity marking for certain products sold within the European Economic Area (EEA) since 1985. The CE marking is also found on products sold outside the EEA that are manufactured in, or designed to be sold in, the EEA.
EMC 2004/108/EC	Electromagnetic compatibility (EMC) - of electrical and electronic apparatus.
EN 60529	Degrees of protection provided by enclosures (IP code)
FIPS 201-1	National Institute of Standards and Technology. Personal Identity Verification (PIV) of Federal Employees and Contractors
IEC 60332-1	Flame Propagation Test for a Single Insulated Cable
IEC 60332-3	Burning Behavior of Bunched Cables
IEC 60455-3-11	Specification for solventless polymerizable resinous compounds used for electrical insulation. Part 3: Specifications for individual materials. Sheet 11: Epoxy resin-based
1-E4	Coating powders IEC 60794-Fiber optic Cable Testing Methods
IEEE 802.3af	Refers to the IEEE Power over Ethernet standard
ISO 15693	ISO standard for vicinity cards
ISO 7240-16	Fire detection and alarm systems - Sound system control and indicating equipment. Machinery and Republic of South Africa - Machinery and Occupational Safety Act 85 of Occupational Safety Act 1993 with special reference to Section 1 (Act & Regulations), Section 2 (Administrative Regulations), Section 6 (Electrical Installation Regulations) and Section 16 (General Safety Regulations)

4. DEFINITIONS AND ABBREVIATIONS

ABS	Acrylonitrile Butadiene Styrene
CR80	Standard Identification Card Format (85.60 mm × 53.98 mm)
DPI	Dots Per Inch
RFID	Radio Frequency Identification
ID	Identification
ISO	International Organization for Standardization
OEM	Original Equipment Manufacturer
OHSA	Occupational Health and Safety Act
PET	Polyethylene Terephthalate
POPIA	Protection of Personal Information Act
PVC	Polyvinyl Chloride
QR	Quick Response
RF	Radio Frequency
USB	Universal Serial Bus
UV	Ultraviolet
YMCK	Yellow, Magenta, Cyan, Black, Overlay
YMCKK	Yellow, Magenta, Cyan, Black, Black
MHz	Megahertz
VAC	Volts Alternating Current
LAN	Local Area Network
TCP/IP	Transmission Control Protocol/Internet Protocol
LED	Light Emitting Diode
QA	Quality Assurance
QC	Quality Control
T&C	Testing and Commissioning

5. FUNCTIONAL REQUIREMENTS

5.1 Access Card Printer

The Retransfer Double-sided Identification Card Printer shall be a high-performance, industrial-grade card printer supporting full-colour and monochrome printing, edge-to-edge printing, single-pass dual-sided printing, be capable of printing employee photographs, text, logos, barcodes, and be designed for secure identification, access control, employee credentials and ID card issuance. The printer shall utilize retransfer printing technology to provide over-the-edge, high-definition card printing on PVC and non-PVC card materials.

The printer software should be compatible with Windows 10 and Windows 11 operating systems, including printer management and card design software which can seamlessly integrate with Lenel S2

Printing Technology - The card printer shall utilise dye-sublimation and resin thermal transfer technology to produce high-quality, durable identification cards. The printer shall support a minimum print resolution of 300 × 300 dpi to ensure sharp text, accurate graphics, and high-definition image reproduction.

Print Mode - The printer shall support single-sided printing as a standard configuration and shall be upgradeable to dual-sided printing to accommodate future operational and card issuance requirements.

Print Quality and Speed - The printer shall provide full-card, over-the-edge printing and maintain high-quality output on uneven card surfaces, including smart cards and proximity cards. The printer shall achieve a minimum speed of 120 full-colour cards per hour in single-sided mode.

Card Compatibility - The printer shall support a variety of card materials, including PVC, Composite PVC, PET, ABS, and Polycarbonate cards. The printer shall accommodate the ISO CR80 card format (85.60 mm × 53.98 mm) and support card thicknesses ranging from 0.25 mm to 1.02 mm.

Security Features - The printer shall support IPSEC-encrypted data transfer, a Kensington security lock, UV security printing, secure card personalisation, and an optional security erase function to help protect sensitive cardholder information.

Software - Card design and printer management software shall be included with the offered solution, providing functionality for card layout design, print job management, printer configuration, monitoring, and administration.

5.2 Card Encoding and Lamination Features

Encoding Capability - The printer shall support magnetic stripe encoding (HiCo/LoCo), contact smart card encoding, contactless smart card encoding, contactless smart proximity credential encoding, MIFARE card encoding, and iCLASS card encoding.

Lamination Capability - The printer shall support single-sided inline lamination, dual-sided inline lamination, holographic laminate application, and security laminates for card protection and counterfeiting.

5.3 Hologram Security Overlay

The bidder shall supply the approved City Power holographic security laminate for use on employee access, identification, and visitor cards. The holographic laminate shall incorporate the official City Power security design and provide enhanced protection against unauthorized reproduction, alteration, and counterfeiting. In addition, the laminate shall improve card durability by protecting printed information and card surfaces from wear, fading, scratching, and environmental damage, while enabling easy visual verification of authentic City Power credentials.

The holographic laminate shall be compatible with the existing card printer and inline lamination module, and suitable for use with PVC, Composite PVC, PET, and Polycarbonate cards. The laminate shall provide clear visual security features visible under normal lighting conditions, protect printed card information against fading, scratching, and unauthorized alteration, and increase card life expectancy to a minimum of three years.

5. 4 Security Features

The holographic laminate shall provide tamper-evident protection, counterfeit deterrence, overt visual security features, protection against photo substitution and card manipulation, and enhanced card authentication during security inspections

5.5 Access Card

The smart contactless proximity card shall be a contactless smart card credential designed for secure physical access control, identification, time and attendance, cashless payment, and logical access applications. The card shall be compatible with the existing readers, support photo ID card printing, operate at 13.56 MHz, provide read/write capability, utilise RF contactless communication, and support mutual authentication between the card and reader for enhanced security.

Data Security - The card shall support encrypted data transfer, 64-bit diversified keys, and secure credential storage to ensure the protection of cardholder information and access control data.

Memory Specification - The card shall provide 16K and 2K bits (256 Bytes) of EEPROM memory, support a minimum of two application areas, and enable the secure storage of access control credentials and application data.

Security Features - The card shall support a unique card serial number, site code, and card numbering, anti-cloning capability, secure credential management, mutual authentication, encrypted communication, protection against unauthorized duplication, support for access control applications, and secure read/write operations.

Printing Compatibility - The card shall be fully compatible with the existing card printers. The card surface shall support full-colour photo printing, barcode printing, staff photographs, variable data printing, holographic lamination, UV security printing, and colour printing, while providing a smooth, image-quality surface finish.

PVC Blank Cards, CR80, White, Printable - The cards must be fully compatible with Retransfer Double-sided Identification Card Printers and capable of supporting full-colour dye-sublimation and retransfer printing. They shall provide excellent print quality to produce photo identification cards, access control cards, barcodes, QR codes, and other personalised credentials. The card shall be CR80 white PVC blank cards compliant with ISO/IEC 7810 ID-1 standards, measuring 85.60 mm × 53.98 mm with a standard thickness of 0.76 mm (30 mil). The cards shall be manufactured from high-quality PVC material and feature a smooth gloss-white finish suitable for high-resolution, edge-to-edge printing.

5.6 Printer Ribbons for Card Printer

The printer ribbons shall be designed for use with the Retransfer Double-sided Identification Card Printer and shall produce high-quality, durable identification cards with edge-to-edge printing. All consumables supplied shall be original manufacturer products or approved equivalents fully compatible with the existing printer.

The printer ribbons shall be colour and monochrome ribbons specifically designed for card printing and fully compatible with the Retransfer Double-sided Identification Card Printer. The ribbons shall support retransfer card printing technology and be available in YMCK, YMCKK, YMCKUV, and Black Monochrome ribbon configurations.

The consumables shall support a minimum print resolution of 300 dpi, providing high-quality and edge-to-edge card printing. The ribbons shall be capable of full-colour dye-sublimation printing for photographic images and graphics, as well as resin black printing for text, barcodes, serial numbers, and other personalization requirements. The ribbons shall be suitable for use on PVC, Composite PVC, and contactless smart cards.. All consumables shall be supplied in original sealed manufacturer packaging, with a minimum shelf life of 12 months from the date of delivery. The ribbons shall be stored and operated within the manufacturer's recommended environmental conditions, with a storage temperature range of 5°C to 25°C to ensure optimal performance and longevity.

6. STATUTORY REQUIREMENTS

The bidder shall ensure that all equipment, software, consumables, and materials supplied under this contract comply with all applicable South African legislation, regulations, standards, and industry best practices. Compliance shall include, but not be limited to, the following:

6.1 For Electronics:

- 6.1.1 CE marked
- 6.1.2 FCC compliant: US Federal Communications Commission.
- 6.1.3 UL 294 standards for access control
- 6.1.4 ULC-S319-05 certification
- 6.1.5 ORD-C1076 proprietary codes as applicable
- 6.1.6 UL 1076 Security Listed
- 6.1.7 FIPS 201-1: National Institute of Standards and Technologies
- 6.1.8 PIV-I: Smart Card Alliance: Personal Identity Verification
- 6.1.9 FASC-N Support: OpenSSL

6.2 Regulations And Acts

6.2.1 Protection of Personal Information Act, 2013 (Act No. 4 of 2013) (POPIA)

This Act governs the collection, processing, storage, and protection of personal information contained on identification cards, access control cards, and cardholder databases. Any information printed, encoded, or stored on contactless smart cards must be processed lawfully and securely.

6.2.2 Electronic Communications and Transactions Act, 2002 (Act No. 25 of 2002)

This Act provides legal recognition for electronic records, digital credentials, electronic authentication, and related information systems. It is relevant where smart cards form part of electronic identification or access control systems.

6.2.3 Occupational Health and Safety Act, 1993 (Act No. 85 of 1993)

The installation and operation of card printers, access control systems, and related equipment must comply with workplace health and safety requirements to ensure the safety of employees and visitors

6.3 Security Requirements

The holographic laminate shall incorporate approved City Power security features to prevent unauthorized duplication, tampering, alteration, or counterfeiting of identification and access cards. The card issuance solution shall provide secure card production and storage processes to maintain the integrity of access credentials.

6.4 Compliance

General Compliance – All contactless smart access cards shall be fully compatible with the existing access control infrastructure and card reader technologies deployed by City Power with its unique facility coding. The appointed bidder shall be provided with the City Power facility code.

Electronic Communications and Transactions Act (Act No. 25 of 2002) - Any electronic processing, storage, or transmission of cardholder information shall comply with applicable electronic data management requirements.

South African National Standards (SANS) - All supplied equipment and electrical components shall comply with relevant SANS specifications and safety requirements where applicable.

EMC and Electrical Compliance - Access card printers and associated equipment shall meet applicable electromagnetic compatibility (EMC) and electrical safety standards to ensure safe and reliable operation.

Manufacturer Certification - Access card printers, ribbons, holographic laminates, and contactless smart cards shall be genuine products supplied through authorized distributors or resellers and supported by the original manufacturer

6.5 Security & Confidentiality

The Supplier shall ensure that all Contactless Smart Cards, Hologram Security Overlays, Card Printers, Printer Ribbons, Retransfer Films, and associated credential management processes are protected against unauthorized access, disclosure, modification, duplication, theft, loss, or misuse.

All products supplied shall incorporate appropriate physical, electronic, and procedural safeguards to maintain the confidentiality, integrity, and availability of cardholder information and security credentials.

The successful Contractor will further be required to sign a Confidentiality Agreement with City Power before the Contract is handed down to the Contractor.

7. GENERAL REQUIREMENTS

All Contactless Smart Cards, Hologram Security Overlays, Card Printers, printer ribbons, retransfer films, and related accessories supplied under this contract shall be new, genuine, and of current manufacture, sourced from authorized manufacturers or distributors. The products shall be fully compatible with one another and with the Purchaser's existing access control and identification card infrastructure. All equipment and consumables shall comply with applicable industry standards, manufacturer specifications, and relevant South African legislation, including the

Protection of Personal Information Act (POPIA), Electronic Communications and Transactions Act (ECTA), and Occupational Health and Safety Act (OHSA). The supplier shall ensure high-quality, reliable, and secure card production, provide all required technical documentation, warranties, and support services, and maintain strict confidentiality of cardholder information, security designs, encoding data, and access control credentials. All products shall be delivered in original sealed packaging, free from defects, and suitable for continuous operation in a secure identification and access control environment.

8. DOCUMENTATION

The supplier shall provide complete and accurate documentation for all Contactless Smart Cards, Hologram Security Overlays, Card Printers, printer ribbons, retransfer films, and associated accessories supplied under the contract. Documentation shall include product datasheets, technical specifications, user manuals, installation and operating instructions, warranty certificates, compliance certificates, and manufacturer authorization letters where applicable. The supplier shall also provide documentation relating to card encoding, printer configuration, consumable compatibility, security features, and troubleshooting procedures. All documentation shall be supplied in English, in both electronic and hard-copy format where required and shall be sufficient to enable the City Power to install, operate, maintain, and manage the equipment and consumables effectively throughout their operational life cycle.

9. QUALITY MANAGEMENT

A quality management system/plan shall be set up to assure quality during manufacture, installation, removal, transportation, and disposal. 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 an agreement between the purchaser and the supplier.

10. HEALTH AND SAFETY

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

11. ENVIRONMENTAL MANAGEMENT

An environmental management system/plan shall be set up to ensure proper environmental management and compliance is adhered to during manufacturing, installation, removal, transportation, and disposal. Guidance on the requirements for an environmental management system shall be found in ISO 14001:2015 standards. The details shall be subject to an 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. WARRANTY AND SUPPORT

The bidder shall provide comprehensive warranty and support services for all access card printers, ribbons, holographic laminates, smart contactless proximity cards, and associated software supplied under this contract. The warranty and support provisions shall ensure the continuous and reliable operation of the card issuance system throughout the contract period.

ANNEXURE A – CONTACTLESS SMART CARD

ITEM NO.1

TECHNICAL SCHEDULES A & B:

Schedule A: Purchaser's specific requirements

Schedule B: Guarantees and technical particulars of equipment offered

Table 11: Technical A & B Schedule – Contactless Smart Card

Item	Description	Schedule A Required	Schedule B
1.	Product Type	Contactless Smart Cards	
2.	Technology	Contactless smart card technology compatible with the City Power's existing access control environment	
3.	Frequency	13.56 MHz	
4.	Standards Compliance	Compliance with applicable ISO/IEC contactless smart card standards and existing system requirements	
5.	Security	Mutual authentication, encrypted communication and diversified keys	
6.	Card Material	High-quality PVC/PVC Composite	
7.	Card Dimensions	CR80, 85.6 mm × 54 mm × 0.76 mm	
8.	Memory Capacity	Memory capacity of 2 Kbits and 16 Kbits, as required by the existing access control system	
9.	Read/Write Capability	Read and write functionality as required	
10.	Compatibility	Fully compatible with existing readers and access control system	
11.	Card Identification	Sequential numbering and facility code programming where applicable	
12.	Printing Capability	Suitable for full-colour dye-sublimation and thermal transfer printing	
13.	Personalization	Photo ID, barcode, QR code and employee information printing	

Note: Ticks, Cross [√, X], asterisk [*], Word [Noted] or TBA ["To Be Advice"] shall not be accepted

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**CONTACTLESS SMART CARD
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	Sub Clause of CP_TSSPEC_430	Proposed deviation

Note: Ticks, Cross [✓, X], asterisk [*], Word [Noted] or TBA ["To Be Advice"] shall not be accepted

Tender Number: _____

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Full name of company: _____

ANNEXURE B –RETRANSFER DOUBLE-SIDED IDENTIFICATION CARD PRINTER

ITEM NO. 2

TECHNICAL SCHEDULES A & B:

Schedule A: Purchaser's specific requirements

Schedule B: Guarantees and technical particulars of equipment offered

Table 12: Technical A & B Schedule Retransfer Double-sided Identification Card Printer

Item	Description	Schedule A Required	Schedule B
1.	Product	Smart Contactless Retransfer Card Printer	
2.	Printer Technology	Retransfer card printing technology	
3.	Print Resolution	Minimum 300 x 300 dpi	
4.	Printing Capability	Full-colour and monochrome printing	
5.	Print Type	Edge-to-edge over-the-edge printing	
6.	Card Printing	Dual-sided printing capability	
7.	Input Hopper Capacity	Minimum 100 cards	
8.	Output Hopper Capacity	Minimum 100 cards	
9.	Card Thickness	0.25 mm to 1.02 mm, with adjustment for thinner/thicker cards	
10.	Card Types Supported	PVC, Composite PVC, PET, ABS, Proximity Cards, Smart Cards	
11.	Encoding Capability	Support for contact and contactless smart card encoding	
12.	Connectivity	USB 2.0 and Ethernet	
13.	Supported Operating Systems	Microsoft Windows compatible	
14.	Print Speed	Minimum print speed of 100 cards per hour in full colour mode	
15.	Security Features	Password protection and security lock capability	
16.	Power Supply	240 VAC, 50 Hz	

Note: Ticks, Cross [✓, X], asterisk [*], Word [Noted] or TBA ["To Be Advice"] shall not be accepted

Tender Number: _____

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**RETRANSFER DOUBLE-SIDED IDENTIFICATION CARD PRINTER
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	Sub Clause of CP_TSSPEC 430_	Proposed deviation

Note: Ticks, Cross [√, X], asterisk [*], Word [Noted] or TBA ["To Be Advice"] shall not be accepted

Tender Number: _____

Tenderer's Authorized Signatory: _____
Name in block letters Signature

Full name of company: _____

ANNEXURE C – HOLOGRAM SECURITY OVERLAY

ITEM NO. 3

TECHNICAL SCHEDULES A & B:

Schedule A: Purchaser's specific requirements

Schedule B: Guarantees and technical particulars of equipment offered

Table 13: Technical A & B Schedule Hologram Security Overlay

Item	Description	Schedule A Required	Schedule B
1.	Product Type	Security Hologram Overlay for ID Cards	
2.	Application	Security enhancement for employees, contractors, visitors, and access control cards	
3.	Hologram Type	Custom-designed tamper-evident holographic overlay	
4.	Card Compatibility	CR80 PVC, Composite PVC, Smart Cards, Proximity Cards, and smart contactless cards	
5.	Overlay Size	Suitable for standard CR80 card dimensions (85.60 mm × 53.98 mm)	
6.	Security Features	Multi-layer security features to prevent duplication and counterfeiting	
7.	Design	Custom logo, emblem, or security pattern	
8.	Tamper Evidence	Overlay shall show visible signs of tampering or removal attempts	
9.	Adhesive Type	Permanent industrial-grade adhesive	
10.	Durability	Resistant to scratching, wear, moisture, and UV exposure	
11.	Print Compatibility	Compatible with card printer retransfer and direct-to-card printing processes	
12.	Finish	Transparent holographic finish without obscuring printed card information	

Note: Ticks, Cross [√, X], asterisk [*], Word [Noted] or TBA ["To Be Advice"] shall not be accepted

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**HOLOGRAM SECURITY OVERLAY
DEVIATION SCHEDULE**

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Item	Sub Clause of CP_TSSPEC 430_	Proposed deviation

Note: Ticks, Cross [√, X], asterisk [*], Word [Noted] or TBA [“To Be Advice”] shall not be accepted

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Tenderer's Authorized Signatory: _____
Name in block letters Signature

Full name of company: _____

**ANNEXURE D – PRINTER RIBBONS FOR SMART CONTACTLESS ID CARD PRINTER
ITEM NO. 4**

TECHNICAL SCHEDULES A & B:

Schedule A: Purchaser's specific requirements

Schedule B: Guarantees and technical particulars of equipment offered

Table 14: Technical A & B Schedule Printer Ribbons for Card Printer

Item	Discretion	Schedule A Required	Schedule B
1.	Product Type	Card Printer Ribbons and Retransfer Film	
2.	Compatibility	Fully compatible with Retransfer Double-sided Identification Card Printer	
3.	Manufacturer	Name of the OEM	
4.	Ribbon Type	YMCK, YMCKK, YMCKOK, Black Monochrome and other approved ribbon types	
5.	Print Quality	High-definition image and text printing suitable for ID cards	
6.	Colour Capability	Full-colour (YMCK) printing	
7.	Monochrome Printing	Black resin printing for text and barcodes	
8.	Retransfer Film	Required for use with retransfer printing technology	
9.	Print Yield	Manufacturer-rated print capacity	
10.	Shelf Life	Minimum 12 months from delivery date	
11.	Card Compatibility	PVC, Composite PVC, Contact Smart Cards, Contactless Smart Cards and Access Control Cards	
12.	Image Durability	Resistant to fading, smudging and normal wear	

Note: Ticks, Cross [√, X], asterisk [*], Word [Noted] or TBA ["To Be Advice"] shall not be accepted

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PRINTER RIBBONS FOR SMART CONTACTLESS CARD PRINTER
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	Sub Clause of CP_TSSPEC 430_	Proposed deviation

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ANNEXURE E – BIBLIOGRAPHY

None

ANNEXURE F - REVISION INFORMATION

DATE	REV. NO.	NOTES
AUG 2026	0	First issue
SEP 2026	1	Second issue • Page 6 – Added software write-up below Security features and edited paragraph 2 • Replace HID with contactless smart card throughout the document • Page 8 – Edited the last sentence of the first paragraph. Annexure A – Contactless Smart Card • Updated Schedule A (Item 2, 4 and 10, Deleted Item 14,15 and 16) • Updated Schedule B – Added 16 Kbits) Annexure B – Retransfer Double-Sided Identification Card PRINTER • Updated Schedule A, Item 3,6,9,14 and removed Item 16(software) Annexure C – Hologram Security Overlay • Added Item numbering Annexure D - Printer Ribbons for Smart Contactless ID Card Printer • Updated Item 3 and 13, removed Item 11 and 12