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TITLE	**SPECIFICATION FOR MULTI ZONE WALK THROUGH METAL DETECTOR WITH X-RAY SCANNER**	REFERENCE	**CP_TSSPEC_265**	REV **1**
		DATE:		**JUNE 2022**
		PAGE:	**1**	OF **15**

COMPILED BY	FUNCTIONAL RESP	APPROVED BY	APPROVED BY
H. SOMO SNR. ENGINEER: SECONDARY PLANT RESEARCH & DEVELOPMENT	**F. NGUBENI** MANAGER SECURITY SYTEMS: FIRE & SECURITY TECHNOLOGY	**S. THELA** GENERAL MANAGER: SECURITY MANAGEMENT	**S. RASEBOKA** GENERAL MANAGER (ACTING): RESEARCH & DEVELOPMENT
AUTHORIZED BY			
N. MALULEKE CHIEF OPERATING OFFICER			

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FOREWORD

This standard was prepared by the following work group members:

Silvester Raseboka	Research and Development
Herson Somo	Research and Development

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

Silvester Raseboka	Research and Development
Herson Somo	Research and Development
Francis Ngubeni	Security
Thulani Nkomo	Security
Andrew Duncan	Facilities Maintenance
Catherine Ditsebe	Security

Recommendations for corrections, additions or deletions should be addressed to the:

Research and Development General Manager
City Power Johannesburg (SOC) Ltd
P O Box 38766
Booysens
2016

INTRODUCTION

City Power is in the process of increasing the security and control within its premises, multi zone walk through metal detector has been identified as one of the necessary needs achieve this goal.

1 SCOPE

This specification covers City Power's requirements for multi zone walk through metal detector.

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.

Reference	Description
SANS 164-2-2	*Plug* and socket-outlet systems for household and similar purposes for use in South Africa Part 2-2: Fully dedicated system, 16 A 250 V a.c.
SANS 1574-5	Electric flexible cores, cords and cables with solid extruded dielectric insulation –Part 5: Rubber-insulated cores and cables
SANS 60950-1	Information technology equipment - Safety Part 1: General requirements
SANS 60529	Degrees of protection provided by enclosures (IP Code)
CP_TSSPEC_263	Specification for ICT hardware
CP_TSSPEC_237	Specification for Integrated Security System
SANS 9001/ISO 9001	Quality management systems – Requirements
SANS 10142-1	The wiring of premises – Part 1: Low-voltage installations.

3 DEFINITIONS AND ABBREVIATIONS

The definitions and abbreviations in the above documents shall apply to this specification.

4 REQUIREMENTS

4.1 Environmental Conditions:

4.4.1 Operating Temperature: 0 to 40°C

4.4.2 Storage Temperature: - 20 to 60°C

4.4.3 Humidity: 90 to 5% non-condensing

4.4.4 Protection Class: System / IP 20 / IP 43 or better

4.2 Safety Features

4.2.1 All electronic and electrical components shall be protected by lockable panel.

4.2.2 The multi-zone walk through metal detector shall not have any effect on heart pacemakers.

4.2.3 The multi-zone walk through metal detector shall not have any effect on all storage media or cameras.

4.3 Power Supply System

4.3.1 4.5.1 The multi-zone walk through metal detector shall be designed to be connected as follows:

a) Voltage of 220/240V

b) Frequency of 50Hz

c) 10 Amp Max With appropriate

d) Single Phase, three wire (phase, neutral and earth) power supply with surge protection

4.3.2 UPS Back up for 30 minutes

4.3.3 The system should be ready for Operation within 2 minutes following power failure.

4.3.4 No warming up procedure during Power –On

5 Metal Detector

5.1 General requirements

5.1.1 When operational and installed, the Multi zone walk through metal detector shall consist of a freestanding walk through frame with an integral control unit. It shall be suitable to detect metallic objects on a person by means of magnetic scan of the transit volume.

5.1.2 The Multi zone walk through metal detector shall be able to detect ferrous and non-ferrous metals.

5.1.3 The Multi zone walk through metal detector shall be able to locate concealed steel artefacts such as knives, weapons and firearms or any materials that can be used to make a bomb accurately on people in transit.

5.1.4 Detection shall be achieved by means of "height on person" display divided in to a minimum of at least 6 zones.

5.1.5 The Multi zone walk through metal detector shall scan the entire area of the walk through area and detect metal objects on a person passing through. The "height on person" display shall be by means of illuminated LEDs, which are built into the antenna of the metal detector.

5.1.6 The LEDs shall be programmed to provide a display on both sides of the frame.

5.1.7 The Multi zone walk through metal detector shall be completely tamper proof.

5.1.8 The program and sensitivity push buttons shall be so arranged that tampering by unauthorised persons is entirely eliminated and shall also be password protected.

5.1.9 The Multi zone walk through metal detector shall not be adversely affected by stationary metal bars or structures in the vicinity of the unit or moving metal near the archway.

5.1.10 The Multi zone walk through metal detector shall be capable of operating adjacent to an x-ray inspection unit.

5.1.11 The operation of the Multi zone walk through metal detector shall not be adversely affected by repositioning of the frame within certain limits of original adjusted position

5.2 Construction

5.2.1 The multi-zone walk through metal detector shall compromise of an aesthetic pleasing freestanding walk through frame containing the detector coils and the electronic control unit, complete with a 5 metre length of flexible cable and a 16A 3-pin plug top.

5.2.2 The cord and plug shall comply with SANS 1574-5.

5.2.3 The frame of the multi zone walk through metal detector shall be of a corrosion resistant and robust construction and designed to ensure rigidity.

5.2.4 The unit shall be able to detect metal objects, magnetic and non-magnetic, in the upper and lower zones (Multi zone) of the passage within the settings specified.

5.2.5 The finish shall be durable and meet or exceed the requirements for compliance with SANS 60529 classification of IP53 for indoors and IP55 for outdoors.

5.2.6 The type of material used for the construction of the frame and control unit shall be stated on the schedule.

5.2.7 The colour of the multi zone walk through metal detector shall grey, the relevant City Power department shall select a different colour should there be a need.

5.2.8 All material consisting of metal shall be corrosion resistant.

5.2.9 The dimensions of the frame shall be as follows:

5.2.9.1 Walk through channel height: 2000mm

5.2.9.2 Walk through channel width: 700-750mm

5.2.9.3 Overall external dimensions of the frame: 2220x460x850mm

5.3 Control System

5.3.1 The system shall operate by means of automatic level control adjustable to environmental changes without the need to reset.

5.3.2 The unit shall be equipped with highly visible "height on person" display, which shall be by means of illuminated LEDs and are built into the antenna of the metal detector.

5.3.3 The control unit shall be equipped with the following:

5.3.3.1 "ON/OFF" main switch

5.3.3.2 "Mains ON" indicator light

5.3.4 The sensitivity setting shall be consistent at average walking speed.

5.3.5 The system shall be modular to facilitate maintenance and repairs.

6 X-RAY SCANNER

6.1 General Requirements

6.1.1 The X-ray Scanner shall be used to scan pedestrians luggage to determine the presence of weapons and explosives.

6.1.2 The X-ray scanner shall be positioned ad main gates of all national key points.

6.1.3 The X-ray scanner shall consist of the following;

6.1.3.1 Generator for generating X-rays

6.1.3.2 Detector to detect radiation

6.1.3.3 Computer or PC to detect signal

6.1.3.4 Conveyer belt to move luggage into the detection chamber

6.1.3.5 A PC monitor to observe and monitor.

6.1.3.6 Peripherals shall include power supplies and cables as well as start and stop buttons.

6.2 Display:

6.2.1 19 inch. or better high–resolution,

6.2.2 low radiation, ergonomic,

6.2.3 LCD colour (2 Nos for simultaneous view of B/W and colour X-Ray scans)

6.2.4 Display resolution: 1280 x 1024; 24 bit/pixel colour or better

6.2.5 Contrast Sensitivity: 24 bit Visible Levels, 4096 Gray Levels

6.3 Physical Specifications:

The following dimensions shall be provided for as minimums.

6.3.1 Tunnel Opening: (600 - 650)mm x (420 - 450 mm) (with 5% tolerance)

6.3.2 Conveyor Speed: 0.19 - 0.21 m/s in both the directions or better

6.3.3 Conveyor Height: Maximum 803mm

6.3.4 Conveyor Capacity: Minimum 160 Kg

6.3.5 Dimensions: 2082mm x 850mm x 1382mm(Maximum Permissible)

6.4 X-Ray Generator

6.4.1 Voltage: 140 to 160kV (Typical range)

6.4.2 Cooling: Sealed Oil Bath

6.4.3 Tube current . 7mA – 1mA (Typical range)

6.4.4 Duty Cycle: 100%

6.4.5 Beam direction: Diagonal

6.5 Accessories:

6.5.1 System to support multiple user login accounts and maintain statistics for individual operator

6.5.2 performance.

6.5.3 Automatic Explosive and Narcotic detection

6.5.4 Screener Assist Threat Detection System

6.5.5 Entry/exit rollers (0.5m, 1.0m or 1.5m)

7 Computer Specification

7.1 The computer shall be equipped with the following as a minimum;

7.2 At a minimum: Processor: Intel i5, 3.1 GHz, 1333MHz, 6 MB cache, 2 GB RAM, 500GB HDD,

7.3 Video card (Dual digital display). Windows 7,

7.4 Suitable VA rated UPS to support PC and electronics for at least 15 minutes back up.

8 Systems requirements

8.1 Automated image archiving up to 50,000 images (1,00,000 images preferred)

8.2 User-friendly Image review - for up to last 50 images (100 images preferred)

8.3 System Health, Advanced continuous diagnostics (with appropriate indications in case of any abnormalities)

8.4 Date/Time Display

8.5 High penetration function

8.6 Density alert

8.7 Edge-enhancement imaging

8.8 Baggage counter

8.9 Colour and black/white imaging

8.10 Bi-directional conveyor movement

8.11 Image annotation

8.12 Manual archiving of images in bitmap format, JPEG , PNG etc.

8.13 Organic and inorganic imaging

8.14 Improved resolution and penetration

8.15 Print image function (Universal Printer support)

8.16 Real-time image manipulation

8.17 High resolution (1280 x 1024 or better) 19 in. (48.26 cm) LCD Monitor

8.18 User-defined access to image archive

8.19 2X to 32X User-selectable zoom (up to 64 X preferred)

8.20 Variable color stripping

8.21 Continuous diagnostics

8.22 Three Colour + gray scale

8.23 The system shall be protected by user login-id and password verification. The system shall be in standby mode if no operating is done for given time.

8.24 When system is recovered from standby mode, password re-verification should be required.

8.25 50 Generation of daily log of events for each operator performance.

9 THREAT IMAGE PROJECTION (TIP) SOFTWARE : (Features)

9.1 Image library: The TIP facility should have an image library containing at least 100 explosive devices, 100 knives and 100 firearms as well as CDs, floppies, thumb devices, etc., in various sizes, shapes, locations and orientations.

9.2 Expansion of TIP library: The system should have facility to expand the library to incorporate additional images by user without assistance of the manufacturer.

9.3 Realistic images: The image library should contain images of threats at different orientations – both plane and end-on orientation should be used. All image projection images should be realistic, representative and non-distinguishable from real threat items.

9.4 Image analysis: Once the screener / operator has responded to identify the computer generated threat image, it should remain on the screen for a predefined user programmable time for analysis. The image should be highlighted, upon identification, and feedback message shall be visible to the screener / operator.

9.5 The threat image projection facility should have details of user database such as screener/ operator name, user ID number, level of access such as screener / operator and Administrator with password.

9.6 Restricted Access: Access to start-up menu should be restricted only to authorized individuals. A login procedure by means of 'Password' or 'Security Key' should be provided to achieve restricted access.

9.7 Facility to bypass TIP : The system should have facility to bypass the TIP facility, if programmed so, by the system Administrator. It is to be ensured that the TIP software should not be a hindrance to normal functioning of X-ray machines.

9.8 Storing Data: All TIP data should be stored in the system database for a minimum period of two months, after it has been downloaded. No individual, regardless of access

10 Warranty

3 Years comprehensive on-site warranty & maintenance covering all parts, service, and visits to the site.

11 Maintenance

6.1 The unit shall be of a low maintenance type and with minimum future service.

6.2 Electronic modules shall be easily exchangeable.

6.3 Spare parts shall be locally stocked.

12 Guarantee, Services and Service Level Agreements

7.1 The unit shall be guaranteed for the period of 12 months from the date of delivery and installation.

7.2 During the period of guarantee the successful service provider shall at his own expense, carry out all necessary repair work including material and labour (excluding work required due to damage by others) in order to maintain the unit in working condition.

7.3 The successful service provider shall, during the period of guarantee repair the unit to the satisfaction of the department within 48 hours after been notified that the unit is not operating.

7.4 Service agreement shall be entered into between City Power and the service provider for the period of 24 months after the initial 12 months.

13 TESTS

The multi-zone walk through metal detector shall have been tested in accordance with the requirements of SANS 60529, SANS 60950-1and SANS 1574-5.

14 MARKING AND PACKAGING

In addition to the requirements, the multi-zone walk through metal detector shall be marked with the nominal voltage(s) for which they are designed. The packaging should be robust enough to protect the unit from damage of compression.

15 DOCUMENTATION

10.1 Detailed test reports confirming compliance with SANS 60529, SANS 60950-1and SANS 1574-5 shall be provided.

10.2 In addition to the documentation required above, full technical information relating to the performance, construction, operation manuals, control system, safety, etc of the multi-zone walk through metal detector shall be supplied.

10.3 The following information is required:

10.3.1 Manufacturer

10.3.2 Year of manufacture

10.3.3 Country of origin

10.3.4 Model number

16 TRAINING

Thorough training shall be given freely to operators designated by the relevant department in the operation of the unit. This training shall be organised by relevant department during handover.

17 QUALITY MANAGEMENT

A quality management plan shall be set up in order to assure the proper quality management of the multi-zone walk through metal detector during design, development, production, installation and servicing phases. Guidance on the requirements for a quality management plan may be found in the ISO 9001:2015. The details shall be subject to agreement between City Power and the Service Provider.

18 HEALTH AND SAFETY

A health and safety plan shall be set up in order to ensure proper management and compliance of the multi-zone walk through metal detector during installation, operation, maintenance, and decommissioning phases. Guidance on the requirements of a health and safety plan may be found in ISO 45001:2018 standards. This is to ensure that the asset conforms to standard operating procedures and City Power SHERQ Policy. The details shall be subject to agreement between City Power and the Service Provider.

19 ENVIRONMENTAL MANAGEMENT

An environmental management plan shall be set up in order to assure the proper environmental management of the multi-zone walk through metal detector throughout its entire life cycle (i.e. during design, development, production, installation, operation and maintenance, decommissioning and disposal phases). Guidance on the requirements for an environmental management system may be found in ISO 14001:2015 standards. The details shall be subject to agreement between City Power and the Service Provider. This is to ensure that the asset created conforms to environmental standards and City Power SHERQ Policy.

Annex A - Bibliography

None.

Annex B - Revision information

DATE	REV. NO.	NOTES
April 2018	0	First issue
June 2022	1	Second issue Added X-ray scanner to metal detector

Annex C - Technical Schedules A and B

ITEM No. 1: Multi-zone walk through metal detector

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

Item	Sub-clause of CP_TSSPEC_265	Description	Schedule A	Schedule B
1	4.1.2	Is the metal detector able to detect ferrous and non-ferrous metals	Required	
2	4.1.3	Minimum of 6 zones	Required	
3	4.1.7	Is the metal detector protected by password?	Required	
4	4.1.9	Is the metal detector capable of operating adjacent to an x-ray inspection unit?	Required	
5	4.2.1	Is the length of the flexible cable 5 metre and has 16A 3-pin plug top?	Required	
6	4.2.9	Does the dimension of the frame comply with 4.2.9.1 to 4.2.9.3	Required	
7	4.3.3	Does the metal detector comply 4.3.3.1 to 4.3.3.2	Required	
8	4.4.1	Are all electronic and electrical component protected by lockable panel?	Required	
9	4.4.2	Does the metal detector have any effect of heart pacemakers	Required	
10	4.5	Does the metal detector comply with the Electrical Supply System in 4.5?	Required	
11	4.6	Does the metal detector comply with the maintenance requirements in 4.6?	Required	
12	4.7.1	Does the metal detector guaranteed for the period of 12 months from date of delivery and installation?	Required	
13	5.1	Has the tests results of the unit attached?	Required	
14	7.3	Has the information required in 7.3 attached?	Required	
15	8	Provide training freely of charge to the identified designated operators after installation?	Required	

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

Tender Number:_____

Service Provider's Authorised Signatory:

_____

Name in block letter_____Signature_____

Full name of company: _____

Technical Schedules A and B

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 shall at least be more cost-effective than that specified by City Power.		
Item No.	**Sub-clause of CP_TSSPEC_265**	**Proposed deviation**

Tender Number:_____

Service Provider's Authorised Signatory:

_____

Name in block letter_____Signature_____

Full name of company: _____