

SECTION 28 13 53 – SECURITY METAL DETECTORS

1.01 SUMMARY:

- A. ^{A16}**Scope:** Scope of work shall be in accordance with Paragraph 1.01 D. of Section 01 81 26 (*Communications, Control, Safety, and Security Systems*), as required, for physical security **in the Works**.^{A16} This Section of the Employer's Requirements shall be read in conjunction with the sections listed in Table 28 13 53-1.
- B. **Related Sections:**

Table 28 13 53-1: Related Sections	
1.	Section 01 81 26 - Communications, Control, Safety, and Security Systems.
2.	Section 01 81 36 - Operations and Maintenance Buildings and Facilities – Program.
3.	Section 01 87 00 - Equipment and Furnishings (refer to turnstiles).
4.	Section 26 05 26 - Grounding and Bonding for Electrical Systems.
5.	Section 28 13 00 - Access Control Systems (ACSs).

1.02 REFERENCE:

- A. **Applicable Publications:** Refer to Section 01 81 26 (*Communications, Control, Safety, and Security Systems*), Paragraph 1.02.

1.03 REQUIREMENTS:

- A. **General Requirements:**
1. The Contractor shall meet all applicable requirements of Section 01 81 26 (*Communications, Control, Safety, and Security Systems*), Paragraph 1.03.
 2. Programmable metal detectors (PMDs) shall be designed to allow thousands of daily passages without failure, have a long service life, and minimize the overall operational cost of maintenance.
 3. PMD shall be light in weight to allow rapid deployment and quick setup and calibration. Periodic calibration shall not be needed.
 4. PMD shall not require recalibration each time the unit is turned OFF and back ON. No battery shall be required for memory retention.
 5. While PMD is in operation, a self-test of all systems is performed continuously with any failures or problems immediately reported on the liquid crystal display (LCD) display.

B. Equipment and Materials:

1. Metal Detectors:

- a. PMD shall be microprocessor based to allow programming, saving, and setting required security pre-programmed operational modes.
- b. PMD shall be walk-through column gate elliptic shaped, IEC 60529 type IP55 or IP65 weatherproofing compliant for outdoor operation, made of corrosion resistant materials, and provisioned with waterproof fastening metal plates to fix unit to the floor as required. Unless otherwise recommended by the Contractor and reviewed by the Employer’s Representative, all metal parts exposed to the air shall be stainless steel.
- c. Built-in photocells shall be provisioned with PMD to allow counting people passing through.
- d. PMDs shall have the following or better characteristics:

Table 28 13 53-2: Metal Detector Characteristics		
Alarm	Audible	High intensity acoustic signal, with programmable volume and alarm tone.
	Visual	At least 24 zones LED display bar with high visibility and wide angle of view.
Control Unit		In detector structure with water proofing and environmental coverings.
Data Interfaces	Serial	^{A10} TIA 232/485 ^{A10}
	LAN	^{A10} TIA 422 ^{A10} (optional), and Ethernet
Detection	Speed	Between 12 and 15 m/s
	Zones	24 independent zones, each one with adjustable sensitivity, for full target coverage on the left, center, and right side of the body from head to toe, fully programmable and displayed on LED array. PMD shall display at least single or multiple mode zoning to point out location of metal mass or detected objects in relation to height on person.
Metering		Signal lights indication is proportional to the mass of the object detected
Operating Environment	Relative Humidity	0 to 95% (without condensation)
	Temperature	+10 °C to +70 °C
Power Supply	Backup	Rechargeable battery
	Consumption	30 VA maximum
	Voltage	120 / 240 VAC, 60 Hz
Programming	Local	Chip card
	Remote	Network capability and ready
	Protection	Mechanical lock and alphanumeric passwords
Size		Overall 711 mm (28 inch) to 813 mm (32 inch) wide X 2,032 mm (80 inch) clear height.

- e. Detectors shall have high discrimination between threat items and harmless metallic objects.
- 2. **Personal Effects Depository:**
 - a. Each metal detector shall be provided with upper tray for placement of small metal personal effects.
 - b. Units shall be a mating part of metal detector unit and have all parts made of same synthetic robust material of metal detector columns. Dimensions shall be approximately 610 x 360 x 975 mm.
- C. ^{A16}**Software:** Shall be as required to meet the Employer's Requirements. ^{A16}
- D. **Installation:**
 - 1. **Metal Detectors:**
 - a. Each new OPP guard house shall be furnished with a PMD.
 - b. Electrical circuits used for PMD shall be connected to a back-up power supply circuit for continuous operation.
 - c. Metal structure shall be grounded in accordance with Section 26 05 26 (Grounding and Bonding for Electrical Systems).

1.04 DESIGN CRITERIA/SYSTEM PERFORMANCE:

- A. **General:**
 - 1. **Problem to be Solved:** Security metal detectors shall solve the following business needs:
 - a. Detect metal objects at designated points, including arms and tools.
 - 2. **Restrictions to be Considered:** (reserved)
- B. **Design Criteria:** (reserved)
- C. **System Performance:**
 - 1. Programmable multi-zone detectors (PMDs) shall spot people attempts of carrying magnetic, non-magnetic, and mixed alloys metal weapons inside the monitored passage of check points.
 - 2. PMD shall have a very low alarm rate, and very high immunity to both electrical and mechanical interference.

1.05 SUBMITTALS: The following shall be submitted for substantiation purposes:

- A. **Design:** The following shall be in accordance with Section 01 81 26 (Communications, Control, Safety, and Security Systems), Paragraph 1.05 D:
 - 1. Calculations, including system availability.
 - 2. Critical path method (CPM) diagram, with monthly updates.
 - 3. Drawings.
 - 4. Protection methods for corrosion, Electrostatic Discharge (ESD), fungus/humidity, lightning/surge, power distortion and harmonics, radio frequency interference / electromagnetic interference (RFI/EMI), thermal, and vibration.
 - 5. Specifications.
 - 6. Strengths, weaknesses, opportunities, and threats SWOT analysis.
 - 7. Any other data required for review.
- B. **Re-submittals Just Prior to Purchasing Materials:** All items in Subparagraph A. above that have changed from original submittal shall be resubmitted in a design conference in accordance with Section 01 81 26 (Communications, Control, Safety, and Security Systems), Paragraph 1.05.
- C. **Upon Receipt of Shipped Items in Panama:**
 - 1. Instruction manuals for installation, maintenance, and operation.
 - 2. Packing lists.
- D. **Prior to Issuance of Taking-Over Certificate:**
 - 1. As-built drawings.
 - 2. List of recommended spare parts.
 - 3. Software licenses.
 - 4. Test reports.
 - 5. Training services.

1.06 QUALITY ASSURANCE: Shall include the following in accordance with Section 01 81 26 (Communications, Control, Safety, and Security Systems), Paragraph 1.06:

- A. Factory quality control tests (FQCT).
- B. Final field inspection tests (FFIT).

- C. Training services for no less than four persons from Employer's Personnel. The Contractor shall provide factory direct training in Panama, pay for all of the expenses, and deliver the certificates for all attendees.
- D. Warranty.

END OF SECTION

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