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**Urban public facilities - Electronic fence system - Operation
specification**

城市公共设施电子围网系统 运行规范

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Table of Contents

1 Scope	1
2 Normative references	1
3 Terms and definitions	1
4 General	1
5 Operating resources	2
5.1 Handover and takeover	2
5.2 Rule system	2
5.3 Equipment management	2
5.4 Personnel management	3
5.5 Emergency management	3
5.6 Intelligent management	3
6 Operating services	3
6.1 Service flow	3
6.2 Inspection and maintenance	4
6.3 Scheduled servicing	6
6.4 Fault handling	6
6.5 Data management	7
7 Operating evaluation and improvement	7
7.1 Operating evaluation	7
7.2 Continual improvement	8

3 Terms and definitions

3.1 electronic fence system: an urban public facility management system that applies information technologies such as multiple moving target detection, face recognition and intelligent analysis, combines smart sensing devices with mobile patrol, and provides early warning, tracking, alarm and multi-level coordinated handling for people, vehicles, objects and other targets entering a controlled area.

3.2 operation: the inspection and maintenance, scheduled servicing, fault handling and similar work carried out on an electronic fence system.

3.3 remote inspection: checking the functional state of the equipment of an electronic fence system without going on site. 3.4 on site inspection: checking the physical state and the functional state of that equipment on site.

4 General

The operating architecture, shown in Figure 1, holds operating resources, operating services, and operating evaluation and improvement.

Operating resources provide the underlying support that the operating services need, and cover handover and takeover, the rule system, equipment management, personnel management, emergency management and intelligent management.

Operating services apply different operating modes according to the object served; the modes are inspection and maintenance, scheduled servicing, fault handling and data management, and the objects are the front-end sensing layer, the information transmission layer and the business processing layer.

Operating evaluation and improvement makes improvements on the strength of the evaluation of resources and services, so that the system keeps receiving sound operating service.

The establishment of operating resources follows the principles of completeness, compliance, suitability and effectiveness. The operating services safeguard reliable, efficient, stable and secure running of the system. Operating evaluation and improvement follows the principles of objectivity, fairness, soundness and completeness, and service quality is improved continually on the strength of the evaluation results.

5 Operating resources

5.1 Handover and takeover. The electronic fence system shall be put into operation only after the works have passed completion acceptance. The builder shall confirm the state of the system and its equipment and then hand the operating work over to the service provider. On taking the system over, the service provider shall obtain the complete records produced during construction.

5.2 Rule system. An organisational structure shall be set up and responsibility rules drawn up for each body and post. Equipment management rules shall be drawn up, covering the equipment ledger, operating procedures, the fault handling plan and spare parts. Safety management and fire management rules shall be drawn up.

5.3 Equipment management. An equipment ledger shall be kept, recording the running state of the equipment and its inspection, maintenance and servicing; the records shall be complete and accurate. Equipment operating procedures and instructions shall be drawn up so that operation is disciplined. A fault handling plan shall be drawn up, covering the grading of fault events and how each is to be met. A spare parts store shall be set up, holding equipment that commonly fails and consumable parts.

5.4 Personnel management. Posts shall be set up according to the operating need, with

responsibility rules for each post covering duties, workflow and operating procedures. Staff shall receive post skills training and shall pass an assessment before taking up the post. They shall respond promptly to what happens on site and deal with problems on their own initiative. They shall observe the post responsibility rules and query and monitor the system in real time as required.

5.5 Emergency management. An emergency management body shall be set up and the necessary emergency equipment, apparatus and supplies provided and checked regularly so that they stay in good order. A single emergency command centre shall be set up to command and coordinate the handling of incidents. Emergency plans shall be drawn up and exercised regularly. Once an emergency occurs, the plan shall be activated as prescribed and measures taken to stop the situation spreading.

5.6 Intelligent management. An intelligent management platform should be set up to suit the needs of the operating resources and services, with functions such as service dispatch, tracking, recording and statistical analysis. The running state of the subsystems and equipment of the front-end sensing, information transmission and business processing layers should be monitored according to their characteristics. An operating database should be set up for judging system state and predicting faults and for providing predictive inspection schemes. The quality indicators of the operating service should be monitored, including at least the mean event response time, the event response rate, the mean fault repair time, the on-time fault repair rate, the equipment fault rate and the completeness rate of documents and records.

6.1 Service flow

The operating service shall be carried out in the following flow.

A work plan for remote inspection, on-site inspection and scheduled servicing is drawn up from the scale of deployment, the equipment and the user's needs.

Remote inspection is used to view the functional state of the equipment, and the equipment state and any operating problems are recorded.

The on-site inspection route is planned by reference to the remote inspection record, and the operating problems found remotely are given particular attention.

On-site inspection is used to view the physical and functional state of the equipment, and the inspection is recorded, including at least the location of the work, the equipment model and number, the equipment state and the fault found.

During inspection and maintenance the logs generated automatically by the equipment are queried and collected, and the equipment state judged from them, as a basis for scheduled servicing and fault handling.

Scheduled servicing keeps the equipment in good running order and lengthens its service

life, and may be combined with on-site inspection.

When the system develops a fault, the fault is analysed and dealt with under the fault handling plan, drawing on the inspection and maintenance records and the equipment logs.

6.2 Inspection and maintenance

6.2.1 Front-end sensing layer. Remote inspection shall cover at least whether the equipment is connected to the network, whether the picture from the video surveillance equipment is normal, whether the smart sensing equipment obtains target information normally, whether the fixed checkpoint equipment captures and recognises normally, and whether the collection of equipment logs and the recording and reporting of the related warnings and errors are normal.

On-site inspection of video surveillance covers, physically, whether the power supply is normal, whether the network connection is normal, whether the camera lens is clean and free of obstruction in front of it, whether the damp-proof and corrosion-proof layer and the seal are in order, and whether the equipment and its supporting structure are damaged; and functionally, whether image sharpness, the picture of the monitored position, camera control, information recognition, remote operation and equipment interlocking are normal.

On-site inspection of smart sensing covers, physically, whether the power supply is normal, whether the network connection is normal, whether there is any obstacle within the sensing range, and whether the mounting base and protection of the equipment have worked loose, been damaged, deformed, become damp or admitted water; and functionally, whether the sensor state, signal recognition, remote operation and equipment interlocking are normal.

On-site inspection of mobile patrol covers, physically, whether the power supply is normal, whether the network connection is normal, and whether the heat dissipation module and the working temperature of the patrol unit are normal; and functionally, whether system log-in and memory load of the patrol unit are normal, and whether positioning, upload of position information and transmission of video and voice information are normal.

On-site inspection of the fixed checkpoint covers, physically, whether the equipment and its supporting structure are damaged; and functionally, whether recognition and surveillance equipment, card readers, information display equipment, audible and visual alarm equipment and barrier control equipment work normally, and whether recognition interlocking and alarm display across the related equipment and systems work normally.

6.2.2 Information transmission layer. Remote inspection shall cover at least whether the network topology and connection state of the equipment are normal, whether the port load is within the normal range, whether the collection of equipment logs and the recording and reporting of the related warnings and errors are normal, and whether the running of the transmission equipment, the ambient temperature, service handling, data backup and alarm logs are normal.