

FENCE PROTECTION SYSTEMS

I. GENERAL:

- I.1. This standard is intended to define specifications for the procurement and installation of Electronic Shock Vibration Type Perimeter Fence Security Protection Systems for the purpose of detecting entry into a designated security area.
- I.2. The Perimeter Fence Security Protection System shall be the electronic shock vibration type integrated with advanced PC-based signal processing and shall incorporate a fully integrated monitoring meteorological device. The meteorological sub-system shall be capable of detecting environmental changes resulting from wind and precipitation and supply the necessary “real-time data to the system processor. Based on this continuously updated flow of meteorological information the system processor shall constantly adjust fence sensor operating parameters to minimize the generation of environmentally induced false alarms while maintaining nearly 100% probability of detection. The perimeter detection system shall be capable of operating to specification in fog, rain, snow or other adverse weather conditions.
- I.3. The Perimeter Fence Security System shall include a complete operating perimeter security system with central monitoring computer, processor, and controlled weather notification device, sensor cable, accessories and such other peripheral equipment as the site may require. The perimeter security system shall have the capabilities to detect perimeter intrusion attempts and indicate alarms on a color graphic display on a central monitoring computer with flashing alarm zones, custom digital audio annunciation of alarms, and command and control capabilities for CCTV cameras via serial port communication, on screen video of alarmed zones and a hard copy printout of alarm activity on the system printer. The system shall also provide relay outputs for each zone, power/communication failure and tamper from the system processor to other site monitoring systems.

II. FIELD SENSOR EQUIPMENT & INSTALLATION REQUIREMENTS:

All Fence Protection Systems will be procured, installed, and programmed in accordance with site specific zone layout drawings provided by JEA Project Management.

- II.1. Field sensors and cable shall be installed on the fence material, concertina, razor ribbon, barbed wire or other such media per manufacturer’s specifications utilizing approved materials and positioned according to design requirements.
- II.2. The sensors and cable shall be mounted on the fence material, concertina, razor ribbon, barbed wire, or other such media using UV resistant cable ties.
- II.3. Lengths of fence protection zones will vary and shall depend to a large degree on the need for certain sections of perimeter to require extra accuracy in locating an attempted intrusion.
- II.4. Sensor cable shall be supplied pre-assembled with shock vibration sensors installed at regular intervals. Detection sensitivity shall be software adjustable by individual zones from the central computer keyboard. No field sensitivity adjustments shall be required.
- II.5. The system shall have separate adjustable wind and precipitation compensation settings for each zone from the central computer keyboard. No field adjustments shall be required.
- II.6. All sensor cable shall be UV resistant to sunlight and rated for direct burial cable.

- II.7. All sensors shall come encased in UV resistant high impact plastic with gold plated internal contact points.
- II.8. All sensor cables shall be fully supervised and an alarm shall be generated if any cable is cut, shorted to ground or each other.
- II.9. A tamper alarm shall be generated if the processors enclosures are opened via an internally mounted enclosure tamper switches.
- II.10. The sensor devices shall be the shock vibration type, weather resistant, UV protected and shall detect in the X, Y and Z axis.
- II.11. System sensor devices shall be capable of operating at -55°C to +155° C. (-67 °F to 311°F)
- II.12. All system internal contact points shall be gold plated to MIL Spec #MIL-G45204-B Type 2 Grade C.
- II.13. All sensors shall be weather resistant and come pre-assembled on a multi-conductor cable.
- II.14. All sensor cable shall be an overall foil wrapped UV resistant PVC jacketed cable suitable for direct burial and EMI/RFI protected.
- II.15. Fence sensors shall not require field calibrations and or routine maintenance and adjustment.

III. SYSTEM OPERATIONAL AND EQUIPMENT REQUIREMENTS:

- III.1. Fence protections systems must be capable of incorporating a dual technology outdoor motion detector(s) to cover all vehicular gates that penetrate the electronic fence protections system perimeter. These devices shall be installed in the most optimum position to provide coverage of the secure side of the gate only and shall not activate due to motion on the non-security side of the electronic fence protection system perimeter.
- III.2. The dual technology outdoor motion detector(s) shall be connected to the fence protection system digital input board for proper monitoring and control.
- III.3. All Fence Protection Systems shall be capable of connecting to the existing GE Facility Commander Wnx security system, Hy-Security Slide Drive gate operators where applicable and also these devices shall have the capabilities to be connected to the fence protections system digital input board for proper monitoring and control. All Fence Protection Systems shall be capable of connecting to any existing Hy-Security Slide Driver gate operators. This connection will be installed as needed in order to allow the fence protections system processor to temporarily “mask” the applicable outdoor motion detector(s) and fence protection zones(s) when the gate operator is activated.
- III.4. The fence protection system shall be capable of utilizing (two routes”) or redundant methodology when installing g the cabling on the perimeter fence to minimize the severity and loss of zone coverage when a FPS zone is physically severed.
- III.5. All fence protection system processor enclosures must be capable of being rack mounted, when an equipment rack is available at the installation site.

IV. SYSTEM PROCESSOR REQUIREMENTS:

- IV.1. The processor enclosures shall include the controller, transponder modules, all accessory electronics, and standby battery with recharger and power supply as required for system

operation. All processor enclosures shall contain an LED power on indicator and a power-reset switch.

- IV.2. The system processor shall be capable of monitoring electronic signals from perimeter sensors and continually analyze and evaluate these signals. The processor shall also analyze inputs from the meteorological device and dynamically calibrate the system for each zone individually during adverse weather conditions to reduce the possibility of weather induced false alarms.
- IV.3. The processor shall be capable of supporting relay outputs for each zone and relay outputs for power/communication failure, tamper and one general output relay.
- IV.4. The processor shall facilitate a battery backup capable of supplying 24 VDC at .500 ma... to support operation of the system during a power outage. The battery shall automatically recharge when 120 VAC power is restored to the system.
- IV.5. The processor shall indicate alarms to a central monitoring computer via RS-232 communication.
- IV.6. The processor shall require no field calibrations, routine maintenance or adjustments.

V. METEOROLOGICAL ASSEMBLY REQUIREMENTS:

- V.1. The fence protection system shall utilize a Meteorological assembly for each system.
- V.2. The Meteorological assembly shall be a fully integrated monitoring sub-system that is capable of detecting environmental changes resulting from wind speed or precipitation intensity and supplies the necessary data to the system processor.
- V.3. Output signals from the Weather Station shall be transmitted through a communication cable to the processor which in turn shall automatically calibrate the system's thresholds for each zone individually according to the weather conditions.
- V.4. The transmitted data from the Weather Station shall cause the processor to constantly adjust fence sensor-operating parameters to minimize the generation of weather induced false alarms.

VI. CENTRAL MONITORING COMPUTER SYSTEM:

- VI.1. The central monitoring computer shall have a multi Gbyte hard disk drive, color monitor, video card, high-density diskette drive, zip drive, CD Rom drive and a printer.
- VI.2. The central monitoring computer system software shall be capable of constantly monitoring the site for intrusions regardless of the operation being performed within the system software.
- VI.3. The system software shall provide a custom site map with flashing alarm zones, custom digital audio messages for each alarm and on screen video of alarmed zones.
- VI.4. The central monitoring computer shall have "data log" retention of alarm activity on the computer hard drive as well as a hard copy printout of alarm activity on the system printer.
- VI.5. The site monitoring system shall provide multi-level password access and have software adjustable sensitivity settings for each zone from the central monitoring computer keyboard, no field adjustments required.

- VI.6. The site monitoring system shall provide software adjustable wind and precipitation compensation settings for each zone individually from the central computer keyboard, no field adjustments required.
- VI.7. The site monitoring system shall include software adjustable event/condition zoning for each zone or software adjustable dual domain zoning for each zone from the central computer keyboard.
- VI.8. Event/condition zoning shall allow individual gate zones to be shunted when related activities occur (such as a valid card read from an access control system) during a software programmable “Time Window”.
- VI.9. The Dual Domain programming shall allow an alarm to be generated only when multiple related activities occur during a software programmable “Time Window”.
- VI.10. The site monitoring system shall include manual keyboard access to instantaneous spot weather conditions including current wind speed and precipitation values.
- VI.11. The site monitoring system shall have the capabilities to automatically log wind speed and precipitation values to the site monitoring system database at software programmable regular intervals.
- VI.12. The site monitoring system shall include logged wind and precipitation values taken in real time when an alarm occurs.

VII. COMPUTER INTERFACE REQUIREMENTS:

- VII.1. The fence protections system shall possess a digital output card within the processor enclosure that provides an alarm output per fence protection zone that will integrate with the JEA GE Facility Commander Wnx System at each subject site.
- VII.2. The fence protection system shall utilize a software program for remote testing and diagnostics of the systems. This shall include but is not limited to the ability of providing a graphical map of the subject site which can be utilized for maintenance of specific site electronic fence protection systems.

EQUIPMENT SPECIFICATIONS:**VIII. SENSOR CABLE:**

- VIII.1. Maximum Zone Length: 27,000 feet.
- VIII.2. Conductors: (9) nine AWG: 22 stranded 730 tinned copper.
- VIII.3. Cable jacket: .060 black polyvinyl chloride and Teflon™ Jacket, sunlight resistant-direct burial.
- VIII.4. Cable diameter: .280 nominal - .295 maximum.
- VIII.5. Applicable UL Designation: subject 13 NEC 725, type PLTC, 300v 105c.
- VIII.6. Surface Print: ISC-9...E101837 (UL) type PL/TC 105c-300v NEC Article 725 sunlight resistant-Direct Burial...22 AWG 9/c.

VIII.7. Output Points: Form “A” relay contact outputs provided for each zone, plus tamper alarm relay, communication failure alarm relay, power failure alarm relay and one general output relay.

IX. SENSOR:

- IX.1. DIMENSIONS: Height = 2.3 in., width=1.5 in., depth=1.0 in.
- IX.2. Weight: 1/5 oz.
- IX.3. Power Requirements: +5 vdc EMI-RFI protected.
- IX.4. Construction: Injection molded UV protected mil. Spec. plastic.
- IX.5. Operating Temp: -50 to +155° C (-67°-311°F), mil. Spec.
- IX.6. Sensor Cable: Sensors shall be pre-assembled on Shielded 22 AWG, 9 conductor cables.
- IX.7. Sealing: Sealed in accordance with mil. Spec. #A-46146 RTV. Sensor shall be weather sealed and maintenance free.
- IX.8. Sensor Contact Points: sensor detection chamber shall be provided per internal mil. Spec. with gold plated contact points. Chamber shall be weather sealed and maintenance free.

X. SYSTEM PROCESSOR:

- X.1. Power Input Requirement: 120/240 VAC, 24VDC, with Battery backup.
- X.2. Enclosure: NEMA 4 or indoor, lockable with tamper switch.
- X.3. Operating Temperature: -55° to 311°C (-67° to 311°F).
- X.4. Lightning Protection: Semiconductor transzorsorbs, effective against both high energy and fast rise transients.
- X.5. Input Points: Unlimited.
- X.6. Maximum Zone Length: 27,000 feet, each zone, fully supervised.
- X.7. Output Points: Form “A” relay contact outputs provided for each zone, plus tamper alarm relay, communication failure alarm relay, power failure alarm relay and one general output relay.
- X.8. Hardware Protocol: RS-232 to host computer, RS-485/422 controller to field transponders.
- X.9. Controls: Dip switch selectable addresses, modem select, wind and rain compensation enabler, reset switch.
- X.10. LED Indicators: Power on/off
- X.11. Connections: Compression type terminal connectors, RS-232 (DB-25). RS-485 controller to field transponder.
- X.12. Remote Communications: Capable of remote communications via modem to host computer. RF Link or Microwave.
- X.13. Sensitivity Control: Sensitivity software shall be adjustable individually by zone (no field adjusting of transponders required). Wind and rain compensation software adjustable individually by zone. No field adjustments are required.

X.14. Peripherals: Weather Station shall detect environmental changes resulting from wind speed and precipitation intensity.

XI. METEOROLOGICAL ASSEMBLY:

- XI.1. Lighting Protection: Semiconductor transsors, effective against both high energy and fast rise transients.
- XI.2. Output Points: Anemometer/precipitation sensors.
- XI.3. Maximum Cable Length: 3,000 feet, for each weather station
- XI.4. Number of Devices: One weather station per transponder or controller card.
- XI.5. Controls: Dip Switch selectable addresses, wind and rain compensation enable.
- XI.6. Connections: Compression type terminal connectors to host controller or field transponder.
- XI.7. Sensitivity Control: Sensitivity software shall be adjustable per zone, (no field adjusting or transponders are required). Wind and precipitation compensation software adjustable by individual zone from the central computer keyboard.
- XI.8. Environmental: Environmentally sealed components.
- XI.9. Operating Temperature: -55°C to 155°C (-67°F to 311°F)
- XI.10. Detection: Unit shall detect precipitation intensity and wind speed status.
- XI.11. Password protected: unit shall have password protection for adjustment capability for wind and precipitation compensation by individual perimeter zone from the central computer keyboard.
- XI.12. Installation requirements: Mast or wall mounting.

XII. GUARANTEES/ WARRENTEES:

- XII.1. System shall be provided with a written 1 year warranty for parts and labor.

XIII. SYSTEM INSTALLATION:

- XIII.1. All installation work shall be accomplished in a professional manner by manufacturer trained installers.
- XIII.2. All on-site workers shall conform to JEA Safety Requirements.

XIV. DOCUMENTATION:

- XIV.1. All equipment manuals, wiring diagrams, operational instructions or any other written materials associated with the installation of the Electronic Shock Vibration Type Perimeter Fence Security Protection System shall be turned over to JEA upon final operational acceptance of the system.