SECTION 281607 - INFRARED DETECTION SYSTEM

Use this section in conjunction with section 281603.

1. GENERAL
   * + 1. RELATED WORK SPECIFIED ELSEWHERE
          1. Video Training Programs: Section 017900.
          2. Main Security Console: Section 281601.
          3. Fence Accessory Stations For Perimeter Security Systems: Section 281602.
          4. Perimeter Security Multiplex System: Section 281603.
       2. SYSTEM DESCRIPTION
          1. The infrared detection system shall operate as a zoned, outdoor perimeter protection system integrated with the perimeter security multiplex system (Section 281603) which detects movement and causes an alarm to be sounded at the main security console when an intrusion occurs.
       3. SUBMITTALS
          1. Submittals for this section are subject to the re-evaluation fee identified in Article 4 of the General Conditions.
          2. Manufacturer’s installation instructions shall be provided along with product data.
          3. Submittals shall be provided in the order in which they are specified and tabbed (for combined submittals).
          4. Waiver of Submittals: The “Waiver of Certain Submittal Requirements” in Section 013300 does not apply to this Section.
          5. Submittals Package: Submit the shop drawings, product data, and quality control submittals specified below at the same time as a package.
          6. Shop Drawings:

Composite wiring and/or schematic diagrams of the complete system as proposed to be installed (standard diagrams will not be accepted).

Scale drawings showing exact location of infrared transmitters and sensors (drawings shall be from Company producing the infrared equipment).

* + - * 1. Product Data:

Catalog sheets, specifications and installation instructions.

Bill of materials.

Detailed description of system operation (format similar to SYSTEM DESCRIPTION).

Name, address and telephone number of nearest fully equipped service organization.

* + - * 1. Quality Control Submittals:

Copy of license for installing Security Systems.

Also include copy of identification card issued by the Licensee for each person who will be performing the work.

Installers’ Qualifications Data: Include the following for each person who will be performing the Work:

Name.

Employers name, business address and telephone number.

Name and addresses of the required number of similar projects worked on which meet the experience criteria.

Company Field Advisor Data: Include:

Name, business address and telephone number of Company Field Advisor secured for the required services.

Certified statement from the Company listing the qualifications of the Company Field Advisor.

Services and each product for which authorization is given by the Company, listed specifically for this project.

* + - * 1. Contract Closeout Submittals:

Test Report: System acceptance test report.

Certificate: Affidavit, signed by the Company Field Advisor and notarized, certifying that the system meets the contract requirements and is operating properly.

Operation and Maintenance Data:

Deliver 2 copies, covering the installed products, to the Director’s Representative. Include:

Operation and maintenance data for each product.

Complete point to point wiring diagrams of entire system as installed. Number all conductors and show all terminations and splices. (Numbers shall correspond to numbered tags installed on each conductor.)

Name, address, and telephone number of nearest fully equipped service organization.

* + - 1. QUALITY ASSURANCE
         1. Installers’ Qualifications: The persons installing the Work of this Section and their supervisor shall be personally experienced in security systems and shall have been engaged in the installation of security systems for a minimum of 3 years.

The installer shall be employed by an organization certified by the manufacturer of the system to be technically qualified in the installation and servicing of the required products.

Furnish to the Director the names and addresses of 5 similar projects which the foregoing people have worked on during the past 3 years.

* + - * 1. Source Quality Control: The Company producing the system shall have test facilities available which can demonstrate that the proposed system meets contract requirements.
        2. Equipment Qualifications For Products Other Than Those Specified:

At the time of submission provide written notice to the Director of the intent to propose an “or equal” for products other than those specified. Make the “or equal” submission in a timely manner to allow the Director sufficient time to review the proposed product, perform inspections and witness test demonstrations.

If products other than those specified are proposed for use furnish the name, address, and telephone numbers of at least 5 comparable installations that can prove the proposed products have performed satisfactorily for 3 years. Certify in writing that the owners of the 5 comparable installations will allow inspection of their installation by the Director's Representative and the Company Field Advisor.

Make arrangements with the owners of 2 installations (selected by the Director) for inspection of the installations by the Director's Representative. Also obtain the services of the Company Field Advisor for the proposed products to be present. Notify the Director a minimum of 3 weeks prior to the availability of the installations for the inspection, and provide at least one alternative date for each inspection.

Only references from the actual owner or owner’s representative (Security Supervisor, Maintenance Supervisor, etc.) will be accepted. References from dealers, system installers or others, who are not the actual owners of the proposed products, are not acceptable.

Verify the accuracy of all references submitted prior to submission and certify in writing that the accuracy of the information has been confirmed.

The product manufacturer shall have test facilities available that can demonstrate that the proposed products meet the contract requirements.

Make arrangements with the test facility for the Director's Representative to witness test demonstrations. Also obtain the services of the Company Field Advisor for the proposed product to be present at the test facility. Notify the Director a minimum of 3 weeks prior to the availability of the test facility, and provide at least one alternative date for the testing.

Provide written certification from the manufacturer that the proposed products are compatible for use with all other equipment proposed for use for this system and meet all contract requirements.

* + - * 1. Company Field Advisors: Secure the services of a Company Field Advisor for a minimum of 30 hours for the following:

Edit number of hours to suit.

Render advice regarding installation and final adjustment of the system.

Witness final system test and certify with an affidavit that the system is installed in accordance with the contract documents and is operating properly.

Train facility personnel on the operation and maintenance of the system (minimum of two 2 hour sessions).

Explain available service programs to facility supervisory personnel for their consideration.

* + - * 1. Service Availability: A fully equipped service organization capable of guaranteeing response time within 8 hours to service calls shall be available 24 hours a day, 7 days a week to service the completed system.
      1. MAINTENANCE
         1. Spare Parts:

One Type “A” sensor unit.

One Type “B” sensor unit.

One test unit.

Six of each size fuse.

One borescope.

1. PRODUCTS
   * + 1. INFRARED DETECTION SYSTEM
          1. Infrared Sensor Unit: I.P.I.D System by ECSI-EAG International, 23 Just Road, Fairfield, NJ 07004, (201) 575-0536, having:

Range: 300 ft in heavy fog or snow; 900 ft when clear and dry.

Housing: 3/8 inch gage aluminum, NEMA 4 weatherproof and vandal resistant construction.

Input circuit suitable for operation on 28 volts dc.

Pulse Format:

Transmitter impulse - 90 mm (3.54 inch).

Transmitter divergence - 15 mrad.

Impulse frequency - 1200 Hz.

Impulse time - 6 microseconds.

Sensor Unit Format:

Type “A”: 2 beam unit, top transmits bottom receives.

Type “B”: 2 beam unit, top receives bottom transmits.

Type “CC”: 4 beam unit, transmits only.

Type “DD”: 4 beam unit, receives only.

* + - * 1. Sensor Unit Mounting Poles: ECSI-EAG International’s mounting pole, having:

6 inch square ‘T’ slotted extruded aluminum pole.

Sensor/transmitter mounting plate, 3/8 inch thick aluminum.

Cast aluminum base.

Cast aluminum top plate.

One inch diameter x 36 inch long anchor bolts (4 per pole) with galvanized hex head nuts and washers. Threaded end hot dipped galvanized minimum of 5 inches. Right angle bend (3 inch) at bottom (L-shaped anchor bolts).

* + - * 1. Interconnection Cable:

Type MCC-I: Multi conductor cable with 6 individually shielded twisted pairs of insulated 20AWG stranded copper wires enclosed in a high density polyethylene jacket suitable for direct burial in earth; Belden Corp.’s 9886, Carol Cable Co. Inc.’s C6062, Quabbin Wire & Cable Co. Inc.’s 6175, Remee Product Corp.’s 3039DB, or Tappan Wire & Cable Inc.’s 2050AT6DB.

* + - * 1. Surge Suppressors: As required to protect equipment from voltage transients and lightning surges.
        2. Central 28 volt DC nominal power supply and batteries as required for powering infrared transmitters and sensors.

Power supply capacity suitable for powering all infrared transmitters and sensors and recharging batteries.

Batteries sized to operate all transmitters and sensors for minimum of 4 hours upon loss of AC power.

Sealed, lead-acid, gelled electrolyte batteries.

Mount power supply and batteries in main security console (Section 281601).

* + - 1. CONCRETE BASES
         1. As detailed on the drawings. Bases may be precast or poured in place.

Infrared system details available on CADD.

* + - 1. MARKERS AND NAMEPLATES
         1. Markers: Premarked self-adhesive; W.H. Brady Co.’s B940, Thomas and Betts Co.’s E-Z code WSL self-laminating, Ideal Industries’ Mylar/Cloth wire markers, Markwick Corp.’s permanent wire markers, or Plastic Extruded Parts Inc.’s Flexible Sleeve or ID Band Markers.
         2. Nameplates: Precision engraved letters and numbers with uniform margins, character size minimum 3/16 inches high.

Phenolic: Two color laminated engraver’s stock, 1/16 inch minimum thickness, machine engraved to expose inner core color (white).

Aluminum: Standard aluminum alloy plate stock, minimum .032 inches thick, engraved areas enamel filled or background enameled with natural aluminum engraved characters.

* + - 1. ACCESSORIES
         1. System shall include all accessories required to perform the functions summarized in SYSTEM DESCRIPTION and indicated on the drawings.

1. EXECUTION
   * + 1. INSTALLATION
          1. Install infrared detection system in accordance with the Company’s printed instructions and interconnect with perimeter security multiplex system (Section 281603) for a complete integrated system.
          2. Exact location of infrared transmitter and sensor units shall be as recommended by the Company producing the system.

Have Company Field Advisor mark exact location of transmitter and sensor units at the site.

* + - * 1. Install a ground rod at each transmitter and sensor location for connection of surge protection equipment.
        2. Make cable connections, terminations, and splices in transmitter, sensor or fence accessory stations. Splices will not be permitted at any other locations.

Terminate spare conductors at terminal strips.

Identify conductors with markers at terminal strips, cabinets and pullboxes (designations shall correspond with point to point wiring diagrams).

Install surge protection on each conductor entering and leaving transmitter and sensor boxes.

* + - * 1. Install nameplates on each transmitter and sensor enclosure with designation as indicated on drawings.
      1. FIELD QUALITY CONTROL
         1. Preliminary System Test:

Preparation: Have the Company Field Advisor adjust the completed system and then operate it long enough to assure that it is performing properly.

Run a preliminary test for the purpose of:

Determining whether the system is in suitable condition to conduct the acceptance test.

Checking and adjusting equipment.

Training facility personnel.

* + - * 1. System Acceptance Test:

Preparation: Notify the Director’s Representative at least 3 working days prior to the test so arrangements can be made to have a Facility Representative witness the test.

Make the following tests as an integral test required for Section 281603:

Perform simulated escape attempts listed below at 10 foot intervals within each zone unless otherwise directed (Director’s Representative shall select exact location and type of escape attempt or combination of attempts). Each escape attempt shall produce an alarm. If it does not, wait 30 seconds and repeat at the same location. If misses are repeated in the same location, the entire zone must be corrected and retested. The simulated escape attempts shall be performed by a person weighing 100 lbs or more. Provide safety equipment and take proper precautions when performing tests. Terminate each attempt upon detection.

Walk Test: Walk slowly across detection zone perpendicular to the beam.

Run Test: Run quickly across detection zone perpendicular to the beam.

Crawl Test: Crawl as low as possible on hands and knees across detection zone perpendicular to the beam. This test shall be conducted immediately adjacent to each transmitter and sensor as well as other locations where directed.

Belly Crawl: Crawl on stomach across detection zone perpendicular to beam (2 to 3 inches per second). This test shall be conducted immediately adjacent to each transmitter and sensor as well as other locations where directed.

Supply all equipment necessary for system adjustment and testing.

Submit written report of test results signed by Company Field Advisor and Director’s Representative. Mount a copy of the final report in a plexiglass enclosed frame assembly adjacent to the security console.

* + - * 1. System Testing and Adjusting During Guarantee Period:

After satisfactory completion of acceptance test, Facility personnel will investigate and record all system alarms. If the system does not meet the following criteria it shall be considered defective under the terms of paragraph 9.8 of the General Conditions:

False alarms that are internally generated within the system shall not exceed 1 per 100 hrs.

False alarms caused by the following weather conditions shall not exceed 1 per zone per 48 hours:

Wind up to 30 mph.

Rain up to 3 inches per hour.

Snow up to 5 inches per hour.

Within one week of notification that any zone does not meet the above criteria, make arrangements for the Company Field Advisor to correct the zone and retest in accordance with 3.02 B. 2. a.

END OF SECTION 281607