SECTION 281603 - PERIMETER SECURITY MULTIPLEX SYSTEM

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. Microwave Detection System: Section 281604.
          5. Sensor Cable Detection System: Section 281605.
          6. Infrared Detection System: Section 281607.
          7. Taut Wire Fence and Alarm System: Section 281608.
          8. Systems Programming Computer: Section 281650.
          9. Perimeter Surveillance CCTV System: Section 282301.
       2. SYSTEM DESCRIPTION
          1. The perimeter security multiplex system shall operate as an integrated proprietary monitoring and control system. Changes in the status of monitored points are detected by the microprocessor based perimeter security central processing unit (PSCPU) located in the main security console.
          2. Upon receipt of alarm condition, the PSCPU:

Displays zone number, time, date and alarm status (flashing) on the display screen.

Prints zone number, time, date, and zone status (alarm).

Sounds an internal audible alarm.

Locks out keyboard.

Include subparagraph below when section 282301 is used.

Automatically initiates switching the perimeter surveillance CCTV camera station covering that zone to a designated monitor in the perimeter security console.

* + - * 1. The attendant at the PSCPU presses the acknowledge switch which:

Silences the internal audible alarm.

Unlocks the keyboard.

Causes print-out of acknowledge message.

Changes flashing alarm status indicator to a steady on state.

* + - * 1. When an alarm condition is corrected, the attendant presses a secure switch which causes a secure status indicator display to illuminate and a print-out stating “Zone Secure”, with zone, date and time.
        2. A numeric keyboard and special purpose keys on the PSCPU allows the attendant to perform the following functions:

Call-up zones for display.

Acknowledge alarm (turns off audible alarms and frees keyboard for response to alarm).

Secure zones in access and zones in alarm after alarm situation is corrected. Securing a zone enables the zone to go into alarm when the sensor is activated. When a zone is made secure, a print-out states “Zone Secure” with time and date.

Access zones (permits authorized access to zones in alarm or secure zones). An accessed zone does not go into alarm when the sensor is activated. When a valid zone is in access a print-out states “Zone Access” with zone, date and time.

Reset active tour zones (future). When an active tour is reset a print-out states “Tour Reset” with date and time.

Display zones that are not secure (recall).

Generate a printed list of all zones that are not secure (status).

Include subparagraph below when section 281605 is used.

Activate audio listen-in capability of electronic fence alarm system (Section 281605).

Initiate a 10 second test of PSCPU audible alarms and indicator lights with a print-out stating “System Test” with date and time.

Advance printer paper.

Change program functions in conjunction with special key program lockswitch (enter).

Activate individual signal processors.

Include two subparagraphs below when section 281605 is used.

Test individual fence sensor cables (Section 281605). A print-out states “Zone Test” with zone, date and time.

Activate tests of individual microwave fence zones and infrared fence zones. Depressing a test button on the keyboard interrupts power to the microwave or infrared transmitter unit for the selected zone. This causes an alarm condition for that zone and the printer prints “Zone Test” with zone number, date and time. All functions associated with an alarm for that zone automatically perform (i.e. illuminate alarm lamps on map display, initiate call up of perimeter surveillance CCTV camera for that zone to designated monitor).

* + - * 1. By inserting a special key in a program lockswitch, the attendant may use the keyboard to make program changes in the system. Programmable functions include:

The time in months, days, hours and minutes.

Addition and deletion of zones.

Description of status of monitored points.

Include subparagraph below when 2 systems are in parallel covering the same zone (most applicable to maximum security prison systems).

Programming of combined alarm monitoring of different PSCPU zones (taut wire, microwave, infrared) which cover common and adjacent primary perimeter zones to generate a “red” alert when 2 different systems covering the same or adjacent primary zones indicate alarm within a specific time interval. Time interval field programmable from 5 to 99 seconds.

Omit “and gate by-pass status” in subparagraph below if section 281605 is not used.

* + - * 1. Perimeter zone status and gate by-pass status is continuously displayed by indicating lamps on the map display.
        2. Tamper alarms are indicated by individual lamps in a schedule on the map display.
        3. Type MCT-UHS transponders located in fence accessory stations (FAS) send alarm conditions from remote sensors to the PSCPU.

Type MCT-UHS transponders are programmable and addressable thru software run on the systems programming computer (Section 281650).

* + - * 1. Transponders receive commands from the PSCPU and initiate functions at remote locations.
        2. All wiring between alarm sensor points, transponders, and control panel is completely supervised.
        3. The loss of signal from a transponder is annunciated by a visual and audible indication. A print-out states the number of the transponder lost, and the date and time.
        4. Loss of AC power to the PSCPU, the power supply for the transponders and the power supply for the map display is annunciated by an audible indicator and separate visual indicators.

An internal battery maintains all programming and operates the PSCPU for a minimum of 4 hours upon loss of AC power.

Batteries maintain the operation of the transponders for a minimum of 4 hours upon loss of AC power.

Batteries maintain the operation of the map display for a minimum of 4 hours upon loss of AC power.

* + - * 1. Loss of AC power to the power supply for the microwave detection system is annunciated by an audible indicator and visual indicator.
        2. Loss of AC power to the power supply for the infrared detection system is annunciated by an audible indicator and visual indicator.
      1. 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).

Interconnection details between the systems monitored and controlled by the perimeter security multiplex system.

Scale drawings of map display showing site drawing and exact locations of lamps.

* + - * 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 Advisors 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.

Do not include subparagraph below if section 281601 is used.

Photographs:

After completion of the work take color photographs of the completed Work of this Section, as follows:

3 of console different positions.

1 overall view of console.

One front view of each console section.

Use a digital camera.  Use wide angle lens for overall view.  Use electronic flash capable of supplying sufficient light to evenly illuminate the overall subject.

Minimum digital requirements:

Format shall be .jpg or .tif

The resolution shall be 12 Megapixels or greater.

Submit photographs to electronic submittal website for approval and record.

* + - 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.

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 Advisor: Secure the services of a Company Field Advisor for a minimum of 80 hours for the following:

Edit number of hours to suit.

Render advice regarding installation and final adjustment of the system.

Engineering associated with interconnecting between the perimeter security multiplex system and the other related systems.

Assist in initial programming of the system.

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

Train facility maintenance personnel in operation, programming and routine maintenance of the system (minimum of 16 hour).

Train facility security personnel in operation and programming of the system (minimum four 2 hour sessions).

Explain available service programs to facility supervisory personnel.

* + - * 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 of each type transponder.

Twelve replacement lamps of each color for map display.

One case of printer paper (50 rolls).

Six of each size fuse.

1. PRODUCTS
   * + 1. PERIMETER SECURITY CONSOLE
          1. Monitor and Control Unit (PSCPU): Vindicator Corp.’s Microplex MP-2200-R, having:

All components necessary to perform the functions summarized under SYSTEM DESCRIPTION.

Internal battery standby power supply with ampere-hour capacity to operate the PSCPU and maintain all programming for a minimum of 4 hours upon loss of AC power.

* + - * 1. Map Display: Vindicator Corp.’s MD-3300, having:

Modified size approximately 60 inches wide by height as required for mounting at approximately 30 degree tilt on top of main security console (control room ceiling is 8’-8”).

Custom enclosure as shown on drawings for mounting on top of main security console (enclosure finish shall match finish of console side and back).

Scale site drawing showing:

Security fences.

Perimeter alarm zones and designations.

Camera stations and designations.

Fence accessory stations (FAS) and designations.

Building outlines and numbers.

Location of main security console.

Use subparagraph below when only one system covers a zone.

Indicating lamps for each zone as follows:

Use subparagraph below when 2 systems are in parallel covering the same zone (most applicable to maximum security prison systems).

Indicating lamps for each system for each primary zone as follows:

Red lamp at the center of each zone which flashes to indicate zone “alarm” (upon depressing acknowledge switch, lamp stops flashing but remains illuminated).

Yellow lamp at center of each zone to indicate zone “access”.

Green lamp at center of each zone to indicate zone “secure”.

Lamp type and brightness suitable for viewing at any angle in ambient illumination level of 70 foot candles.

Include subparagraph below when 2 systems are in parallel covering the same zone (most applicable to maximum security prison systems).

A red incandescent type lamp at the center of each primary zone to indicate “red” alert.

Tamper alarms indicated on a schedule on the map display as follows:

One lamp and description for each “tamper” zone listed in the schedule on the drawings.

20 additional spaces, complete with lamps, for future alarm indications (description space blank).

Power supply with batteries:

Batteries sized to operate map display for a minimum of 4 hours upon loss of AC power.

Power supply sized to operate the map display with all lamps (including future alarm spaces listed above), and to recharge batteries.

Sealed, lead-acid gelled electrolyte batteries.

Modify subparagraph below if section 281601 is not used.

Mount power supply and batteries in main security console.

Use paragraph below when section 281601 is not being used.

* + - * 1. Console Rack: Vertical front, welded steel frame, modular cabinet rack assembly; Premier Metal Products Co.’s Trimline TVA series, having:

Number of sections as required to house the system equipment (each section 23 inches deep with 19 inches wide by 70 inches high panel space). Note: The number of sections indicated on the drawings are the minimum number to be provided. If additional sections are required due to the characteristics of the system equipment, provide additional sections as approved.

Skeletal frame including top and bottom.

Matching 45 degree wedge sections as shown.

Textured charcoal gray frame finish.

Front, Back, and Side Panels:

Back panels hinged with locking door handle.

Blank panels to cover front panel space where equipment is not installed.

Louvers for back and side panels to provide adequate ventilation of components.

Beige tan enamel finish.

White plastic laminate (formica) covered writing shelf, one piece construction which spans front of console.

Aluminum trim with black vinyl inlay.

Accessories as required for mounting and support of equipment.

Multi-outlet strips mounted within the enclosure with number of 15 amp, 120V ac receptacles (3 wire grounding type) as required for equipment. (Not less than 6 receptacles in each section).

Use subparagraph below when section 281601 is used.

* + - * 1. Console Rack: Mount equipment in main security console (Section 281601).
        2. Central 12 Volt Nominal (13.8 volt) DC Power Supply and Batteries:

Power supply capacity suitable for powering all transponder units, recharging batteries, and powering future transponders (include 100 percent spare capacity for future transponders).

Batteries sized to operate transponder units (including future units described above) for a period of 4 hours upon loss of AC power.

Sealed, lead-acid gelled electrolyte batteries.

Modify subparagraph below if section 281601 is not used.

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

* + - 1. ZONE OUT PROCESSOR (ZOP)
         1. Vindicator Corp.’s Model ZOP-1000.
      2. TRANSPONDERS
         1. Type MCT-UHS: Vindicator Corp.’s Model UHS-6842.

Type MCT-TW is used with taut-wire fence.

* + - * 1. Type MCT-TW: Vindicator Corp.’s Model MCT-160.

Modify subparagraph below if section 281601 is not used.

Mount in main security console.

* + - 1. GATEWAY FOR TYPE MCT-UHS TRANSPONDERS
         1. Vindicator Corp.’s UHS-8200.
      2. PROGRAMMING AND DIAGNOSTIC KIT FOR TYPE MCT-UHS TRANSPONDERS
         1. Vindicator Corp.’s PK-1 Programming Kit.
      3. INTERCONNECTION CABLE
         1. Type MPX: Multiconductor cable with 6 individually shielded twisted pairs of insulated 20 AWG stranded copper wires enclosed in a 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.
      4. DATABASE STORAGE KIT
         1. Vindicator Corp.’s PK-2 Database Storage Kit.
      5. SURGE SUPPRESSORS
         1. Equip system with surge suppressors to protect equipment from voltage transients and lightning surges.
      6. TERMINAL STRIPS
         1. Barrier type double screw terminals rated 300V minimum, meeting UL94 requirements for materials classed 94V-0.
      7. 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

Edit paragraph below for integrated systems

* + - * 1. Install perimeter security multiplex system in accordance with the Company’s printed instructions. Interconnect with microwave detection system (Section 281604), electronic fence alarm system (Section 281605), infrared detection system (Section 281607), taut wire fence and alarm system (Section 281608) and perimeter surveillance CCTV system (Section 282301) for a completely integrated system.
        2. Make cable connections, terminations, and splices in fence accessory stations, microwave detection system control boxes, infrared unit junction boxes, and console. Splices will not be permitted at any other locations.

Use markers to identify conductors at terminal strips, cabinets, and pull boxes (designations shall correspond with point to point wiring diagrams).

* + - * 1. Install surge protection on each conductor entering and leaving console and fence accessory stations.
      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 a 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:

Individually test alarm initiating points.

Individually test control points.

Test audible and visual alarm devices.

Test each system function step by step as summarized under SYSTEM DESCRIPTION.

Supply all equipment necessary for system adjustment and testing.

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

END OF SECTION 281603