

SECTION 285000 - SECURITY CONTROL SYSTEM

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Provisions of the Contract and of the Contract Documents apply to this section.

1.2 DESCRIPTION OF WORK

- A. The general contractor shall contract the services of a qualified Security Controls System Contractor (SCSC) and shall be responsible for the Security Controls System Contractor (SCSC) and the systems they shall provide as part of the Division 28 specification sections.
- B. Summary of work includes, but is not necessarily limited to, providing the products, labor, services, and overall systems integration required for installation of a complete, fully functional Security Control System, as indicated and specified herein.
- C. The SCSC shall provide all equipment, shop drawing submittals, testing reports, and samples as described in Specification Sections 285000, 285010, 285020, 285022, 285030, 285100, 285200, 285260, 285300, 285400, 285500, and 285900.
- D. The SCSC shall provide a software data flow diagram/chart indicating in what programs and where all control logic will reside. Provide a detailed description of software solution and provide a statement that all software shall be developed in the Wonderware or InduSoft environment. All computers listed throughout the security control system in specification sections 285000 – 285900 shall use Windows 10 or better operating system. All servers listed throughout the Security Control System specification sections 285000 – 285900 shall use Windows Server 2008 R2 or better.
- E. No proprietary DLL, EXE or other encrypted software shall be considered unless identified prior to bid and accepted by addendum. If it is found that SCSC provided any proprietary programming language or encrypted software but did not disclose this information, the system shall be completely redeveloped with non-proprietary programming methods at the SCSC's expense.
- F. The SCSC shall turn over all programming passwords, source codes and programming schedules at the end of the project. Prior to final payment, all software shall be authenticated as being non-proprietary by the Owner or Owner's designated representative.
- G. Summary
  - 1. The SCSC shall be responsible for coordinating with Division 8, Division 11, and Division 26, the power and cabling requirements of all electric strikes, electric locks, door position indicators, or any other device associated with and controlled/monitored by the Security Control System.
  - 2. Types of Security Control System components/features/interfaces:
    - a. The SCSC shall be responsible for all Division 28 field device installation, terminations, and equipment configuration.
    - b. Provide a complete fully functional Security Control System. Provide all conduit, raceway, wire, terminations, backboxes, and equipment for a complete system.
    - c. Provide proper control of detention hardware as supplied by Division 11 and security hardware as supplied by Division 8. Coordinate all architectural doors with security devices to ensure proper lock, lock power, and control wiring to these locations.

- d. Provide all necessary distributed AC/DC system power, unless otherwise noted.
  - e. The complete Security Control System shall be connected through UPS power and generator power.
  - f. Prior to fabrication, coordinate exact location and installation of Security Control System with other trades.
  - g. Provide complete system test and written operational certification to the Architect/Engineer and Owner prior to substantial completion.
  - h. Provide Owner training by factory-trained and authorized personnel as specified.
  - i. Turn over to Owner all termination point and interconnection schedules, all programming source codes including Touch Screen software, PLC development software, VMS software, VMS viewing software, video system software and applicable license required for operations. This is to also include the touch screen and security management system development and runtime licenses.
  - j. Flat Touchscreen panel Control Consoles to integrate the controlling and monitoring of all doors, alarms, video, intercoms, card access and other designated device annunciators. Touchscreen Control shall have the ability to monitor all security devices and components throughout the entire facility during normal operations.
  - k. Audio Communications system.
  - l. Provide IP based color video System with network video recording.
  - m. Provide Video Client workstations as indicated on the drawings.
  - n. Provide cameras, lenses, housings and accessories for interior and exterior applications.
  - o. Provide complete Access Control System and interface with indicated architectural doors and pedestrian gates for remote control and/or monitoring. Coordinate with the Owner to ensure the Access Control System provided under this contract can use all types of cards and credentials currently being used by the Owner.
  - p. Provide all furniture-mounted and wall-mounted duress alarms
  - q. Provide Security System Interface, cabling & connection for remote warranty troubleshooting and maintenance.
  - r. Interface to plumbing system for water shutoff in holding areas and housing unit sleeping rooms via touchscreen control.
  - s. Interface to lighting control for holding areas, sleeping rooms and housing units via touchscreen control.
  - t. Provide Talk-thru Communicators (TTC).
  - u. Coordinate all lighting pole mounted camera locations with Division 26. Coordinate conduit, wiring, and termination responsibility.
  - v. Provide all spare components as specified.
  - w. Provide interface with UPS to touchscreen system for annunciation of trouble alarms.
  - x. Provide interface with emergency generator for annunciation of trouble alarms.
  - y. Provide walk-through metal detectors (magnetometers) and X-ray unit at Lobby.
  - z. Other controls, annunciation & monitoring indicated in the Division 285xxx specification sections and on the Drawings.
- H. Electrical Contractor: (SCSC shall coordinate with EC & GC)
- 1. Coordinate all electrical requirements with both the SCSC and General Contractor.
  - 2. The Division 26 contractor shall be responsible for the coordination of conduits/cable raceways of architectural door frames with security hardware provided by Division 8. The SCSC shall be responsible for coordinating with Division 8, Division 11, and Division 26, for the power and cabling requirements of all electric strikes, locks, door position

- switches, or any other device associated and controlled/monitored by the Security Control System.
3. Provide termination of all 120-volt power connections required by the Security Control System for the computer and monitoring equipment at various security control stations.
  4. Lighting and Receptacle control relays and terminations shall be done by the electrical contractor. SCSC to coordinate interface to relays and termination of outputs.
  5. Provide all 120V power connections from emergency/generator power panels.
  6. Coordinate with the SCSC and provide 120V power for:
    - a. At the vehicle drive up card reader / intercom / camera post
    - b. At all power supplies in hardware sets for architectural doors, as listed in Specification Section 087100 – Door Hardware.
- I. General Contractor: (SCSC shall coordinate and make the GC aware of these requirements)
1. Coordinate the inter-related work of the SCSC, Div. 11, Div. 8, millwork provider, and Div. 26 Contractors.
  2. Include detailed scheduling information for Security Control System installation and testing in the construction schedule. Provide the SCSC two months of testing and troubleshooting of the installation of his equipment near the end of the project. When the system is completely installed, provide the SCSC free access and total control with no other construction traffic for a period of two weeks for proper testing and certification of the system.
  3. Provide coordination to ensure that control rooms and Security Electronics rooms are completed as early as possible to facilitate installation of control wiring. Control room(s) and Security Electronics equipment room(s) shall be free of airborne contaminants from cutting, grinding, painting, masonry work, etc., prior to the installation of any Security Electronics equipment. HVAC system must be started and running at a temperature and humidity level required for the operation of the equipment in the spaces.
  4. Conduct periodic coordination meetings between security, electrical, plumbing, masonry and all other contractors to make everyone aware of critical areas of construction. Distribute the meeting minutes and attendance to the Architect/Engineer and Owner.
  5. Provide coordination with the SCSC to complete the inspections, submittal and closeout documentation as described in the general provisions.
- J. Detention Equipment Contractor (DEC):
1. Coordinate with the General Contractor, Electrical Contractor and SCSC.
  2. Furnish, install, and terminate detention hardware.
  3. Provide all the necessary and proper adjustments for correct hardware operation.
- 1.3 QUALITY ASSURANCE
- A. Work shall be in accordance with the applicable federal, state, and local codes or standards current at the commencement of installation. Where more than one code or regulation is applicable, the more stringent shall apply. All Security Contractor Licensing requirements for contractors and subcontractors shall be enforced as per applicable codes and statutes (refer to the Virginia Department of Criminal Justice Services; <https://www.dcjs.virginia.gov/> ).
  - B. Cable installation, identification and termination shall be performed in accordance with the Manufacturer's technical installation guidance, in addition to the applicable codes and statutes.

- C. In the absence of the Manufacturer's recommendations on conductor applications, the Security Control Systems Contractor (SCSC) shall ensure that the cabling selected meets all technical requirements of the equipment to be installed.
  - D. An SCSC is required for this project. It is critical that the SCSC understands and meets the requirements of the Contract Documents, the equipment specified and security control systems integration. And, that the equipment is properly installed and functionally ready for use at time of completion specified for the facilities.
  - E. Division and separation of total responsibility for contract delivery of the security control systems will not be acceptable.
  - F. The SCSC shall be able to respond on site with qualified personnel to emergency service within 12 hours of notification.
  - G. The SCSC shall be responsible for providing a complete, fully-functional security control system. This shall include, but not be limited to, cabling, cabling raceways, terminations of all system cabling, all distributed AC and/or DC power, field devices and control components, systems start-up, acceptance testing, training, and the complete and total integration of all systems utilizing 'In-House' software programming expertise.
  - H. Available Security Control System Contractors (SCSC):
    - 1. Accurate Controls Inc. – Ripon, WI
    - 2. Cornerstone – Madison, AL
    - 3. ~~Communications Specialists, Inc.~~ **Corbett Technology Solutions, Inc. (CTSI) – Mechanicsville, VA (ADDENDUM 04)**
    - 4. Esitech Inc. – Richmond, VA
    - 5. Pinnacle Integrated Systems, Inc. – Malvern, PA
    - 6. Johnson Controls – Montgomery, AL
    - 7. Stanley Security Solutions, Noblesville, IN
    - 8. South Western Communications – Decatur, AL
  - I. Refer to specification section 014323 for additional subcontractor qualifications and procedures.
- 1.4 SECURITY CONTROL SYSTEM TRAINING
- A. Provide supervisory, operational, and maintenance training outlines and training materials thirty (30) days prior to training.
  - B. Provide complete supervisory and operator training for the Owner's personnel at the end of construction.
    - 1. Provide three (3) eight-hour sessions on consecutive days at times set by the Owner. This may include 2<sup>nd</sup> and 3<sup>rd</sup> shift times to accommodate all officers. These should be scheduled as part of the Owner's pre-occupancy transition training.
    - 2. Provide one (1) eight-hour session at a time set by the Owner for maintenance training of the system.
  - C. Provide an interactive training DVD's for all system operations and system troubleshooting. Provide system operations and system troubleshooting training on separate DVD's. Provide two copies of each.
    - 1. This DVD shall be carefully organized and segmented so that training may be given on the complete system or on specific functions as may be appropriate.

2. The DVD shall contain computer-generated screen animation with narration describing icon selection, graphic animation and operation.
3. The maintenance portion of this DVD shall contain still images with graphics and narration describing all equipment states and troubleshooting methods including LED indication and text read out.

#### 1.5 SUBMITTALS

- A. The SCSC shall submit the necessary submittal criteria for Div. 285xxx sections as a complete submittal package, and for each subsequent re-submittal if necessary. Following this process will afford the submitted information to be reviewed more efficiently. All the necessary information the reviewer needs to properly evaluate the submission will be in one package each and every time it has to be reviewed. Failure to follow these submission requirements shall constitute the submittal as being non-compliant and will be returned as "Rejected/Resubmit".
- B. It shall be the responsibility of the Architect and OWNER to completely review and approve all details of the Touchscreen control console screens prior to release for final software production. Any applicable changes made prior to release for software production shall be made at no cost to the Owner. (Refer to Part 3 - Execution, paragraph 'Software Supports'.)
- C. The submittal package shall consist of one (1) reproducible (digital format) copy for each of the four (4) sections listed below. All four (4) documents shall be submitted at the same time, as stated in paragraph A above. Provide electronic bookmarks, hyperlinks and divider pages to help navigate to and within all the documents. Bookmarks and divisions shall match what is provided in the submittal's table of contents.
  1. Product Data:
    - a. Provide Title Page and Table of Contents. Organize document by spec sections as listed in the Project Manual. Provide electronic bookmarks and divider pages to allow viewer to navigate to spec sections and the different items within each section.
    - b. A Bill of Materials for each system, which shall include manufacturer names, model numbers, and quantities of all equipment proposed. It is acceptable to combine the Bill of Materials with the Table of Contents or section headings, provided all the required information is provided.
    - c. Technical product information clearly marked to identify the principal component(s) proposed. Information shall be listed in same order as presented in Table of Contents.
    - d. Specifications information for each type of cable required (power and data) and its application.
    - e. Markings: Submit for approval the SCSC's proposed wire marking, panel label, zone label, terminal strip numbering & terminal strip identification styles and typical text as outlined.
  2. Shop Drawings:
    - a. All drawings shall be computer-generated for expedient modifications if required. At completion of the project, these drawings, along with any field changes, shall become part of the Contract Documents. Refer to paragraph titled "Record Drawings" ahead.
    - b. Building Floor Plan / Device Layout drawings: These drawings shall indicate the accurate locations of all equipment associated with each system in respect to architectural and structural conditions. Size drawings of components, equipment layouts and other small size areas to the common scale of 1/8", 1/2" or 1" per foot. Size drawings of larger areas to the common scale of 1/4" or 1/8" per foot. Draw-

- ings shall include explicit notes on the termination of all conductors and shields for each location. Architectural backgrounds shall be in accordance with the latest architectural drawings and shall be complete with elevations, sections, and details as required to depict the installation. These drawings shall be approved prior to starting work.
- c. Equipment Room Layout Floor Plans:
    - 1) Scaled plan drawings indicating the placement of all required security control system components/racks and their relationship with all other adjacent objects.
    - 2) Indicate clearance and maintenance access requirements, and confirm all necessary clearances around components for both installation and maintenance have been coordinated.
    - 3) Dimension the location of and provide installation details of the security control system's 'Head-End' racks, including mounting and anchorage provisions.
    - 4) Provide elevations of each rack indicating the location of all equipment and components.
  - d. Control Room Enlarged Floor Plans and Elevations: Provide detail drawings depicting the plan location and elevation of all equipment to be provided within each security control room.
  - e. Block Diagrams:
    - 1) Provide block diagrams of all systems/sub-systems showing interconnects and relationships as a complete system.
    - 2) Describe all power requirements and connections. Indicate line and low voltage information, all UPS, battery back-up, and emergency/generator power.
  - f. Provide complete "point to point" wiring diagrams for all systems and subsystems. Indicate all components in the communications path from Master Control through all intervening system components, including terminal boards to the individual end devices. Document dedicated leased lines and associated equipment required to complete a transmission path. Where conductors are grouped into a cable for long site runs, a single line properly identified shall be indicated. Where these cables fan out for termination, individual wire terminations and markings shall be indicated.
  - g. Wire management details for the installation of cable harnesses inside racks, equipment cabinets, and consoles, control panels and other areas of exposed cable.
  - h. The SCSC shall provide a detail schematic depicting the location and elevation of all equipment to be provided within each security control room and security equipment room.
3. Test Procedure:
    - a. Provide written document detailing the test procedure for substantial completion of the system provided. These procedures shall include all tests recommended by the equipment manufacturer and by this specification. Provide samples of system approval test sheets for review.
  4. Screen Shots:
    - a. Touchscreen Control Console "Screens": Submit for approval a detail drawing or screen snap shot of each control console "screen" depicting the exact layout to full size scale. Screens that distort the building floor plan layout are not acceptable. Representation of all colors shall be included, as well as the operator's orientation of the control panel in relationship to the control room and building. Include a

glossary of all icons available and a description of their function and actions shown beside an image of each of their varying states of status. The review and approval of this submittal will only serve as a basis for proceeding forward with Phase I meeting of Software Support as described in paragraph 3.3.A. A second Screen Shot submittal shall be provided after the Phase I meeting to reflect any decisions made during that process.

#### 1.6 TESTING

- A. The Security Control System shall be assembled and tested at the SCSC's shop. Refer to paragraph 3.3.B for Phase II expectations and requirements.
- B. Submit approved substantial completion test sheets seven (7) days prior to scheduled testing date.
- C. Conduct with Owner and/or Architect a comprehensive system test of all system components per the approved test plan. At completion of all testing, provide substantial completion test sheets.

#### 1.7 RECORD DRAWINGS

- A. The SCSC shall obtain, pay for, and keep up-to-date and available to the Owner or its representative, complete black-line prints as well as magnetic media copies of all computer drawings of the project, clearly annotated with "as-built" data as the work is performed. This data shall include the following:
  - 1. Routing of signal and power wire and cables, including the designations assigned to each wire/cable and field terminations schedules.
  - 2. Accurate location of all equipment installed under the specifications.
  - 3. A complete equipment list for each functional area.
- B. Upon completion and for inclusion into the Final Record Sets of drawings of this project, all as-built information shall be transferred to a full size set of AutoCAD drawings and transmitted to the A/E within 30 days of substantial completion.

#### 1.8 GUARANTEE

- A. The SCSC shall guarantee all equipment & systems for a period of two (2) years commencing with Substantial Completion. The guarantee shall cover all costs for Warranty Services, including parts, labor, prompt field service, pick-up and transportation.
- B. The SCSC shall also provide an extended warranty for computer hardware that includes critical maintenance support services for a period of five (5) years commencing with Substantial Completion. Critical support services shall be available 24 hours per day, 365 days per year, with 2 hour onsite response time.

#### 1.9 WARRANTY AND PREVENTATIVE MAINTENANCE SERVICES

- A. The SCSC shall design the Security Control System to provide for remote PC connection with the new security control system. This remote connection shall be used by the SCSC during the warranty period for remote system troubleshooting and maintenance. The Owner/user will activate and de-activate the local communications device to ensure that unauthorized remote access to the security control system will not occur.
- B. Maintenance services within this scope of work shall include a preventative maintenance and system optimization inspection to be conducted every three (3) months during the first year of

warranty. These visits shall be recorded at the site by signing in the Owner's daily operations log book and shall include, as a minimum, the following:

1. Configuration Checks on video recorders
  2. Verify the integrity of all system software including Remote Viewing Stations.
  3. Configuration Checks on Access Control System Components and Software.
  4. Cleaning of air filters.
  5. Adjustment of video monitors picture controls.
  6. Tuning of video camera views (i.e., focus, iris).
  7. Configuration and through-put tests of system network (i.e., network switches)
  8. Inspection of cables and connections.
  9. Inspect and test all UPS units, including batteries and cables.
  10. Lubricate and clean system, report, and badging printers.
- C. Service response requirements shall include the following:
1. Twenty-four (24) hour phone number to reach in-house troubleshooting personnel.
  2. Ability to restore functionality within eight (8) hours after notification on a twenty-four (24) hour basis.
  3. Service technicians trained by the manufacturers of the system components.
  4. Provide remote support within a two hour response time during regular business hours - 7am – 6pm, Monday – Friday, excluding holidays.

## PART 2 - PRODUCTS

- 2.1 Refer to appropriate Division 28 section for specific product information.

## PART 3 - EXECUTION

### 3.1 INSPECTION

- A. Check location, "roughing in", and field dimensions prior to beginning work.
- B. Do not begin installation until all unsatisfactory conditions have been corrected.
- C. Verify field measurements are as indicated on Drawings and as instructed by manufacturer.
- D. Verify that required utilities are available, in proper location, and ready for use.

### 3.2 INSTALLATION/APPLICATION OF ALL SECURITY PRODUCTS

- A. Field testing and inspection will be performed under the provisions of Section 285000.
- B. Replace equipment, components, & wiring as required to achieve a fully functional system.

### 3.3 SOFTWARE SUPPORT

#### A. PHASE I

1. Within three (3) months of receiving the approved shop drawing submittal, the SCSC shall request in writing a preliminary meeting with the Owner/Architect to discuss and demonstrate his working Touchscreen, programmed 'In-House' for the specific operations and functions of this project's Security Control System. Also the SCSC shall pre-



sent an extensive outlined analysis of all his 'In-House' software's performance possibilities and their potential applications and/or approval to be utilized on this project. Refer to paragraph 1.5.C.4 of this section for the 'Touch Screens' shop drawing submittal requirements.

2. The SCSC shall prepare a detailed report summarizing all software design and function criteria to be submitted to the Owner/Architect for approval by appropriate parties no later than two weeks after the date of the Phase I meeting. The custom software that operates the security control system shall be designed specifically from this document.
3. The Phase I meeting shall outline the requirements of the custom software as it relates to integrating all the individual components and devices making up the Security Control System (Touchscreen, CCTV, Intercommunications, Alarms, Locks, etc.)

**B. PHASE II**

1. Prior to the scheduled date for job site delivery of the Touchscreen control stations, the SCSC shall request a second meeting with the Owner/User and Architect/Engineer at their manufacturing facility. The SCSC shall provide a full demonstration of the completed control consoles with a fully functional simulation of all the security control system software. The design and function of the 'In-House' software shall match the exact performance as specified in the detailed Phase I report. The SCSC shall include in their bid all expenses (travel, per diem, hotel and food) for four (4) owner representatives and two (2) architect representatives to attend the factory testing of the systems for a two (2) day period.
2. All deviations in the performance of the hardware or software shall be documented during this meeting, by the Architect/Engineer and SCSC, on a "pre-punch list". This "pre-punch list" shall be 100% corrected by the SCSC prior to delivering the equipment to the job site. Any additional comments shall now be incorporated.
3. During this time period, the SCSC shall perform all tests and critical conditioning on the security system to prepare the detailed diagnostic information and operational procedures for the service/operations manual.

**C. PHASE III**

1. Immediately following the installation of the security control system, the SCSC shall work with the Owner, the facility personnel, and the Architect/Engineer to correct any hardware problems or operational deviations from the original Phase I software design document. The SCSC shall modify the hardware/software as necessary to solve any problem resulting from poor installation.
2. Upon achieving a 100% functional security control system as determined by the Architect/Engineer, a documented release form provided by the SCSC shall be signed by the Owner and retained on file with the Project Manager. The SCSC shall continue to work on the installed hardware/software at no cost to the Owner or Architect/Engineer until the Owner's satisfaction is obtained by fulfilling the Phase I, II, and III document and a system release form is filed.

**3.4 SPARES FOR ALL SECURITY CONTROL SYSTEM SECTIONS**

- A. Provide adequate capacity in equipment racks/cabinets, PLC I/O, relay capacity and spare terminal to increase number of control points in the future by 25 percent above those indicated for work of this project.
- B. Provide the following shelf spares:
  1. Provide one (1) PLC of each type used.

2. Provide one (1) PLC input and one (1) PLC output module of each type used
3. Provide one (1) PLC system power supply
4. Provide one (1) Power supply of each type used
5. Provide one (1) Duress station of each type used
6. Provide one (1) Card reader and one (1) Keypad/Card Reader of each type used
7. Provide one (1) Intercom station and one (1) Intercom master station
8. Provide one (1) Speaker (ceiling mount) with baffle and one (1) wall mount Speaker
9. Provide one (1) Video Intercom Master station and one (1) Video Intercom Slave station.
10. Provide one (1) Talk -thru Communicator (TTC) of each type used.
11. Provide one (1) Speaker (ceiling mount) with baffle and one (1) wall mount Speaker
12. Provide two (2) pre-programmed Fixed cameras and one (1) pre-programmed 360° and PTZ camera with licenses of each type used.
13. Provide one (1) 22" CCTV video monitor.
14. Provide one (1) 42" CCTV video monitor.
15. Provide one (1) 22" Touchscreen station with PC fully loaded with software for plug-and-play operation when an officer station touchscreen/computer goes down.
16. Provide ten (10) relays, terminals, and fuses of each type used.
17. Provide one (1) spare of each type of surge protector.
18. Provide two (2) hard drives of type installed on this project for video archive storage.
19. Provide lockable metal storage cabinets capable of holding spare equipment excluding TV and Monitors. Place cabinet per owner's direction.

END OF SECTION 285000