SECTION 17120
TOUCH SCREEN SYSTEM

PART 1 - GENERAL

1.01 SUMMARY.

A. Provide Touch Screen control stations as specified herein and as shown on the schedules and drawings. Installing contractor shall receive, place, connect, and mount all equipment specified in this Section per the manufacturer's instructions. Installing contractor shall furnish all hardware, wire, connectors, and other necessary items as required for a complete and functional control system.

B. Related Sections:
   1. Section 17000 Security Electronics, General
   2. Section 17140 Programmable Logic Controllers
   3. Section 17150 Electronic Relay System
   4. Section 17200 Intercommunications System

1.02 ACCEPTABLE INTEGRATORS

A. Except as otherwise specified, herein, or in the General Conditions, the equipment and materials of this Section shall be products of the following manufacturers, subject to compliance with specification requirements and provided each specifications. Integrators and their products that utilize proprietary or custom software and or equipment such as those by MTI, OSS, Simplex and Comtec are not acceptable.

   1. South Western Communications, Inc., Decatur, AL
   2. SimplexGrinnel, Boca Raton, FL
   3. United Prison Equipment, Green Lane, PA
   4. Grayco Detention Equipment Inc., Surfside Beach, SC
   5. Southern Steel, San Antonio, TX

1.03 REFERENCES.

A. Standards listed by reference, including revisions by issuing authority, form a part of this specification section to extent indicated. Standards listed are identified by issuing authority, authority abbreviation, designation number, title, or other designation established by issuing authority. Standards subsequently referenced herein are referred to by issuing authority abbreviation and standard designation.

B. Underwriter's Laboratories (UL)
   1. UL 508 Industrial Control Equipment
   2. NEC National Electrical Code (latest edition)

1.04 WORK INCLUDED

A. Provide materials, labor, equipment, and services necessary to furnish, deliver, and install a touch screen control system as shown on the drawings, as specified herein, and/or as required by job conditions.

B. Touch Screen Control Locations:
   1. Central/Male Control Room – (1) 32" LCD Touch Screen Control Station
   2. Female Control Room – (1) 32" LCD Touch Screen Control Station
   3. Booking Control – (1) 19" LCD Touch Screen Control Station

C. Major Sub-systems include:
   1. Touch Screen Control Stations.
   2. Programmable Logic Controllers (PLC's).
   3. Electronic relay system.

1.05 COORDINATION WITH OTHER TRADES

A. The Contractor shall coordinate the work of this Section with that of other Sections as required ensuring that the entire work of this Project will be carried out in an orderly, complete and coordinated fashion.
B. Division 17 responsibilities for electro-mechanical locks and devices Shall include the following:
   1. Division 17 shall provide relay cabinets in each equipment room to interface to the door locks, door status switches, and jam mounted push-buttons and key switches. Relay cabinet and associated terminal strips shall be sized as required to accommodate control equipment for specified lock functions.
   2. Division 17 contractor shall be responsible for furnishing and installing all equipment, wiring, installation and testing of systems defined in Division 17. The sub-contracting of Division 17 equipment installation shall not be acceptable. The Division 17 contractor shall be responsible for the design, fabrication, project management, installation and warranty of all systems within this division of work.
   3. Provide all control hardware and systems to control or monitor a door in accordance with the requirements of Division 17.
   4. After installation, verify proper control operation of all doors.
   5. Each touch screen location shall be provided with UPS backup power sufficient to maintain system power in the event of main power failure for a minimum of 15 minutes.

1.06 SUBMITTALS

A. General
   1. Submittals shall be made in accordance with the General Provisions (Section17000) of these specifications.
B. Specific Requirements:
   1. Submit catalog cuts for all equipment and devices being furnished under this Section.
   2. Submit full scale color drawings for each control screen which shall designate colors and icons for each controlled and/or monitored condition within the system.
   3. Submit electronic files from which each screen may be viewed to reflect selected colors and icons. Software shall be provided to allow the Owner to view the screens.
C. Software development
   1. Within one (1) month of receiving the approved shop drawing submittal, the security equipment contractor shall schedule a preliminary meeting with the Owner. Specific operation and function of the security control system must be determined prior to the preliminary meeting. Extensive analysis outlining all performance of software design and application will be determined and approved at the preliminary meeting.
   2. Based on the preliminary meeting, the Division 17 contractor shall develop the control and display software. The complete set of control screens shall be submitted as shop drawings on both paper prints and electronic CAD files. If necessary, shop drawings shall be resubmitted until approved.

3. Any changes or modifications to the system resulting from the shop drawings shall be incorporated into the system and demonstrated at a meeting to finalize the system.
4. Any modifications to the system resulting from the meeting will be incorporated and demonstrated at the factory testing.

1.07 TOUCH SCREEN SYSTEM DESCRIPTION

A. Touch Screen control stations provide the human interface device at locations as shown on the drawings for security alarm monitoring and control of security devices including doors, cameras, and intercoms.
B. The Touch Screen control stations are comprised of a Pentium based PC, LCD monitor with touch screen transducer. The control icons serve as a means of interface to the programmable logic controller (PLC). The PLC then performs logic functions (such as timing and interlocking) and activates the appropriate field devices (such as locks or video Switcher control) based on the graphic control panel switch command.
C. Monitoring functions: The PLC receives signals from field devices and routes the information to the Touch Screen control stations where icons and/or audible tones annunciate the condition of the controlled field devices.
D. The touch screen terminal consists of a 19" or 32" high-resolution LCD color video monitor integrated with a touch screen transducer which is applied to the monitor surface. Touch screens shall be freestanding or rack mounted in casework as indicated on the drawings. Freestanding monitors shall have adjustable swivel bases secured to the casework.
E. Log-In: Access to the touch screen system shall be password protected and all operators shall log into the system. Touch screen keypads shall utilize a "scramble" function so that the digits do not appear in the same location each time an operator logs into the system. All log-in/log-out activities shall be recorded on the system data logger. Terminals shall be limited to three consecutive invalid log-in attempts. After three failed attempts, the terminal shall be disabled and an alarm shall be generated at Central Control. Control of the screen must be returned from Central Control.
F. Mouse: Each touch screen station shall also be equipped with a mouse to operate the terminal using an on-screen indicator rather by using the touch of a finger. Selecting a program segment or option requires moving the display cursor to the appropriate screen location with the mouse and depressing left mouse button.
G. Control Transfer: Two methods of control/transfer shall be provided:
    1. Substation Transfer. Activating the "Log Off" icon on the touch screen monitors shall automatically transfer all control and indicating functions to the designated location. When logged off, the transferred terminal shall not be capable of performing control functions. Return to normal operation shall be accomplished by logging onto the system using the video keypad.
    2. Control "Takeover": Activating the "Takeover" icon on the touch screen monitor shall automatically transfer all control and indicating functions to the designated location. When logged off, the transferred terminal shall not be capable of performing control functions. Return to normal operation shall be accomplished by logging onto the system using the on-screen keypad.
H. Takeover Hierarchy: Central Control shall be able to take over any control location.
I. UPS Alarms: UPS Alarms shall send a text message to Central Control and be logged on the data logger.

J. Failure of any touch screen or network PC shall not affect the operation of any other touch screen station. Touch screen control stations shall communicate directly with the PLC's for control functions via the security Ethernet LAN. PLC's shall be located in equipment rooms as shown on the drawings.
K. Each Touch Screen control station shall contain a licensed copy of the Graphical User Interface Software (GUI). The use of server based systems shall be strictly prohibited. All copies of licenses shall be turned over to the owner at the time of substantial completion of the project and become the sole property of the owner.
L. The system shall utilize voice instructions for alerting the operator to alarm conditions and critical control sequences such as interlock, interlock override, emergency release, and other functions as directed by the Owner/User. There shall also be a voice annunciation ON/OFF switch to enable and disable the voice instructions.

1.08 TOUCHSCREEN SYSTEM – SCREEN CONTROLS/MONITORING FUNCTIONS – GENERAL:

A. General: Control screens shall be comprised of icons and text fields. Icons shall designate the sensitive area for touch control and display, which provides a pictorial representation of a switch function.
   1. All icon activations shall be annunciated with an audible tone, a color change of the icon, and a change of icon configuration.
   2. Each screen shall annunciate off-screen inputs, such as intercom calls and alarm events. The control terminal operator shall be notified of these events regardless of the screen that is currently displayed on the terminal.

1.09 TOUCHSCREEN SYSTEM – SCREEN CONTROLS/MONITORING FUNCTIONS - SPECIFIC

A. Specific Icon Control Functions: The drawings include representative control and monitoring screens for several console locations. Following is a description of the control and monitoring functions for the icons presented on those drawings. The following descriptions may not include all control and monitoring functions for all icon types required for this project, but provides a representative sample to indicate the type and level of control and monitoring expected.
B. Door Control and Monitoring
   1. SWING DOOR. Momentarily touching the Unlock icon shall apply power for approximately one second to the lock motor, to begin it's unlocking cycle. A GRAY padlock shown locked indicates SECURE condition of the door. A RED padlock shown unlocked indicates UNLOCKED or UNSECURED condition of the door. If door is part of an INTERLOCK GROUP, the icon outline shall become yellow anytime another door in the group is unlocked. An attempt to unlock a door that is part of an interlock group (while another door of the interlock group is insecure) shall cause a dialogue box to be displayed indicating the presence of an interlock. The dialogue box shall include icons for OVERRIDE or CANCEL. Touching the OVERRIDE icon shall defeat the interlock and unlock the selected door. Touching the CANCEL icon shall cancel the dialogue box and return to the floor plan.
   2. MONITORED ONLY DOOR: A GRAY padlock shown locked indicates SECURE condition of the door. A RED padlock shown unlocked indicates UNLOCKED or UNSECURED condition of the door.
   3. FULLY OPERABLE SLIDING DOOR DEVICE: Open/Stop/Close. Momentarily touching the Open icon shall open the door. Momentarily touching the Stop icon shall halt any door movement. Momentarily touching the Close icon shall close the

door. The device shall not be allowed to reverse operation without first going through an approximate one second delay of stop time. If the door is part of an interlock group and another door in the group is not secure, the door will not open without overriding the interlock group. A GRAY padlock shown locked indicates SECURE condition of the door. A RED padlock shown unlocked indicates UNLOCKED or UNSECURED condition of the door. If door is part of an INTERLOCK GROUP, the icon outline shall become yellow anytime another door in the group is unlocked. An attempt to unlock a door that is part of an interlock group (while another door of the interlock group is insecure) shall cause a dialogue box to be displayed indicating the presence of an interlock. The dialogue box shall include icons for OVERRIDE or CANCEL. Touching the OVERRIDE icon shall defeat the interlock and unlock the selected door. Touching the CANCEL icon shall cancel the dialogue box and return to the floor plan.

4. ROLL UP DOOR, SLIDING VEHICLE GATE: See description for fully operable sliding door device.
5. INTERLOCK OVERRIDE: This function shall be accomplished utilizing an interlock dialogue box. The dialogue box contains two icons, Override and Cancel. When an attempt to unlock or open a door within an Interlocked group of doors where one or more doors are in the insecure position, the Interlock dialogue box shall appear. Selecting the Override icon will allow the opening of the door. Selecting the Cancel icon will return the operator to the previous control screen. When a door is part of an Interlock group and another door within the group is insecure, the outline of the padlock door indication symbol shall illuminate yellow for all doors within the group. Once the door moves to the insecure position, the fill color of the icon shall turn red and depict an unlocked padlock symbol while the outline is simultaneously yellow.
6. GROUP ASSIGN: There shall be a Group Assign toggle function. Once the Group Assign toggle function has been activated, touching any door icon within the associated group will assign the door to be released upon activation of the Group Release function. If a door has been selected for the Group Assign function the door indication icon shall have its keyhole circle change from black to blue in color to indicate the Group status of the door. Depressing the Group Assign toggle function a second time will disable the function and return the system to its previous operating condition.
7. GROUP RELEASE: Touching the Group Release icon shall cause all doors within the group that have been previously assigned to unlock and the door status icons for each doorway will indicate the actual status of the doors. All doors connected to the group shall re-lock when closed.
8. EMERGENCY RELEASE:
    a. Touching the “Emergency Release” icon located in the menu bar of the Touch screen shall switch the view to the primary emergency release screen, which shall contain an Emergency Release icon for each ER group within the facility and an ER Enable icon. Touching the Enable” icon shall arm the system for emergency release and shall display an “Are you Sure?” prompt and “Yes” and “No” icons. Touching the “No” icon shall again display the primary emergency release screen. After touching the “Yes” icon, a pulsing audible tone shall sound every 4 seconds to indicate the system is armed.
    b. While armed, touching a Emergency Release icon for any ER Group, an emergency Release door switch, or a normally controlled door release switch shall unlock the door or doors associated with that switch and the doors shall remain unlocked until reset. A “ER Reset” icon shall appear on each screen.

Touching the “ER reset” icon and then an activated door or Emergency Release icon shall reset the emergency release function for that door or group and the door(s) shall lock.

c. The emergency release function shall continue to be armed and the audible tone shall continue to sound until the operator returns to the primary emergency release screen and touches the emergency release “Cancel” switch. The “Cancel” switch shall disarm the emergency release function, cancel the audible tone, and reset and lock all doors opened by the emergency release function.
d. The door indication icon for doors actively Emergency Released shall have it’s black keyhole change to a flashing black “E”. Once the Emergency Release has been reset, the “E” shall change back to a keyhole and the icon shall depict the current status of the door as previously described.

9. INTERCOM CONTROL: When an intercom call-in is initiated from a sub-station the following conditions shall apply:
   a. The intercom station icon shall have a speaker symbol that will flash green to indicate the call-in along with an audible tone every 4 seconds. Touching the intercom station icon will select the audio path to the station and cause the icon speaker symbol to change to steady and green. Touching the station icon a second time, or selecting another intercom station, will cause the audio path to be closed and the speaker symbol to turn gray in color to indicate the inactive status of the station.
   b. Once an intercom station is active, the operator shall touch and hold the Push To Talk icon to talk to the associated intercom station, and release the Push To Talk icon to listen to the associated intercom station.
   c. Intercom call-ins shall go into an intercom stack on a first in first out basis. Located in the menu bar shall be two intercom associated icons, “Select” and “Reset”. Touching the Select icon will select the first Intercom call-in within the stack and automatically change the control screen to the location of that Intercom icon. Each time the Select icon is touched the current intercom conversation will be terminated and the next call in the stack will be initiated and the appropriate graphic control screen will be called. Touching the “Reset” icon will cancel any current intercom station. Intercom stations are NOT to be displayed in the alarm queue of the Touch Screen control station.
   d. Anytime an intercom station is active, the associated camera/cameras are to be displayed on the spot monitors. Spot monitor A is to display the camera viewing the side of the door where the intercom station is active. Spot monitor B is to display the camera viewing the opposite side of the door.
10. PAGING SPEAKER/ZONE: Touching a PAGE icon shall select a paging speaker zone for broadcast. Touching the PAGE icon a second time to reset. The associated Page icon shall have a speaker symbol that will turn green in color any time the page function is active. The speaker symbol shall be gray in color to indicate the inactive status of the Page The operator shall press and maintain pressure on the Push To Talk switch to talk in order to broadcast out to the affected speakers.
11. ALARM QUEUE: Located at the bottom of each control screen shall be an alarm queue. This queue will display a list of alarms in the order at which they were initiated.
    a. Each alarm shall be depicted in the queue by a text description as well as audibly annunciated with a voice command describing the alarm condition. Voice commands shall re-sound every 4 seconds until the alarm condition has been acknowledged and reset.

b. The alarm condition shall be acknowledged by highlighting the condition in the queue and touching the “Select” icon. This sequence will cause the appropriate control screen to be automatically displayed and display an alarm dialogue box with operator instructions for the alarm condition response.

12. ALARM SILENCE: Touching the Alarm Silence icon shall cause the audible alarm to silence. All visible indicators shall remain unaffected.
13. ALARM RESET: Touching the Alarm Reset icon will return all acknowledged alarm conditions to their normal state, and extinguish any alarm icons only after the alarm signal has been cleared.
14. CCTV CAMERA CONTROL: CCTV camera icons shall have a camera symbol located within the camera control icon. While a camera is inactive the camera symbol shall be gray. Touching the camera control icon shall display the camera to the appropriate spot monitor and cause the camera symbol to turn orange. Touching the camera control icon a second time will cause the spot monitor to go blank and return the camera symbol to gray to indicate the inactive status of the camera. If a camera is automatically called-up for an intercom call, the above described icon conditions shall apply for any active cameras.
15. EMERGENCY POWER: The Emergency Power icon shall flash and an audible tone shall sound when the system is operating on power derived from the UPS System. This shall be an alarm condition that is annunciated in the alarm queue. While operating on Emergency Power the Alarm Silence icon can be touched to silence the audible tone and cause the icon to illuminate steady. The associated icon shall extinguish when the system resumes operating on normal power.
16. PANEL DISABLE: Pressing the panel disable icon will disable the control station and initiate an alarm at the Central Control touch screen. The station can be enabled only from the touch screen control station or master graphic control panel having control of the area. While disabled, the screen shall be blank and display “Panel Disabled”.
17. PANEL CONTROL: There shall be a screen that is called from the Touch Screen utility screen that shall have an icon for each Control Station/Graphic Panel in the system. The icon shall indicate the Enabled/Disable condition of each control location. This function is only available to the Master Control station located in Central Control. Each control station may be enabled/disabled from these control icons.
18. CONTROL TRANSFER/LOG-OFF: Touching the “LOG OFF” icon will switch control of all panel functions to the designated transfer control station and cause the“LOG-IN” screen to be displayed. Control can be returned to the panel by entering a valid log-in code; no action is required by the station to which the panel was transferred.
19. MAIN SCREEN: Touching this icon will switch the display to an overall map of the facility. This control screen shall contain icons that will direct the operator to control screens for the various areas of the facility.
20. AREA ICONS: Located under a screen from the Utilities screen shall be icons for control of each area of the facility. These icons shall determine which control station has authority to control each area of the facility.

1.10 TOUCHSCREEN SYSTEM ALARM REPORTING FUNCTIONS

A. The following alarms shall be reported on the Central Control touch screen terminals and logged on the SMS computer:
   1. Unauthorized exit (opening) of any door monitored/controlled by the operator terminal or any station transferred to operator position.
   2. “Panel Disable” alarms from any control station.

3. Duress Alarms
4. UPS Alarms
5. Interlock Overrides
6. Emergency Release

1.11 SECURITY MANAGEMENT SYSTEM DESCRIPTION

A. A Security Management System (SMS) shall be furnished and Installed and include the following interface terminals and equipment:
   1. Operator Terminals
   2. Printers
   3. File Server
   4. SMS components shall be interconnected utilizing a dedicated local area network (LAN)

B. The system shall:
   1. Provide a means of archiving alarm and other activity data in a SQL Server compatible data base.
   2. Provide packaged data reporting programs to generate activity reports based on user selectable search criteria. All reports shall be displayed in chronological order.
   3. Allow the user to create custom programs to retrieve data from the data base.

C. The Security Management System shall be served by the Ethernet LAN network. The file server/data logger shall retrieve data from the Touch screen operator terminals, card access system, and PLC's. The system shall be configured such that system malfunctions of the SMS cannot in any way affect the performance of the PLC and touch screen systems.

D. As the touch screen terminal or PLC receives or generates data, the data shall be copied to the Security Management System.

E. In the event the Security Management System is incapable of receiving data from the remote terminal, the remote terminal shall store the last 200 alarm records and transfer the records when the SMS is again functional.

F. Logging: System shall log all control and alarm events in the facility, including door control, and operator log-on and log-off activities.

G. The administrative Terminal located in Central Control shall be configured to access the database and activity reports.

PART 2 - PRODUCTS

2.01 Acceptable Integrators

A. Except as otherwise specified, herein, or in the General Conditions, the equipment and materials of this Section shall be products of the following manufacturers, subject to compliance with specification requirements and provided each manufacturer meets all requirements of the Quality Assurance Section of this Specification. Proprietary and custom systems and those using on board processors as manufactured by MTI, Icotech, OSS, Simplex and or Comtec are not acceptable.
   1. South Western Communications, Inc., Decatur, AL
   2. SimplexGrinnel, Boca Raton, FL
   3. United Prison Equipment, Green Lane, PA
   4. Grayco Detention Equipment Inc., Surfside Beach, SC
   5. Southern Steel, San Antonio, TX
   6. Trentech, Montgomery, AL
   7.

2.02 TOUCH SCREEN SYSTEM

A. Graphical User Interface Software: The touch screen software shall have the following characteristics:
   1. Non-proprietary, standard, off-the-shelf product of a company other than the Division 17 Contractor.
   2. Nationally distributed.
   3. National software technical support.
   4. Based upon a Microsoft Windows (latest version) operating system.
   5. Provided with documentation to allow User Programming.
   6. Software shall be Wonderware Intouch, GE Fanuc Cimplicity, or pre-approved equal.

B. LCD Monitor and Transducer: The touch screen monitor shall have the following characteristics:
   1. Useful screen area: 14.8” Horizontal, 11.9” Vertical for 19”
   2. Useful screen area: 27.6” Horizontal, 15.6” Vertical for 32”
   3. Display size: 19” diagonal or 32” diagonal.
   4. Optimal resolution: 1280 X 1024.
   5. Colors: 16.7 million (8 bit).
   6. LCD Panel brightness: 300 cd/m2 (typical).
   7. Response time: 25 msec (typical).
   8. Viewing angle: Horizontal 170° total, Vertical 170° total.
   9. Contrast Ratio: 700:1 (typical).
   10. Input Audio: Computer audio on 3.5mm stereo mini.
   11. Input Frequency: Horizontal: 31-80 kHz, Vertical: 56-75 Hz.
   12. Input Data: Serial or USB 1.1.
   13. Power Dissipation: 40 W (typical).
   14. Temperature: Operating 0oC to 40oC, Storage -20oC to 60oC.
   15. Speakers: Two built-in, rear-facing 2W speakers in display head.
   16. Mounting Options: 100 mm M4 Vesa mount, desk top mount with removable base.
   17. Monitor shall be Elo Touch Systems 1928L for 19” and Elo Touch Systems 3220L for 32” or pre-approved equal.

C. Touch Screen Computer
   1. Dual Core Intel® Processor 2.80GHz.
   2. Windows® XP Professional, SP2.
   3. 2GB, DDR2 SDRAM Memory, 533MHz.
   4. 256 MB video graphics card.
   5. 80 GB, 7200 RPM hard drive.
   6. 16XDVD+/-RW drive.
   7. 10/100/1000 Gigabit PCI Ethernet adapter.
   8. USB keyboard.
   9. Optical USB mouse.
   10. Digital PCI sound card.
   11. Shall be powered by UPS.
   12. CPU shall be located in a lockable metal enclosure.
   13. The operation of the touch screen shall not depend on a keyboard. The keyboard shall be stowed and shall not be normally accessible from the console surface except as required for installation and maintenance purposes.
   14. Acceptable PC manufacturers
      a. IBM
      b. Dell
      c. HP

15. Spare Units: The Contractor shall provide to the Owner one spare 19" color touch screen. The Contractor shall also provide an imaged hard drive for each Touch Screen location.

D. Network Switches
   1. Ethernet switch shall be IEEE 802.3 compliant. The switch will have the ability to utilize a variety of media modules such as 10/100BaseT, single mode 10BaseFL and 100BaseFL and multimode 10BaseFL and 100BaseFL.
   2. The unit shall be capable of full and half duplex communication and housing multiple Ethernet modules supporting any standard Ethernet media at 10/100megabits per second Ethernet speed. Ethernet modules will be available for direct connection to an Ethernet network using10BaseT, or 100BaseTX (RJ-45), and fiber optic 10Base FL or 100Base FX. All modules will be supplied with integral LED indicators for monitoring communication link status. All fiber optic modules will be IEEE 802.3 FIOL compliant.
   3. The switch shall be able to signal device faults through an alarm dry contact output on the switch. The alarm contact shall be able to signal port link and power supply loss.
   4. Ethernet Switch will be DIN rail mountable.
   5. The Ethernet Switch shall support SNMP management.
   6. Switch(s) shall be Hirschmann MICE industrial Ethernet switch, Phoenix MMS series or approved equal.

2.03 SYSTEM PERFORMANCE

A. The systems shall be configured to meet the following performance requirements:
   1. Outputs to field devices such as door locks shall activate within 300 msec of the touch screen icon activation. Activation of any touch screen icon or control switch shall provide a short audible tone.
   2. Video screen displays shall be refreshed within 300 msec. Screen graphics shall be stored in RAM to effect fast refresh with no moving parts. Storage on disk drive shall be for back-up purposes only
   3. The system shall annunciate alarms including touch screen display, video graphic alarm display, and audible tone in 500 msec or less from the time the field device is activated. Alarm audibles shall be distinctly discernible from intercom call-in tones and touch screen audible feedback tones.
   4. Touch screen terminals shall not be interdependent. The failure of one touch screen terminal shall not affect the operation of other touch screen terminals. The use of server based applications is strictly prohibited. Each Touch screen stations shall contain a licensed copy of the VGUI software.
   5. System faults or crashes shall not be capable of activating field outputs such as door locks during system failure or reboot.

PART 3 - EXECUTION

3.01 MANUFACTURER'S INSTRUCTIONS

A. Compliance: Comply with manufacturer's product data; including product technical bulletins, product catalog, installation instructions, submittal sketches or drawings, and product carton instructions for installation.

3.02 EXAMINATION

A. Site Verification of Conditions: Verify that related conditions, including equipment that has been previously installed under other sections, are acceptable for product installation in accordance with manufacturer's instructions.
B. All devices connected to equipment specified in this section shall bear the UL, cUL, or CSA label and comply with all applicable National Electrical Code (NEC) standards.

3.03 PREPARATION

A. Division 17 Subcontractor shall develop custom software as required to affect the functions of the system as dictated by the Specifications.
B. Division 17 Subcontractor shall provide equipment cabinets for installation of the control equipment and cable terminations to the equipment.
C. All equipment related to the system shall be factory tested before shipment.

3.04 INSTALLATION

A. Contractor shall furnish all equipment, labor, system setup, and other services necessary for the proper installation of the products/system as indicated on the drawings and specified herein.
B. Install in accordance with manufacturer's handling and installation instructions.
C. Install in accordance with all local and pertaining codes and regulations.
D. All equipment and systems shall be installed by the ESC. Subcontracting of equipment installation shall not be permitted.
E. Equipment shall be ready to use condition at end of installation.
F. Energize equipment in accordance with manufacturer's instructions.

3.05 PROTECTION AND CLEANING

A. Storage and Protection: Store materials protected from exposure to harmful environmental conditions and at temperature and humidity conditions recommended by the manufacturer.
B. Touch up, repair, or replace damaged components before Substantial Completion.
C. Remove temporary tags, coverings, and construction debris from interior and exterior surfaces of equipment. Remove construction debris from equipment area and dispose of debris.
D. Clean integral air filters, heatsinks, grills, and fans before Substantial Completion and Commissioning Services.

3.06 WARRANTY

A. The ESC shall provide a single source warranty for all supplied equipment specified in this section to be free of defects in material and workmanship for a period of one (1) year from the date of substantial completion.

END OF SECTION 17120