REQUEST FOR PROPOSALS
RFP#01-4321p

REPLACEMENT OF DOOR CONTROL, INTERCOMMUNICATION AND CLOSED CIRCUIT TELEVISION SYSTEMS FOR THE MACON COUNTY DETENTION CENTER

ISSUE DATE: AUGUST 4, 2010

ISSUING DEPARTMENT:
MACON COUNTY FINANCE DEPARTMENT
5 WEST MAIN STREET
FRANKLIN, NC 28734
PHONE: (828) 524–1640
FAX: (828) 349–2520
ATTN: LINDSAY McCONNELL, PURCHASING AGENT
lmcconnell@maconnc.org

PROPOSALS WILL BE RECEIVED UNTIL AUGUST 25, 2010 AT 3:00 p.m.

PROPOSALS ARE TO BE SEALED AND MAILED VIA USPS TO THE ABOVE ADDRESS OR DELIVERED TO THE PURCHASING AGENT’S OFFICE LOCATED IN THE MACON COUNTY ANNEX BUILDING AT 5 WEST MAIN STREET, FRANKLIN, NC 28734
REQUEST FOR FORMAL BIDS AND PROPOSALS FOR REPLACEMENT OF DOOR CONTROL, INTERCOMMUNICATION AND CLOSED CIRCUIT TELEVISION SYSTEMS FOR THE MACON COUNTY DETENTION CENTER

Pursuant to General Statutes of North Carolina, Section 143-129, as amended, sealed bids and proposals, subject to the conditions and specifications herein, are invited for furnishing the following equipment, materials, services or repair work. All bids will be received by the Macon County Finance Department until 3:00 p.m. local time on Wednesday, the 25 day of August, 2010, at which time they will be publicly opened and read.

MAILING INSTRUCTIONS

1. Bidder submit a complete, fully executed RFP document.
2. If mailed, proposal should be forwarded by certified U.S. Postal Service. Please address and mark your bid as shown below.

   MACON COUNTY FINANCE DEPARTMENT
   ATTN: LINDSAY MCCONNELL
   5 WEST MAIN STREET
   FRANKLIN, NC 28734
   RFP NO 01-4321p

3. If forwarded other than by U.S. Postal Service, delivery must be made directly to Macon County Finance Department, 5 West Main Street, Franklin, NC 28734.

NOTE: IF MAIL OR DELIVERY BY ANY OTHER MEANS IS DELAYED BEYOND THE DATE AND HOUR SET FOR BID OPENING, PROPOSAL THUS DELAYED WILL NOT BE CONSIDERED.
I. Description of Procurement Process

A. Timetable:
The County expects to undertake the selection process according to the following schedule:

Release of RFP: August 4, 2010
RFP Acknowledgement due August 9, 2010
Submission of Written Questions August 10, 2010 at 10:00 AM
Questions Answered/Addenda Issued August 13, 2010
RFP Due Date August 25, 2010 at 3:00 PM
Anticipated Award Date: September, 2010

B. RFP Acknowledgement:
Upon receipt of this RFP, acknowledge its receipt by fax or e-mail by August 9, 2010 using the Request for Proposals Acknowledgement form. Complete the form in its entirety advising the County of your firm’s intention to submit or not submit a proposal and name, address, telephone number, facsimile number and e-mail address of your primary and secondary contact person. The completed and signed form should be faxed or e-mailed to Lindsay McConnell, Purchasing Agent, at 828-349-2520 or lmcconnell@maconnc.org.

C. Interpretations and Clarifications:
Requests for information or clarification of this RFP must be made in writing and addressed to Lindsay McConnell at the address, fax, or e-mail address listed below, with e-mail being the preferred method of communication. Please reference the RFP page and topic.

Lindsay McConnell
Purchasing Agent
5 West Main Street
Franklin, NC 28734
Phone: 828-524-1640, Fax: 828-349-2520
E-mail: lmcconnell@maconnc.org

The answers to questions submitted will be available to all vendors via e-mail.

D. Submission of RFP:
One (1) original and one (1) electronic copy of the proposal along with the Non-Collusion Affidavit shall be submitted by August 25, 2010 at 3:00 p.m. to:

Macon County Finance Department
Attn: Lindsay McConnell
5 West Main Street
Franklin, NC 28734

Proposals should be clearly marked “REPLACEMENT OF DOOR CONTROL, INTERCOMMUNICATION AND CLOSED CIRCUIT TELEVISION SYSTEMS FOR THE MACON COUNTY DETENTION CENTER”.
When received, all proposals and supporting materials, as well as correspondence relating to the RFP, shall become the property of the County. **Proposals sent by fax will not be accepted.**

As allowed under NCGS 143.129.8, proposals will not be made available to inspect or copy until the contract has been awarded.

In submitting a proposal, it is understood by the vendor that Macon County reserves the right to accept any proposal, to reject any and all proposals as non-responsive and to waive any irregularities or informalities in proposals when to do so is in the best interest of Macon County.

Any proposal may be withdrawn or modified by written request of the vendor, provided such request is received by the County at the designated address prior to the date and time set for receipt of proposals.

If a proposal includes any propriety data or information, such data or information must be specifically identified as such on every page on which it is found. Data or information so identified will remain confidential to the extent allowed by North Carolina law and will be used by Macon County personnel solely for the purposes of evaluating proposals and conducting contract negotiations.

The cost of preparing a response to the RFP will not be reimbursed by the County.

All proposals must include all necessary brochures of proposed equipment.

After the RFP issue date, all communications between the Issuing Department and prospective Proposers shall be in writing. Email or facsimile questions will be accepted. Any inquiries, requests for information, technical questions, clarifications, or additional information shall be directed to Lindsay McConnell at the address, facsimile number, or email on page one of this RFP. All questions concerning this RFP shall reference the RFP number, section number, and paragraph (emailed questions shall also reference RFP number, section number, and paragraph in the subject line). Questions and responses affecting the scope of the proposal will be provided to all prospective Proposers by issuance of an Addendum. All questions shall be received by the Issuing Department no later than August 10, 2010 at 10:00 am. **NO EXCEPTIONS.**

**E. List of Technical Specifications:**

- 17000—SECURITY ELECTRONICS, GENERAL
- 17120—TOUCH SCREEN SYSTEM
- 17140—PROGRAMMABLE LOGIC CONTROLLER
- 17150—ELECTRONIC RELAY SYSTEM
- 17200—INTERCOMMUNICATIONS SYSTEM
- 17300—CCTV
Request for Proposals Acknowledgement

REPLACEMENT OF DOOR CONTROL, INTERCOMMUNICATION AND CLOSED CIRCUIT TELEVISION SYSTEMS FOR THE MACON COUNTY DETENTION CENTER

Please complete this form and return to the Macon County Finance Department, Attn: Lindsay McConnell, 5 West Main Street, Franklin NC 28734 or fax to 828-349-2520 or email to lmcconnell@maconnc.org by June 1, 2010.

_______ Will submit bid for this proposal.

_______ Decline to submit bid for this proposal

Additional Comments:

________________________________________________________________________
________________________________________________________________________
________________________________________________________________________

If you have any questions concerning the RFP, please call Lindsay McConnell at 828-524-1640.

Thank you for your cooperation.

________________________________________________________________________
Company

________________________________________________________________________
Authorized Signature

________________________________________________________________________
Address

________________________________________________________________________
Phone

________________________________________________________________________
City, State, Zip Code

________________________________________________________________________
Fax

________________________________________________________________________
E-mail address
NON-COLLUSION AFFIDAVIT

REPLACEMENT OF DOOR CONTROL, INTERCOMMUNICATION AND CLOSED CIRCUIT TELEVISION SYSTEMS FOR THE MACON COUNTY DETENTION CENTER

1. The signer of this document is the ___________________________ (Title) of __________________________________________(company), who is the respondent that has submitted the attached bid response.

2. The undersigned person is fully informed concerning the preparation and contents of the attached response and of all pertinent circumstances related to it, and is authorized to sign this affidavit. This affidavit is given under penalty of perjury as provided by law.

3. Such bid response is genuine and is not collusive of sham in any way whatsoever.

4. Neither the person responding nor any of its officers, partners, owners, agents, representatives, employees or parties in interest, including the signer of this affidavit, have in any way colluded, conspired, connived, or agreed, directly or indirectly, with any other respondent, firm or person to submit collusive or submit sham response in connection with the contract for which the attached response has been submitted or to refrain from responding in connection with such contract, or has in any manner, directly or indirectly, sought by agreement or collusion or communication or conference with any other responder, firm, or person to fix the price or prices in the attached response or of any other responder, or, to fix any overhead, profit, or cost to secure through collusion, conspiracy, connivance or unlawful agreement any advantage against the Board of County Commissioners, Macon County or any person interested in the proposed contract.

5. The price or prices quoted in the attached response are fair and proper and are not derived by any collusion, conspiracy, connivance or unlawful agreement on the part of the respondent or any of its agents, representatives, owners, employees, or parties in interest.

___________________________________________
Signature of Officer

Subscribed and sworn to before me, this ___________day of ____________, 20_____.

Notary Public ________________________________

My commission expires __________________________ (SEAL)
BID FORM
MACON COUNTY DETENTION CENTER

REPLACEMENT OF DOOR CONTROL, INTERCOMMUNICATION AND CLOSED CIRCUIT TELEVISION SYSTEMS

| COMPANY | __________________________________________________________ |
| ADDRESS | __________________________________________________________ |
| ADDRESS | __________________________________________________________ |

| AUTHORIZED SIGNATURE | __________________________________________________________ |
| PRINTED NAME | __________________________________________________________ |
| TITLE | ___________________________ PHONE | ___________________________ |
| FAX | ___________________________ DATE | ___________________________ |

**BASE BID**

$______________________________

(Base bid includes all materials and labor.)

$______________________________

(Applicable taxes (please list separately on this line).)

After award of Contract:

Number of Days to Commence | ____________

Number of Days to Complete | ____________

**Equipment Manufacturer and Model Numbers being proposed:**

PLC CPU: | __________________________________________________________

Intercom Station Select Card: | __________________________________________________________

Intercom Amplifier: | __________________________________________________________

Touch Screen Software: | __________________________________________________________

Touch Screen Computer: | __________________________________________________________
SECTION 17000
SECURITY ELECTRONICS, GENERAL

PART 1 - GENERAL

1.01 SUMMARY.
A. This division of the specifications covers the complete security controls, communications and alarm systems as specified herein. The Electronics Systems Contractor (ESC) shall be the single contractor responsible for this and all other divisions covered by the complete contract specification documents and any and all supplementary documents and addenda and shall provide all design, labor, material, equipment and supervision to install the specified equipment and systems for a complete integrated operational security systems package inclusive of any and all equipment to effect a complete and functional system in accordance with and in strict compliance to the complete contract specifications.
B. A single Electronics Systems Contractor (ESC) being listed as pre-approved or having submitted all the requirements listed hereafter and having been approved by special addendum, shall assume control and accountability for furnishing and installing all systems as specified hereafter using only equipment of pre-approved manufacturers.
C. The ESC shall be responsible for the total integration and interfacing of the products and systems specified in this section and all other sections in accordance with submittals, which have been reviewed and approved by the Owner.
D. The ESC must maintain permanent employees under it’s hire for positions of project management and trained electronics technicians sufficient to provide the proper service to the defined project throughout the warranty period and a minimum of one (1) year following the warranty period. Response time to a call shall not exceed twenty-four (24) hours in a normal situation or four (4) hours in an emergency situation. Warranty service must be available through a toll free number to the Owner, twenty-four (24) hours a day and seven (7) days a week.

1.02 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)
C. Institute of Electronic and Electrical Engineers (IEEE)
   IEEE 802.3 CSMA/CD (ETHERNET)

1.03 SCOPE AND RESPONSIBILITY
A. The scope of work and project responsibility shall consist of the total replacement of the existing Simplex door control system and intercommunications system. This includes but is not limited to all control boards,
processors, relays, terminals, intercom relays, paging amplifiers, intercom amplifiers and master stations.

B. Wall mounted intercom stations and their associated cabling from the head end to the station shall remain and be re-used.

C. Overhead and/or wall mounted paging speakers and their associated cabling from the head end to the speaker shall remain and be re-used.

D. All existing door hardware including but not limited to locks, door position switches, keeper switches and associated wiring from the head end to the door shall remain and be re-used. Before beginning on-site installation or removal of existing equipment, contractor shall test each lock for proper functionality and submit a report to the owner of deficiencies for owner correction.

E. The existing Simplex system utilizes resistors located at each input device, i.e. DPS switches in locks, call buttons on intercom stations and duress push buttons. The contractor shall be responsible for the removal and re-installation of all devices, including but not limited to, electro-mechanical locks, door position switches, intercom stations and duress push buttons, in order to remove the supervisory resistors installed to work with the Simplex control modules. Any lock or other device that is damaged during this process shall be the responsibility of the contractor to repair or replace.

F. The existing Bosch CCTV system shall remain. There have been 34 cameras added since the original construction. Currently, these cameras are only routed to existing DVR’s. Contractor shall add the appropriate components to the existing Bosch matrix switcher in order to accommodate the 34 added cameras into the switcher.

G. This contractor shall be responsible for the interface between the new touch screen control system and the existing CCTV system to affect automatic camera call up to control station spot monitors for intercom and various alarm conditions.

H. The control center is currently a free standing metal casework unit. The control center is to be re-located to the corner of the Master Control room. Macon County will provide new millwork and any conduit work required in order for the control center to be re-located. Demolition of the existing control center will be by the contractor and any and all materials removed shall be turned over to the owner.

I. The existing (3) DVR’s shall be re-located to the equipment rack. Existing DVR’s and associated monitors shall remain and be re-used.

J. Re-locate (3) 21” LCD ceiling mounted monitors currently connected to the existing DVR’s and ceiling mount them above the new control center.

K. Add a new 19” LCD monitor with Quad display to be counter mounted at the new control center. Each quadrant of the monitor shall be connected to matrix switcher outputs able to display any camera within the system. Quadrants (1) & (2) shall be used for intercom call-up, showing both sides of a door for an active intercom. The other (2) quadrants shall be used for spot and alarm call up.

L. Provide new CCTV keyboard connected to the Bosch matrix switcher. Keyboard to be located at the Touch Screen at the new control center.

M. Provide (1) Touch Screen Control Station at the new control center counter.

N. The Touch Screen Control station shall have an integrated intercommunications master station with speaker, microphone and push to talk.
O. There are currently (7) inmate telephone circuits controlled from toggle switches at the control center. Re-route telephone wiring to security equipment cabinet and connect to relays controlled by the new system. Icons shall be placed on the Touch Screens for individual control of the (7) inmate telephone control circuits.

P. The ESC scope of work shall consist of, but not be limited to the following as defined in the details of this division of the specifications and as shown on the plans.

1. 17000 – Security Electronics, General
2. 17120 – Touch Screen System
3. 17140 – Programmable Logic Controller
4. 17150 – Electronic Relay System
5. 17200 – Intercom System
6. 17300 – CCTV

Q. The ESC scope of work shall additionally consist of the following:

1. Furnishing, installing (pulling) and terminating of all wire, wiring and cable where required.
2. ESC 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 ESC contractor shall be responsible for the design, fabrication, project management, installation and warranty of all systems within this division of work.
3. Complete engineering documents consisting of equipment plans, cut sheets and manuals for a coordinated total system including documentation for submittal, installation, operation and maintenance.
4. Project management on and off site to oversee and supervise all work performed by, for or in coordination with the scope of work by the ESC. Inspection and verification of the site and building prior to installation to insure correctness of structure.
5. Although such work may not be specifically indicated, furnish and install all supplementary or miscellaneous items, appurtenances and devices incidental to or necessary for a complete and operating system.
6. Furnish and install all necessary power transformation and surge protection required to operate control system equipment and functions.

R. Acceptable ESC’s

1. SWC – South Western Communications, Inc., Decatur, AL
2. Southern Steel, San Antonio, TX
3. Trentech, Montgomery, AL

1.04 PREQUALIFICATION REQUIREMENTS

A. All ESC’s must be pre-approved and listed. ESC’s not listed as being approved that desire to bid the project must request approval and shall submit the following qualification information to the Architect in writing no later than twenty-one (21) days prior to bid. Request received after this time will not be considered under any condition. If approval is received, acknowledgment will be by the noted special addendum. Verbal approval will not satisfy the right to bid. Any bids an ESC not listed and pre-qualified will not be considered and will be thrown out as a non-qualifying bid. All ESC’s shall submit all information exactly as herein
requested or approval will not be considered. Disqualification shall immediately exist if the request is submitted in a manner inconsistent and or incomplete as requested following. Disqualification shall also exist if in the opinion of the Owner, the information submitted is inaccurate or does not satisfy the qualification requirements.

B. The Owner reserves the right to disqualify and or not approve any ESC for any reason if they deem it to be in the best interest of the Owner.

C. The ESC shall be a true systems integrator specializing in the design, manufacture, installation and servicing of integrated security electronics and communication control systems for the corrections market.

D. The evaluation of each perspective ESC’s qualifications will be strictly and solely based on the qualification proposal. The proposal’s format must be on a paragraph-by-paragraph basis to the items listed following:

1. Provide a history of the company that reflects accurately the length of time the company has been licensed and performed services of an ESC. The company shall have been in business under and incorporated under the name submitted in the proposal for a minimum of ten (10) years. For companies with multiple offices, the proposal must contain information based only on the location that will be responsible for the entire management and operations for this project from award of bid through the warranty period.

2. Provide an organizational chart to include the names and positions of the Project Manager, Engineering Manager, the principal Project Engineer, the Project Programmer(s), the Manufacturing Manager, the Project Superintendent, the Lead Technician, all Field Technicians and Technical Support Staff that are to be assigned to this project.

3. For each of the individuals listed in the organizational chart, provide complete resumes and a delineation of each individual’s responsibilities for this project. The resumes must include information about the individual’s education, electronics systems detention experience, systems integration capabilities, factory training and certification and the length of time employed by the ESC. Provide a copy of each individual’s manufacturer’s certificate of certification for all systems, equipment and software for which each individual that will be involved.

4. The ESC must employ and provide the names and resumes of the following resident staff personnel in its employ and such individuals must have oversight of the project. The resumes shall include the same information as listed in paragraph 3 above plus a copy of the certificates of certification required for each:
   a. A Microsoft Certified Professional.
   b. A UL Trained Applications Engineer.

5. Provide a list of the ten (10) most recently completed jail system projects involving the major systems similar to those described in these specifications for which the ESC has been the integrator and having furnished and installed. Each project shall be of the size, complexity and requirements of this project and must have been in successful operation for a minimum period of three (3) years. If more than ten (10) projects are listed, only the first ten (10) will be reviewed. Provide the following information for each project:
   a. Project name and location.
b. Date project was completed.
c. Total project value.
d. Contract amount to the ESC.
e. Names of the ESC’s Project Manager, Principal Project Engineer and Field Superintendent.
f. Name and telephone number of Architect.
g. Name and number of the Security Consultant.
h. Name and number of the Architect’s Project Manager and Site Project Engineer.
i. Name and number of an individual (preferably the maintenance manager) at each facility who is familiar with the operation, performance and maintenance of the facility’s security electronic system. Reference must be current or the ESC will be considered non-responsive.
j. List and description of all systems on the project and the approximate value of each. System values must exceed the following amounts for at least two (2) of the projects:
   1) Graphic Door Control System - $100,000
   2) Touch Screen Door Control System - $100,000
   3) Intercommunication System - $100,000
   4) Video Surveillance System - $100,000
   5) Programmable Logic Controller - $100,000
   6) Video Visitation System - $100,000
6. Provide a list of all current projects, which the ESC is the integrator and is furnishing and installing. Provide the following information for each project:
   a. Project name and location.
   b. Date project was started.
   c. Total project value.
   d. Contract amount to the ESC.
7. Provide a list of all projects, which the ESC was involved in any form of litigation. Provide the following information for each project:
   a. Project name and location.
   b. Date project was started or completed.
   c. Total project value.
   d. Contract amount to the ESC.
8. Provide a list of all projects, which the ESC was assessed liquidated damages, even those projects for which the ESC did not have to pay a claim. Provide the following information for each project:
   a. Project name and location.
   b. Date project was started.
   c. Total project value.
   d. Contract amount to the ESC.
9. Provide a current independently audited and certified financial statement showing a consolidated net worth of $1,000,000.00.
10. Provide a letter from the Surety Company reflecting the Surety Company’s history with the ESC. The letter must state the position of the Surety relative to providing a 100% payment and performance bond should a contract be awarded to the ESC. The letter must be an original and include a current issue date and reference this project and state the estimated value of the ESC.
contract. The ESC will be required to provide both a bid bond to bid (cashiers check or bank letter will not be acceptable) and a performance and payment bond in order to perform the work.

11. Provide Microsoft certificate and Microsoft qualification number attesting to the ESC’s approval and certification by Microsoft that they are a Microsoft listed and authorized Microsoft Certified Professional.

12. Provide certificate to attest that the contractor is an ISO 9001:2000 certified company.

13. The ESC shall confirm in writing that they will have qualified personnel available to be on the project site daily for any and all coordination purposes throughout the total duration of the project. Provide the name(s) and resume(s) and the individual(s).

E. Systems, equipment and products specified in this division shall be engineered, programmed, manufactured and assembled, installed and serviced by an approved ESC.

F. All work is to be performed in strict accordance to any and all applicable codes, ordinances, regulations and standards; Federal, state, local and otherwise including but limited to the following:

1. National Electrical Code (NEC), latest edition
2. National Fire Protection Association (NFPA)
3. Factory Mutual System (FM)
4. Electronics Institute of America (EIA)
5. Underwriters Laboratory (UL)

G. Provide a statement attesting that the ESC has reviewed the entire set of bid documents and understands the specified system and project requirements.

H. Provide a riser diagram for each system specific to this project depicting all relevant details and information inclusive of but not limited to equipment layout and locations, conduit routing and sizing, cable and wiring requirements and power requirements.

I. Provide a narrative description of all software to be used including touch screen, programmable logic controllers, systems management and closed circuit television.

J. Provide from each manufacturer of each system certification that the ESC and its applicable personnel have been factory trained and certified to manufacture/assembly, install and service equipment contained in each system.

K. Refer to each individual section of this division of the specification for the list of acceptable manufacturers. If the ESC preparing the proposal desires to request a substitute, he must do so within the confines of these proposal qualification requirements in writing twenty-one (21) days prior to the bid date. Manufacturers and equipment substitution proposal request must be submitted noting section, page, paragraph and item with a detailed cross-referencing and comparison. For proposed substitutions submit the following information exactly as requested:

1. Name of manufacturer
2. Address of manufacturer
3. Phone number of manufacturer
4. Trade name
5. Model and catalog designation
6. Performance and test data
7. Referenced standards
8. Warranties
9. Material construction
10. Finish

L. Electronic components shall be from manufacturers who at present have not less than ten (10) years continuous successful experience in the design and manufacture of the type products required for this project.

M. In order to meet the high standard requirements for Quality Assurance, proprietary and custom systems such as those manufactured by MTI, Icotech, OSS, Simplex, Trentech and or Comtec are not acceptable. Integrators listed as being approved and/or Integrators having been approved by addendum shall use products as specified and defined by these specifications.

1.05 SUBMITTALS
A. Product Data: Submit product data, including manufacturer’s data sheets for all proposed system components. Submit three (3) copies with all specific items that will be provided clearly indicated and the options highlighted.

B. Shop Drawings: Complete system Shop Drawings shall be prepared for this particular project which include point-to-point wiring diagram(s), conductor sizes and types, riser diagrams and schematics, theories of operation, and full scale color Touch Screen map layouts. Submit three (3) copies for review and approval. Layout shall be based on an actual building floor plan. Drawings shall show all equipment locations and quantities required. A final “as-built” plan layout shall be provided to the Owner upon Substantial Completion of the actual installation.

C. Materials List: Submit a complete materials list indicating all equipment to be provided as part of this section.

D. Samples: Submit selection and verification samples of finishes, colors, and textures as requested.

E. Complete details of equipment mounting configuration.

F. Manufacturing assembly and testing procedures and forms.

G. Installation testing and check out procedures and forms to be used by the ESC and the owner.

H. The equipment plans, riser diagrams, block diagrams and details are to be submitted in the latest version of MicroStation or AutoCad and shall be submitted on a minimum of a ‘D’ size drawings. Documents submitted in any other manner including marked up sets of the bid documents shall receive immediate rejection and will not be reviewed. A complete set of as built documents will be issued at the completion of the project inclusive of CAD files on CD.

I. Submittals issued in a manner inconsistent with the requirements of these specifications shall receive immediate rejection and will not be reviewed. Submittals issued containing materials, products and or equipment not listed and approved addendum shall receive by the original bid document specifications or by immediate rejection and will not be reviewed.

1.06 OPERATION & MAINTENANCE MANUALS
A. The ESC shall furnish three (3) sets of operational and maintenance manuals for all systems furnished. The manuals shall include component list, instructions for care, operation instructions, and instructions for ordering replacement equipment and personnel to contact for warranty work.

B. Record Documents:
1. This Contractor shall supply Record Documents for the entire facility inclusive of existing areas (if applicable), systems and conditions. The as built Record Documents at a minimum shall include control room layouts, equipment room layouts, touch screen control layouts, equipment cabinet layouts (including existing to remain if applicable), theories of operation, wiring diagrams and schematic block diagrams.
2. At the time of project completion, this contractor shall turn over to the owner all original software media and manuals for all programmable systems to include but not be limited to Touch Screen Computers, Programmable Logic Controllers, Intercommunications System and Closed Circuit Television System.
3. At the time of project completion, this contractor shall turn over to the owner all custom programs on permanent magnetic media for all programmable systems to include but not be limited to Touch Screen Computers, Programmable Logic Controllers, Intercommunications System and Closed Circuit Television System.
4. At the time of project completion, all project installed hardware, software and programs becomes the sole property of the owner.

1.07 APPROVALS
A. Deviations from this specification must be documented in writing to the at least twenty-one (21) business days prior to the bid date.
B. Complete catalogue data, product specifications, and technical information on alternative equipment must be provided including all associated cost savings or additions, including but not limited to equipment, equipment installation, power wiring and materials, programming, documentation, and project management.

1.08 DELIVERY & HANDLING
A. Delivery: Deliver Materials in manufacturer’s original, unopened, undamaged containers with identification labels intact.
B. Storage and Protection: Store materials and equipment in an area protected from harmful weather conditions and at temperature conditions recommended by manufacturer. After initial installation, protect equipment from exposure to dust, dirt, paint, and other contaminants.

1.09 PROJECT CONDITIONS
A. Field Measurements: Verify actual measurements/openings by field measurements before fabrication; show recorded measurements on shop drawings.
B. Scheduling: Coordinate taking field measurements, fabrication schedule, and deliveries with construction progress schedule to avoid construction delays.

1.10 WARRANTY
A. Manufacturer’s Warranty: All equipment and labor provided under this section is warranted for one (1) year from Substantial Completion or System Commissioning, whichever occurs first.
B. During the warranty period the ESC shall perform quarterly preventive maintenance inspections on all installed equipment.
C. Nothing in the above warranty shall apply to material which has been misused, abused as follows; neglect by the owner, defects or damage caused by work or failure of work by others, ordinary wear or normal equipment adjustment.
D. Additionally, any unauthorized modifications; repairs or tampering shall constitute termination of the warranty.

1.11 TRAINING
A. The ESC shall provide forty (40) hours of on site training for operational purposes and forty (40) hours of training for maintenance purposes at the turn over of the project.
B. It is mandatory that the ESC shall set up in their facilities all equipment for the project and shall test each and every component and operation prior to shipping to the project. Test reports as mentioned above shall be provided to the Owner.

PART 2 - PRODUCTS

2.01 See Individual Division 17 Specification sections for specific product requirements.

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. 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) years from the date of substantial completion.

END OF SECTION 17000
PART 1 - GENERAL

1.01 SUMMARY.
   A. Provide Touch Screen control stations as specified herein. 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. SWC – Southwestern Communications, Inc., Decatur, AL
      2. Southern Steel, San Antonio, TX
      3. Trentech, Montgomery, AL

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. Control Room/Dispatch 246 – (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 SUBMITTALS
A. General
1. Submittals shall be made in accordance with the General Provisions (Section 17000) 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.

1.06 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.

1.07 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.

1.08 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 control panel 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.
1.09 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

1.10 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. SWC - South Western Communications, Decatur, AL
2. Southern Steel, San Antonio, TX
3. Trentech, Montgomery, AL

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.
6. LCD Panel brightness: 300 cd/m2 (typical).
7. Response time: 25 msec (typical).
8. Viewing angle: Horizontal 170° total, Vertical 170° total.
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.
14. Temperature: Operating 0°C to 40°C, Storage -20°C to 60°C.
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.
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. Gateway
15. Touch screen Spare Unit: The Contractor shall provide to the Owner a complete touch screen spare unit. The unit shall include a 19” color touch screen, CPU, mouse and operational programs.

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 FIOI 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.
PART 1 - GENERAL

1.01 SUMMARY.
   A. Provide Programmable Logic Controllers as specified herein. 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 17120 Touch Screen System
      3. Section 17150 Electronic Relay System
      4. Section 17200 Intercommunications System

1.02 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)

1.03 WORK INCLUDED
   A. Provide materials, equipment, programming and services as required to install programmable logic controllers as specified herein.
   B. Major Sub-systems include:
      1. Programmable Logic Controllers (PLC’s).
         a. PLC located in main security electronics room.
      2. Electronic relay system.

1.04 SUBMITTALS
   A. See division 17000.

1.05 APPROVALS
   A. General
      1. Submittals shall be made in accordance with the General Provisions (Section 17000) of these specifications.
   B. Specific Requirements:
      1. Submit catalog cuts for all equipment and devices being furnished under this Section.

1.06 DESCRIPTION
A. Programmable Logic Controllers (PLC) shall provide control and monitoring functions for systems as described on the drawings and in these specifications.

B. The controllers shall provide all necessary logic functions, timing functions, memory, software, input/output points and communication capabilities for the operating features required to meet all of the requirements for the specifications.

C. Logic functions shall include but limited to AND, OR and INVERT functions with sufficient levels to provide operating features required to perform all of the functions required by the specifications.

D. Timing functions shall include, but not be limited to, on-delay, off-delay, stepping and pulsing. Sufficient variations of programmable timing shall be available to provide all the operating features as required by the specifications.

E. The controller shall be standard off the shelf, commercially available industrial grade programmable logic controller equipment. Proprietary or custom cage mounted, discrete logic cards or PLC units and associated software such as those manufactured by MTI, OSS, Simplex, ICOTECH and Comtec are not acceptable.

F. Each PLC CPU 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.

PART 2 - PRODUCTS

2.01 MATERIALS

A. The PLC shall be the product of a manufacturer engaged in the production of controllers for industrial application for a minimum of five years. Only manufactures with national distribution and local parts outlets will be considered.

B. The program shall be developed for each controller on an individual basis and shall be stored in a non-volatile memory.

C. The programming format shall be traditional relay ladder logic utilizing basic and advanced instruction sets for function generation. Controllers that utilize spreadsheets and other means of programming shall not be acceptable.

D. The I/O modules shall be standard backplane type mounting and shall contain status LED’s for I/O point on the module.

E. There shall be a minimum of 10% spare capacity in the amount of installed PLC I/O.

F. I/O modules shall be installed in any available slot in the CPU or expansion baseplates, and shall require no tools for insertion and extraction.

G. The system design shall accommodate the replacement of assemblies without having to disconnect field wiring. Wherever possible, removable connectors shall be used to connect field wiring to the individual circuit board assemblies

H. The controller shall operate on 105 to 130 VAC, 60 Hz and contain an Integral circuit breaker for overload protection. The controller shall Operate in temperatures of 0 to 60C and up to 95 percent humidity(non-condensing). The controller shall conform to electrical noise standards of IEEE-472.

I. The PLC shall be Modicon Quantum Series, Allen-Bradley PLC5 Series, GE Fanuc Series 90-70, Omron CS1 Series, or pre-approved equal

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. 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 17140
SECTION 17150
ELECTRONIC RELAY SYSTEM

PART 1 - GENERAL

1.01 SUMMARY.
A. Provide Electronic Relay System as specified herein. 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 17120 Touch Screen System
   3. Section 17140 Programmable Logic Controller
   4. Section 17200 Intercommunications System

1.02 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)

1.03 WORK INCLUDED
A. Provide relays, terminals, power supplies, cabinetry and other equipment as required to install an Electronic Relay System to facilitate a completely functional system as shown on the drawings or as specified herein.
B. Major Sub-systems include:
   1. Programmable Logic Controllers (PLC’s).
   2. Electronic relay system.

1.04 APPROVALS
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.

1.05 DESCRIPTION
A. The relays shall provide the actual switching of power to all electric locking hardware, lights etc.
B. All relays shall be mounted in NEMA-1 type cabinets with removable steel mounting plate. The cabinet shall be sized according to the number of relays required by the job and constructed of code grade steel. The cabinets shall be mounted where shown on the drawings.

C. All relays shall be of the electro-mechanical type. The use of solid state type relays is strictly prohibited.

D. All relays, terminals and other equipment shall be standard off the shelf, commercially available components.

E. *Relays and terminals for each device, i.e. doors, shall be grouped together and each terminal labeled with the device designation, wire color, power supply nomenclature and PLC I/O.*

F. *Each door shall have a device for overcurrent protection. Overcurrent protection devices shall be circuit breakers, fuses shall not be acceptable. The overcurrent device shall provide protection for both constant lock power (if applicable) and unlock/lock signal voltage.*

G. All control wiring in the relay cabinet shall be grouped and laced with nylon tie straps with a maximum spacing of one inch. Straps will be placed within 1/2” on each side of all bundle breakouts. Wiring will be supported at intervals not exceeding four inches and labeled at both ends.

**PART 2 - PRODUCTS**

2.01 MATERIALS

A. Relays

1. Nominal input voltage 24 VDC.
2. Nominal input current 9 mA.
3. Typical response time 5 ms.
4. Typical release time 8 ms.
5. Continuous current rating 10 A.
6. Relays shall be Din rail mounted with a base structure and field replaceable relay module. Relay boards containing multiple relays shall not be acceptable.
7. Shall have LED indication for relay status.
8. Acceptable Manufacturers
   a. Phoenix
   b. Omron
   c. Idec

B. Power Supplies

1. Nominal input voltage 115 VAC.
2. Nominal output voltage 24 VDC.
3. Output current 10 A.
4. MTBF > 500,000 hrs
5. Ambient temperature operating range -25 C to 70 C.
6. Din rail mounted
7. Acceptable Manufacturers
   a. Phoenix
   b. Power One

C. Circuit Breakers
1. Shall be thermal miniature circuit breaker, pluggable in a screw type terminal block.
2. Sized for the device being protected.
3. Rated surge 3 kV.
4. Nominal voltage 65 VDC, 250 VAC.
5. Ambient operating temperature -20 C to 60 C.
6. Acceptable Manufacturers
   a. Phoenix

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. 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. All control wiring systems shall use solid or stranded copper conductors. Stranded conductors shall be acceptable only where all terminations can be made to lugs. Where stranded conductors are used, all terminations shall be made with crimp type lugs, correctly sized for termination, and applied to conductor with crimping tool intended for use with the lug used.
   C. All wiring systems shall be labeled and color coded with labeling and coding shown on shop drawings. White conductors shall be used only for neutral conductors and green only for grounding conductors. All conductors within junction boxes, pull boxes and equipment enclosures shall be grouped and laced with nylon tie straps with identification tabs (equivalent to Ideal Industries #41-693 write-on I.D. marker plates) in individual sets, serving individual locks or groups. Conductor group shall be identified on the tab with respect to room or area served. Control system conductors shall not be spliced; control conductors shall be continuous between the control panel and the relay cabinet.
   D. Install in accordance with all local and pertaining codes and regulations.
   E. All equipment and systems shall be installed by the ESC. Subcontracting of equipment installation shall not be permitted.
F. Equipment shall be ready to use condition at end of installation.
G. Energize equipment in accordance with manufacturer’s instructions.
H. All panels must be certified and listed by UL and must be labeled accordingly.

### 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 17150*
PART 1 - GENERAL

1.01 SUMMARY.
   A. Provide Intercommunications equipment as specified herein. 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 Intercommunications system.
   B. Related Sections:
      1. Section 17000 Security Electronics, General
      2. Section 17120 Touch Screen System
      3. Section 17140 Programmable Logic Controller

1.02 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)

1.03 WORK INCLUDED
   A. Provide relays, terminals, power supplies, intercom amplifiers, paging amplifiers, cabinetry and other equipment as required to install an Intercom System to facilitate a completely function system as specified herein.
   B. Major Sub-systems include:
      1. Programmable Logic Controllers (PLC’s).
      2. Touch Screen Control Stations.

1.04 APPROVALS
   A. General
      1. Submittals shall be made in accordance with the General Provisions (Section 17000) of these specifications.
   B. Specific Requirements:
      1. Submit catalog cuts for all equipment and devices being furnished under this Section.
      2. Submit a complete Intercom System riser diagram. Diagram shall include labeling of each station and the corresponding relay card point for termination, interconnecting wiring of all components including but not limited to relay cards, intercom amplifiers, paging amplifiers, intercom stations, paging speakers and master intercom stations.

1.05 DESCRIPTION
A. The relays shall provide the actual switching of audio paths to all intercom stations and paging zones.
B. All relays shall be mounted in NEMA-1 type cabinets with removable steel mounting plate. The cabinet shall be sized according to the number of relays required by the job and constructed of code grade steel. The cabinets shall be mounted where shown on the drawings.
C. All relays shall be of the electro-mechanical type. The use of solid state type relays is strictly prohibited.
D. All relays, terminals and other equipment shall be standard off the shelf, commercially available components.
E. All intercom station and paging zone termination points shall be permanently labeled in the cabinet.
F. The PLC shall be the basis of control for the integrated intercom system and shall provide switching and control through a series of input and output points from the PLC.
G. All intercom controls shall be via the Touch screen control stations.
H. Existing remote station shall be a re-used.
I. Existing Paging speakers shall be re-used.
J. Existing wire and cable for remote stations and speakers shall be re-used.
K. Each operator position shall have a desk-mounted intercom station employing a microphone and a speaker. The desk mounted intercom station shall be equipped with a push-to-talk switch.
L. The Programmable Logic Controllers shall provide outputs to automatically call up cameras associated with each intercom station on the control panel’s monitor while an intercom link is connected. Camera call-ups for each station are to be determined and at the discretion of the Owner.
M. For conditions where two CCTV cameras are identified to be viewed upon selection of the intercom, video shall be displayed on adjacent movement control monitors. When a single camera is associated with the intercom selection, CCTV video shall be displayed on one monitor and the adjacent monitor shall be blank.

PART 2 - PRODUCTS

2.01 MATERIALS
A. Except as otherwise specified, herein, or in the General Conditions, the equipment and materials of this Section shall be products of the following listed manufacturers, subject to compliance with the specification requirements and provided each manufacturer meets all requirements of the Quality Assurance Section of this specification. Proprietary or custom units and associated software such as those manufactured by MTI, Icotech, OSS, Simplex and Comtec are not acceptable.
B. Audio control boards as required to interface to remote intercom stations and paging zones.
C. Power Supplies. Redundant power supplies shall be provided with alarm reporting of any failed power supply.
D. Discrete input/output boards.
E. Intercom master stations.
F. All software and programming to perform the functions described herein.
G. Custom interface to the Touch screen control stations and/or Graphic Control panels.

H. All consoles shall have a gooseneck type, microphone with cardioid pattern, permanently mounted to the top of the console panel.

I. All consoles shall have volume control for the intercom monitor speaker.

J. System shall be the Rauland-Borg Intercom Systems, Dukane or approved equal.

K. Intercom Amplifiers
   1. Rated Power – 10 Watts @ 25 VRMS (balanced).
   3. Auxiliary Input – 20 k ohm balanced (input impedance).
   4. Telephone Handset – 600 ohm (input impedance).
   5. Frequency Response Talk – 350 Hz to 4.5 KHz (+0/-3 dB from RPO).
   6. Frequency Response Listen – 700 Hz to 4.0 KHz (+0/-2 dB from RPO).
   7. Distortion – Less than 3% at full load.
   8. Power – 24 VDC @ 1.7 Amps (at RPO).
   9. Unit shall be Rauland-Borg DCC100 or approved equal.

L. Paging Amplifiers
   1. 60 Watt Amplifiers
      a. Rated Output – 60 Watts RMS.
      b. Frequency Response – 40 Hz to 15 KHz ±1.5 dB at -3 dB below RPO.
      c. Distortion – Less than 3%, 60 Hz to 15 KHz. Less than 2% 70 Hz to 10 KHz.
      d. Noise Level – 84 dB below RPO (input control full on). 90 dB below RPO (input control full off).
      e. Input Sensativity – 0.3 volts for RPO.
      f. Input Impedance – 13,000 ohms unbalanced.
      g. Output Impedance – 10.4 ohms, 25 V line.
      h. Center Tap Balance - ± 2%.
      i. Output Regulation – Less than 2dB, full load to no load.
      j. Auxiliary Power Available – 1.2 amp @ 28 VDC fully isolated.
      k. Unit shall be Rauland-Borg model DAX 60 or approved equal.
   2. 120 Watt Amplifiers
      a. Rated Output – 120 Watts RMS.
      b. Frequency Response – 40 Hz to 15 KHz ±1.5 dB at -3 dB below RPO.
      c. Distortion – Less than 3%, 60 Hz to 15 KHz. Less than 2% 70 Hz to 10 KHz.
      d. Noise Level – 84 dB below RPO (input control full on). 90 dB below RPO (input control full off).
      e. Input Sensativity – 0.3 volts for RPO.
      f. Input Impedance – 13,000 ohms unbalanced.
      g. Output Impedance – 5.2 ohms, 25 V line.
      h. Center Tap Balance - ± 2%.
      i. Output Regulation – Less than 2dB, full load to no load.
      j. Auxiliary Power Available – 1.2 amp @ 28 VDC fully isolated.
      k. Unit shall be Rauland-Borg model DAX 120 or approved equal.

M. Intercom Station Card
   1. Shall contain 26 DPDT relays.
   2. Relays – 24 VDC at 25 mA; DPST precious metal contacts.
   3. Each relay shall be hermetically sealed to prevent contact contamination, and have a life expectancy of more than 1,000,000 operations.
4. Unit shall be Rauland-Borg TZC 25 or approved equal.

N. Power Supplies
1. Output Voltage – 28 VDC.
2. Output Current – 2 amps DC.
5. Unit shall be Rauland-Borg PSX 300.

O. Intercom Stations (if required)
1. Intercom slave station shall be a flush-mounted security type with a 3” acrylic impregnated cotton cloth cone speaker. The unit shall have a momentary call-in switch, stainless steel tamperproof hardware, and a backbox. Unit shall have security steel offset grill and a 12-gauge stainless steel plate. Unit shall mount on a standard three gang 3 ½” deep masonry box. Gangable type boxes shall not be acceptable. Mount unit 48” AFF to top. All units mounted in exterior spaces shall be of the weatherproof configuration.
2. Intercom stations shall be Rauland-Borg HSS1 or approved equal.

P. Paging Speakers (if required)
1. 8” dual cone.
2. Power Handling – 25 Watts peak, 15 Watts RMS.
4. Frequency Response – 45 Hz to 19 KHz nominal.
5. Dispersion - 105º (2 KHz octave band, -6 dB points).
6. Magnet Weight – Nominal, 10 oz.
7. Shall have a built-in matching transformer for both 25V & 70V audio lines.

Q. Exterior Paging Horn (if required)
2. Frequency Response – 40 to 14,000 Hz nominal.
5. Shall be Atlas Soundolier AP-15T or approved equal.

R. Vandal Proof Speaker Baffle
1. Shall be cast from aluminum alloy with a tensile strength of 44,000 PSI and reinforced with a perforated 22-gauge CRS stud-mounting loudspeaker plate.
2. Shall be matched with the appropriate surface or recessed speaker enclosure.

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 effect the functions of the system as dictated by the drawings and 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 17200
SECTION 17300
CLOSED CIRCUIT TELEVISION SYSTEM

PART 1 - GENERAL

1.01 SUMMARY.
A. Provide CCTV equipment as specified herein. 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 CCTV system.
B. Related Sections:
   1. Section 17000 Security Electronics, General
   2. Section 17110 Graphic Control Panels
   3. Section 17120 Touch Screen System
   4. Section 17140 Programmable Logic Controller
   5. Section 17200 Intercommunications System

1.02 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)

1.03 WORK INCLUDED
A. Included under this Section of the work shall be upgrading the existing CCTV matrix switcher to accommodate all cameras, original as well as cameras that have been added. The contractor shall provide a serial interface to the existing switcher to effect automatic camera call-up for alarms and intercom selection.
B. Addition of a 19” LCD quad spot monitor for the new Touch Screen station. Each quadrant shall be individually selectable and connected directly to outputs from the matrix switcher. (2) of the quadrants are to be controlled from the touch screen for alarm and intercom call up.
C. Major Sub-systems include:
   1. Programmable Logic Controllers (PLC’s).
   2. Touch Screen Control Stations.
   3. Graphic Control Panels.

1.04 APPROVALS
A. General
   1. Submittals shall be made in accordance with the General Provisions (Section 17000) of these specifications.
B. Specific Requirements:
1. Submit catalog cuts for all equipment and devices being furnished under this Section.

1.05 DESCRIPTION

A. Video switchers shall be furnished and installed to provide auto-select and manual selection of video cameras. Auto-select shall be initiated by acknowledging intercom call-in requests or by inputs from Touchscreen and/or Graphic Control Panel or desk mounted video control panels. A manual video selector shall be incorporated into the Touch Screen System and/or Graphic Control Panels to provide for selection of a specific camera to be monitored by an operator. Switching logic for auto selection of video may be a single logic control unit or may represent logic control signals generated from other systems such as the intercom system or door locking control system.

B. Video Switching/Control:

1. Some consoles are equipped with two intercom call-up monitors for movement control. These are designated as shown on the drawings. The first monitor (ex. M1) shall view the side of the door from which the intercom call was initiated. The second monitor (ex. M2) shall view the opposite side of the door. Cameras on both sides of a door will be called up and display simultaneously upon acknowledging an intercom call. If a door has only one CCTV camera viewing it, the monitor displaying the side without a camera shall be blank. Activating an intercom by touching the intercom icon on the touch screen shall switch the associated cameras to these intercom call-up monitors. For conditions such as elevator lobbies, monitors shall display lobby video and cab video.

C. The PLC shall be the basis of control for the integrated CCTV camera call-up. A serial interface shall be provided between the PLC and the CCTV system.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Except as otherwise specified, herein, or in the General Conditions, the equipment and materials of this Section shall be products of the following listed manufacturers, subject to compliance with the specification requirements and provided each manufacturer meets all requirements of the Quality Assurance Section of this specification.

B. Acceptable Manufacturers:

1. Pelco, Clovis, California
2. Vicon, Hauppauge, NY
3. Bosch, Lancaster, PA

C. Television Monitors:

1. CCTV monitors shall be the standard products of one manufacturer and compatible with the total system specified, herein, and complying with these specifications. Monitors and cameras shall be provided by the same manufacturer.

2. CCTV monitors shall be color solid state TFT LCD flat panel type as indicated on the drawings and as specified herein. Monitor controls shall be on-off,
brightness, contrast, vertical hold and horizontal hold. All monitors shall be U.L. listed.

3. Nineteen (19) inch monitors shall be shall be mounted as shown on the drawings. Monitors shall comply with not less than the following specifications:
   a. LCD Panel Pixel Array 1280 x 1024, 75 Hz
   b. Panel Aspect Ratio 4:3 composite, 5:4 VGA
   c. Viewing Area 376 X 301mm
   d. Pixel Pitch 0.294 x 0.294mm
   e. Brightness 380 cd/m²
   f. Contrast Ratio 500:1
   g. Viewing Angle (H/V) 150°/130°
   h. Response Time 8 ms
   i. Monitor shall be Pelco PMCL319

D. Video Quad Processor:
   1. Unit shall be a 4-Channel real time color quad splitter.
   2. Connect up to 4 cameras with loop through capability.
   3. High resolution 720 x 480 (NTSC), 768 x 512 (PAL).
   4. Refresh rate: 30 frames/sec. (NTSC)
   5. Title: 10 character title generator for each camera input.
   6. The multiplexer shall be Vicon V5400QS or equal.

E. Matrix Switchers:
   1. The switching system shall be a microprocessor-based crosspoint matrix switcher capable of automatically routing video signals from a requested camera position to a specified monitor. Control of the system shall be provided by either an external CPU or by a CPU that can be incorporated in the switcher card cage itself. The switcher card cage shall include a power supply, an output amplifier, and a mother board. The switcher card cage shall also accommodate removable printed circuit boards, featuring plug-in connectors.
   2. The video input shall be high impedance looping, 2 V p-p maximum. The video output shall be 1 V p-p nominal into a 75-ohm load. The bandwidth shall be typical 20 Hz to 15 MHz. The frequency response shall be 100 Hz to 10 MHz +/- 0.5 dB. The crosstalk isolation shall be typical 50 dB. The gain shall be unity. The differential gain/phase shall be less than 1.5%/1.5 degrees. Hum shall be 50 dB (RMS) below 1 V p-p to 5 MHz. The video switcher frame control logic input shall be 5 V TTL, eight data bits per monitor output. Maximum power consumption for a fully loaded card cage (including 16 switcher cards and an address decoder) shall not exceed 55 W.
   3. The card cage shall be constructed of a steel chassis with aluminum side plates. The cage shall be designed to fit into a standard 19-inch-wide (48.3 cm) instrument rack, and shall be no more than 7.0 inches (17.8 cm) in height nor more than 12.3 inches (31.2 cm) in depth including connectors. The weight of an empty switcher card cage shall be 19.5 lb (8.8 kg).
   4. The switcher shall be Bosch LTC-8600 Switching System to match existing.
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.

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.

PREPARATION
A. Division 17 Subcontractor shall develop custom software as required to effect the functions of the system as dictated by the drawings and 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.

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.

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.

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 17300