SECTION 13700

ELECTRONIC ACCESS CONTROL SYSTEM (EACS) FOR EMPLOYEE PARKING LOT

1.1 GENERAL DESCRIPTION

A. This specification section covers the furnishing, installation, configuration, and testing of a Security Gate Arm Barrier (also referred to as a Barrier Drop Arm), and associated ancillary equipment, to secure the employee parking lot at the Barnstable Airport.

B. The EMPLOYEE PARKING LOT EACS components installed will secure the employee parking lot and only allow employees with existing access control cards, and other authorized vehicles to enter and exit the parking lot.

C. Contractor shall furnish and install security hardware devices, mounting systems, power supplies, switches, controls, and other components of the system as shown and specified.

D. Also furnish and install outlets, junction boxes, conduit, connectors, wiring, and other accessories necessary to complete the system installation.

1.2 SUBMITTALS

A. Prior to approval of the Electronic Access Control System hardware components, the Contractor must submit the proposed equipment vendors qualifications and the vendors acknowledgement of the hardware to be supplied will meet all functionality required within this specification. The Contractor and vendor shall be prepared to demonstrate the equipment functionality prior to approval. The Contractor shall submit a typical site block diagram indicating hardware components that shall be installed at all locations.

B. Submit descriptive literature, including manufacturer specification sheets, for all access control equipment, software functionality, and materials proposed for use in accordance with the requirements of this Section for approval prior to fabrication, assembly, installation and testing. Also, submit the following to the Engineer for approval:

1. Block diagram of complete system, illustrating proposed configuration and interconnections of all system components including but not limited to: Access Control Panels, card readers, , motion sensors, request to exit device, and security gate arm barrier.

C. Prior to ordering any equipment required under this Section, submit six (6) copies of the following to the Engineer for approval:

1. Full technical data and manufacturer cut sheets for all equipment.

2. Site specific plans showing details of the following:

   a. Access Control equipment locations and mounting details.

   b. Security gate arm barrier including the following:

      1) Location of each hardware set cross-referenced to indications on drawings.

2) Operation of security gate arm barriers.
3) Type, style, function, size, and finish of each hardware item.
4) Elevation drawings and operational descriptions for all electronic openings.
5) Name and manufacturer of each hardware item.
6) Fastenings and other pertinent information.
7) Explanation of all abbreviations, symbols, and codes contained in the schedule.
8) Keying information indicating clearly how the owner's final instructions on keying have been fulfilled.

c. Cable and conduit details.

3. Schematic and wiring diagrams complete with terminal numbers.

4. Procedures for programming and troubleshooting.

5. Full interconnect diagram for overall system, including interface connections to existing equipment.

D. Provide maintenance instruction manuals to the Engineer including information regarding installation and maintenance as follows:

1. Operational Description and Procedures

2. Troubleshooting and Routine Test Procedures

3. Adjustments and Alignment Procedures

4. Wiring Diagrams, Tables and Schematics

E. Prior to installing any equipment, submit to the Engineer for approval six (6) copies of a detailed test procedure intended to ensure all components of the system are functioning properly, in accordance with these Specifications and the Contract Drawings. The tests performed shall include, but not be limited to, the tests outlined in Paragraph 3.4 of this Section. The detailed test procedure shall include a description of all test equipment to be used and specific measurements and/or pass/fail criteria for each test.

F. Factory Tests: Submit, at completion of factory testing, six certified copies of test results.

G. Test Procedures and Reports: Full report details shall be submitted for the scheduled tests and the expected duration of all test procedures. All test report forms and details of the methods shall be approved before commencement of system testing to be furnished under this Contract.

1. The test report shall identify the name of manufacturer, model numbers, serial numbers, and the last date of calibration of test instrumentation. Documentation shall be furnished to verify that test instruments have been calibrated not more than nine months prior to the tests. If a test instrument does not require calibration, it must be highlighted in the report.

2. The test report shall include a list of attendees.

3. Certified test results for the system components (All locations and 10 Park Plaza.) tests shall be submitted within 30 days after the completion of each test. No equipment shall be released for shipment until certified test data is approved by the Airport. Copies of approved test procedures, raw data measured results, calculations and all data derived from tests shall be included as part of report. All test data shall be bound in one report. The test report shall be indexed and cross-referenced in an easily understood manner.

4. Certificate of Compliance: Submit a certificate of compliance that all components furnished meet the requirements specified herein.

H. Operation and Maintenance Manuals shall submitted as listed below:

1. The Contractor shall furnish an operation and maintenance manual for each piece of equipment, unless otherwise specified herein. The manual shall be provided in both hardcopy and on compact disk. The following identification shall be inscribed on the cover: the words "OPERATING AND MAINTENANCE MANUAL", the name and location of the project, the name of the Contractor, and the Contract number. The manual shall include the names, addresses, and telephone numbers of each subcontractor furnishing or installing equipment. In addition, include the local representatives for each item of equipment. The manual shall have a table of contents and index. The manual shall be assembled to conform to the table of contents, including tab sheets placed before instructions covering the subject. The instruction sheets shall be legible with large sheets of drawings folded in. The contents of the manual shall also be available on-line by means of a help screens. The final Operating and Maintenance manual shall also be submitted on CD.

2. The Contractor shall submit to the Engineer for approval three copies of the preliminary operation and maintenance manual at least 30 days prior to shipment of first relevant unit. After approval of the preliminary submittal and having made all necessary corrections and amendments required, the Contractor shall provide the Engineer with six additional copies of the approved dated operation and maintenance manuals. One set of master camera-ready copy shall be included as one of the six copies to permit additional copies to be made. The master camera-ready copy shall be clearly marked as such on the outside. One manual shall be provided on compact disk. The manual shall provide a clear explanation of the theory, operation, and maintenance of the equipment accompanied by photos and schematic, wiring and mechanical assembly diagrams, as required. The manual shall be indexed and cross-referenced in an easily understood manner. The manual shall be loose leaf bound and shall include, but not necessarily be limited to, the following information:

    a. Operating instructions.

    b. Troubleshooting and fault isolation procedures for on-site level repair

    c. System equipment removal and replacement procedures.

    d. A list of the replaceable components.

    e. A test procedure to verify the adequacy of repair work.

    f. A preventive maintenance schedule and instructions for the replacement of any electrical equipment

    g. A preventive maintenance schedule for inspection, removal, and replacement for each component.

h. A list of special tools provided by the manufacturer.

i. A list of recommended tools and test equipment required performing all maintenance tasks.

j. Recommended spare parts list for one year's operation.

k. Interchangeable parts list-showing parts common to items of equipment.

l. Equipment manufacturers' descriptive literature including catalog cuts.

m. As-built working drawings.

n. System component approved factory test reports.

o. The latest service bulletins with dates that describe service procedures.

1.3 REGULATORY REQUIREMENTS

A. Comply with all applicable requirements of the following:

1. National Electrical Code
2. Massachusetts Electrical Code
3. EIA/TIA
4. IEEE
5. ADA

1.4 TECHNICAL REQUIREMENTS, ELECTRONIC ACCESS CONTROL SYSTEM

A. General: The following information is provided to establish required system performance for the complete operating EMPLOYEE PARKING LOT EACS security system. Some of the performance requirements noted herein are supported and supplied by existing systems in concert with new equipment and software which shall be provided by the Contractor under this scope of work. Contractor shall provide equipment, wiring and software programming at sites as necessary to provide a complete system as described herein and as shown on the drawings.

1. The access control system components provided under this scope of work shall be compatible with the existing Banstable Airport EACS System and shall function as an integral part thereof. The Airport’s existing EACS is a Software House CCure system, providing access control and credential database services.
2. Contractor shall be responsible for providing equipment to achieve the specified system performance described herein and, by reference, realize absolute and seamless compatibility with the existing Software House system.
3. Contractor shall ensure system additions and modifications provided under this scope of work have no negative effect on the existing systems and operations, and no permanent effect beyond that specified or implied by the scope of work unless otherwise noted herein.

B. Purpose: The EMPLOYEE PARKING LOT EACS System's major function is to provide controlled vehicular access to the Barnstable Airport employee parking lot.

C. Environment:

1. The existing EACS system is distributed throughout the Main Terminal, access gates, and other facilities, on the Airport property. Refer to the drawings and Bid Instructions to determine the scope limitations for this phase of work.

2. The system Server is located in the Security IT Closet (Room 217) of the Main Terminal. System programming, configuration and control shall occur at this location.

3. Infrastructure and Connectivity:

a. Existing 8-conductor, twisted pair cabling is in place form the exterior handhole, to the Tel/Data Room (Room 174) and continuing to the Security IT Closet (Room 217).

b. Existing electrical service is in place from the exterior handhole, to the Electrical Room (Room 181)

D. Attributes

1. General:

a. The EMPLOYEE PARKING EACS is the key central component for managing physical vehicular security at the employee parking lot, adjacent to the Main terminal building. The system shall provide a variety of integral functions including the ability to regulate access and egress through the employee parking lot without initiating alarms; provide identification credentials; and provide a record of the use of credentials at the employee parking lot.

b. The system shall comprise electronic access control system field devices located as shown on the drawings and connected together to provide a complete and operational system.

c. The system shall be compliant with the existing Barnstable Airport EACS, and the credentials shall be compliant with the current Airport credentials.

d. The existing Barnstable Airport EACS is a Software House CCURE system.

PART 2 - PRODUCTS

2.1 GENERAL REQUIREMENTS

A. Furnish all items of the material, design, sizes and ratings shown on the Contract Drawings and herein specified.

B. Product Acceptability: The Products section contains lists of acceptable products. If product substitutions are proposed, they must be made based upon a comparison of equivalence to the product specified. Considerations may include but shall not be limited to functional, physical, aesthetic and/or interface aspects. The Airport shall be the sole judge of whether or not a submitted substitution is deemed to be "equivalent" to that specified.

C. EMPLOYEE PARKING LOT EACS Software Functionality: The capabilities and functions described herein are capabilities of the existing software application. Contractor shall coordinate with the Airport to establish the parameters, groups, and levels of use governing each software function or capability of the system, and shall configure the system to recognize and use these values. Applicable functionality that will require configuration on this project is included herein.

D. The Contactor shall be approved and certified by Software House to install and maintain Software House Access Control Systems. The technician installing the system shall be a Software House Certified Technician. The technician shall also be skilled in the installation and programming of PLCs. All logic shall be provided to the Engineer for review prior to implementation.

E. Use cases are provided in paragraph 3.3 of this section and should be used along with logic diagrams to guide the programming and configuration of the system. Use cases should be reviewed with the stakeholders prior to implementation and programming changes may be required after initial implementation and testing at no additional cost to the contract.

F. The Contractor shall provide all licenses necessary to provide the functionality described herein.

2.2 MATERIAL

A. All material shall be new and unused and the workmanship shall be in accordance with the highest standards of the electronic equipment industry. Bids will be accepted only for new and current equipment. Equipment discontinued by the manufacturer will not be accepted. All components shall be UL listed.

B. Equipment purchased under this Section shall comply with applicable EIA standards and the manufacturer's warranties against material and workmanship shall last for a minimum of one (1) year, following the acceptance by the MBTA.

C. Provide equipment that meets all performance requirements when operating within the MBTA transit system environment, subject to temperature, electromagnetic interference, humidity, vibration, and light conditions typically encountered.

2.3 LOOP DETECTOR

A. The Loop Detectors shall be installed in the Security Gate Arm Barrier cabinet, as indicated on the Contract Drawings. Loop detectors provided under this section shall meet or exceed the following:

1. Power: 24VDC, 80 mA max
2. Eight sensitivity levels
3. Fail-safe and fail-secure settings
4. Loop Feeder Length: 762 m
5. Operating Temperature: -34 to +82˚C
6. Mechanical:
   a. 3.00 x 1.75 x 4.30 in

b. Contractor shall provide DIN rail mountable base with wiring terminals certified by manufacturer to function properly with product.

7. Failure indication LEDs

8. (4) loop frequencies

2.4 SECURITY GATE ARM BARRIER

A. A Security Gate Arm Barrier shall be installed on the entrance and exit lanes of the Employee Parking Lot, as indicated on the drawings.

B. The Security Gate Arm Barrier shall have an arm on a pivot the shall cycle between horizontal position across to lane to a vertical position out of the lane.

C. Security Gate Arm Barrier shall have a footprint that allows placement within the existing traffic island of the Employee Parking Lot entrance.

D. Security Gate Arm Barrier shall be a UL Listed industrial Gate Arm Barrier designed for industrial use in outdoor environments in Barnstable, MA.

E. The Security Gate Arm Barrier shall meet or exceed the following specifications:

1.	Operating Temperature:	-15 to 130 Degrees Fahrenheit
2.	Operating Environment:	Shall function in rain, snow, ice, and sleet conditions and protect installed auxiliary components without additional protections
3.	Construction:	1/4" white powder coated aluminum
4.	Motor Power:	1/2 HP, minimum
5.	Input Voltage:	To match existing
6.	Service amps:	20 Amps at 120VAC, 10 Amps at 240VAC
7.	Weight:	200lb, max
8.	Gate Arm:	14’, aluminum, yellow striped
9.	Internal Access:	Removable keyed cover
10.	Protections:	Motor shall auto reverse on object impact Thermal/overload protection
11.	Position Sensors:	Open and closed limit switches
12.	Inputs:	Open, close, (3) loops
13.	Outputs:	Opened, closed, arming
14.	Auxiliary equipment:	Gate Arm Barrier shall have Din Rail mounting location for loop Detectors or contain built-in loop Detectors
15.	Opening functionality:	Shall have selectable opening and closing functionality for opening and closing utilizing momentary or toggled outputs from

		a controller
16.	LED Indicators:	Power and error indicators
17.	Override Switches:	Up, down, normal
18.	Warranty:	2 years on electronics, 5 years on enclosure

2.5 CARD READER

A. The card reader shall use unique coded data stored in or on a compatible credential card as an identifier. The card reader shall be proximity type, and shall incorporate built-in heaters or other cold weather equipment to extend the operating temperature range as needed for outdoor operation at the Barnstable Airport. Communications protocol shall be compatible with the existing Software House CCURE controller. The Contractor shall furnish the card reader to read passive proximity entry cards compatible with the Airport's existing card population and interface the card reader to the existing security system.

B. The proximity card reader shall use passive proximity detection and shall not require contact with the proximity credential card for proper operation. The passive detection proximity card reader shall use a swept-frequency, radio frequency field generator to read the resonant frequencies of tuned circuits laminated into compatible credential cards. The resonant frequencies read shall constitute a unique identification code number.

1. The reader shall have a typical read range of 5.5" to 8" when used with the compatible access card.
2. The reader shall have a lifetime warranty.
3. The reader shall be equipped with an internal tamper switch that shall indicate an alarm condition if an unauthorized attempt is made to disassemble the unit.
4. The reader shall have a keypad that contains the digits zero through nine, pound, and star.
5. The reader shall be sealed to a NEMA rating of 4X.
6. The reader shall be UL 294 listed, and shall be FCC and DTI certified.
7. The card readers shall include an LED. The display shall indicate power on/off, and whether user passage requests have been accepted or rejected. The reader shall have separate terminal control points for the green and red LED's, and for the audible indicator.
8. The reader shall buffer a card read, until the controller has verified the read information can be sent up-line for processing. The response time shall be 800 milliseconds or less, from the time the card reader finishes reading the credential card until a response signal is generated.
9. The reader shall require a one-second field clearance between card presentations, to prevent multiple reads from a single card presentation.
10. The card reader shall be powered from the local controller and shall not dissipate more than 5 Watts.

C. Card Reader Pedestal: Provide a single card reader pedestal and card reader enclosure at the location as shown on drawings. The enclosure shall have a locked housing of heavy duty gage, all steel construction to mount card reader and house required equipment. The pedestal shall be constructed of 2" square steel tubing with an 8" square baseplate welded on the bottom and a

two-part baseplate cover. The pedestal and enclosure shall be finished with a black powder coat finish to provide weather protection.

2.6 SPARE PARTS

A. The Contractor shall supply the following spare parts upon completion of the project:

1.	(1)	Controller
2.	(1)	Loop Detectors
3.	(5), each type used	Fuses
4.	(1)	14’ Aluminum Gate Arm
5.	(1)	Card Reader

PART 3 - EXECUTION

3.1 GENERAL

A. Installation of all Access Control System equipment and components shall be in accordance with NFPA 70, UL 681, UL 1037, UL 1076, manufacturer’s recommendations, approved shop drawings, and as shown on the Contract Drawings.

B. All wiring shall be neatly installed and wire ways shall be utilized wherever possible. All wiring shall be identified at both ends by wire markers.

C. Furnish and install a complete and operable Employee Parking Lot Electronic Access Control System.

D. Contractor responsible for system start-up, testing and network testing.

E. Provide incidentals and appurtenances necessary to complete the work as specified herein and as shown on the Contract Drawings.

F. Complete as-built drawings for all work and verify that all drawings are accurate. One paper set to be provided. One copy on Compact Disk in the latest version of AutoCAD.

3.2 INSTALLATION

A. Install supporting equipment as shown on the Contract Drawings and described herein.

3.3 SYSTEM CONFIGURATION

A. Configure the system to provide the following operation:

1. Barrier and Gate System Operation:
    a. The following are the normal operating scenarios of the inbound (Entry) lane system:

1) Authorized Vehicle Entering Employee Parking Lot-Stops at card reader Before Gate Arm
    a) An authorized vehicle pulls up to the Card Reader
    b) The vehicle activates Arming Loop, which activates card reader
    c) Authorized vehicle occupant scans access card
    d) The vehicle scan is valid
    e) The gate arm raises
    f) The authorized vehicle passes by the gate arm
    g) The authorized vehicle activates the Down Loop
    h) The gate arm drops
2) Unauthorized Vehicle Entering Employee Parking Lot-Stops at card reader Before Gate Arm
    a) An unauthorized vehicle pulls up to the Card Reader
    b) The unauthorized vehicle activates Arming Loop which activates card reader
    c) Unauthorized vehicle occupant scans an invalid access card OR does NOT scan
    d) No card is read
    e) The gate arm does NOT raise
    f) The vehicle backs out

b. The following are the normal operating scenarios of the outbound lane system:
    1) Vehicle Exiting Employee Parking Lot
        a) The vehicle passes over Automatic Exit Loop
        b) The gate arm raises
        c) The authorized vehicle passes by the gate arm
        d) The vehicle passes over Exit Down Loop
        e) The gate arm drops

2. Alarm Operation:
    a. When the barrier is deployed or a trouble alert is received, an alarm shall be sent from the Security Gate Arm Barrier to the Software House CCURE system. The Software House CCURE system shall be programmed to automatically call-up a live and/or recorded view of the nearby CCTV camera(s) onto the screen of the security operator with a description of the alarm and a work flow to manage the situation.

3. Remote Control of Gates:
    a. Via the Software House CCURE interface, the Security user should have the following options on both lanes:
        1) Raise either gate arm
        2) Drop either gate arm

b. The use of any of these functions shall create a verification workflow requiring the user to verify that the function has worked correctly.

3.4 TESTING

A. Testing shall be performed in accordance with the requirements described herein.

B. Conduct electrical tests to demonstrate compliance with this Specification and with manufacturer's recommended test procedures as approved by the Engineer.

C. The Contractor shall supply all test equipment and software for all system tests.

D. After installation is complete, the Contractor shall verify proper operation of all system software control functions and all Access Control System components as described herein, to test all functionality of the Access Control System. The Contractor shall develop and submit a test plan for review by the Engineer 30 days prior to testing. The test plan shall contain performance and failure testing of all levels and all components within the system. The test plan must include integration of the Employee Parking Lot EACS into the existing Barnstable Airport EACS. Notify the Engineer a minimum of 14 days in advance of scheduled testing. Engineer or authorized representative reserves the right to attend and approve testing.

3.5 TRAINING

A. The Contractor shall provide separate Electronic Access Control System training to Operators, Administrators and Maintenance personnel. The training shall cover all equipment and software supplied under this specification. The Contractor shall supply non-contract equipment for hands-on training.

B. The training shall be performed in front of Airport management prior to demonstration to the Airport personnel for any final edits. The Contractor shall correct all discussion training material that the Airport feels is inappropriate for Airport personnel.

PART 4 - MEASUREMENT AND PAYMENT

4.1 GENERAL

A. No separate measurement or payment will be made for work required under this Section. All costs in connection therewith shall be included in the Contract Lump Sum price for the ELECTRONIC ACCESS CONTROL SYSTEM (EACS) FOR EMPLOYEE PARKING LOT Project.

END OF SECTION