
PART 1 - GENERAL**1.1 RELATED DOCUMENTS**

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section Includes:

1. Automatic barrier gates
2. Vehicle detectors
3. Entry terminal ticket dispensers
4. Automated vehicle identification system (AVI)
5. Card reader units
6. Intercom systems
7. Exit terminals
8. Central Pay Stations (Pay on Foot)
9. Parking facility management system

- B. Related Sections:

1. Division 05 Section "Metal Fabrications" for pipe bollards to protect parking control equipment.
2. Division 08 Sections for parking garage entrance doors and grilles interlocked to parking control equipment.
3. Division 10 Sections for exterior parking-related signs.
4. Division 28 Section "Intrusion Detection" for integrating parking control equipment with building intrusion detection system.
5. Division 28 Section "Perimeter Security Systems" for integrating parking control equipment with site security control system.
6. Division 32 Section "Asphalt Paving" for asphalt driveway and approach paving.
7. Division 32 Section "Concrete Paving" for concrete driveway and approach paving.

1.3 SYSTEM DESCRIPTION

- A. Parking Control System: Intended to be used for the following types of parking management:

1. Contract Parking: Monthly rated parking, with fee paid by the month and access gained by access control equipment.
2. Transient Paid/Validated Parking: Fee set, reduced, or waived by tenant validation, with ticketed gate entry and fee paid/validated while exiting.

1.4 ACTION SUBMITTALS

- A. Product Data: For each type of product indicated. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes for parking control equipment. Include rated capacities, operating characteristics, electrical characteristics, and furnished specialties and accessories.

- B. Shop Drawings: For parking control equipment. Include plans, elevations, sections, details, and attachments to other work.

1. Detail equipment assemblies and indicate dimensions, weights, loads, required clearances, method of field assembly, components, and location and size of each field connection.
2. Wiring Diagrams: For power, signal, and control wiring.

1.5 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For qualified Installer.
- B. Field quality-control reports.

1.6 CLOSEOUT SUBMITTALS

- A. Operation and Maintenance Data: For parking control equipment to include in emergency, operation, and maintenance manuals.
- B. Software and Firmware Operational Documentation:
 - 1. Software operating and upgrade manuals.
 - 2. Program Software Backup: On magnetic media or compact disk, complete with data files.
 - 3. Device address list.
 - 4. Printout of software application and graphic screens.

1.7 MAINTENANCE MATERIAL SUBMITTALS

- A. Furnish extra materials that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.
 - 1. Gate Arms: Two (2) breakaway gate arms for each gate installed, complete with accessory components.

1.8 QUALITY ASSURANCE

- A. Installer Qualifications: Manufacturer's authorized representative who is trained and approved for installation of units required for this Project.
- B. Source Limitations: Obtain parking control equipment from single source from single manufacturer.
- C. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.
- D. Pre-installation Conference: Conduct conference at Project site.
 - 1. Inspect and discuss electrical roughing-in, equipment bases, and other preparatory work specified elsewhere.
 - 2. Verify that equipment operation is consistent with system description.
 - 3. Review sequence of operation for each type of parking control equipment.
 - 4. Review coordination of interlocked equipment specified in this Section and elsewhere.
 - 5. Review required testing, inspecting, and certifying procedures.

1.9 SOFTWARE SERVICE AGREEMENT

- A. Technical Support: Beginning with Substantial Completion, provide software support for two years.
- B. Upgrade Service: Update software to latest version at Project completion. Install and program software upgrades that become available within two years from date of Substantial Completion. Upgrading software shall include operating system. Upgrade shall include new or revised licenses for use of software.
 - 1. Provide 30 days' notice to Owner to allow scheduling and access to system and to allow Owner to upgrade computer equipment if necessary.

PART 2 - PRODUCTS**2.1 MATERIALS**

- A. Aluminum: Alloy and temper recommended by aluminum producer and manufacturer for type of use and finish indicated, and as follows:
 - 1. Sheet: ASTM B 209.
 - 2. Extruded Shapes: ASTM B 221.
- B. Cold-Rolled Steel Sheet: ASTM A 1008/A 1008M, Commercial Steel (CS), Type B.
- C. Zinc-Coated (Galvanized) Steel Sheet: ASTM A 653/A 653M, commercial quality, with G60 coating designation; mill phosphatized.
- D. Stainless-Steel Sheet: ASTM A 666, Type 304.
- E. Anchorages: Anchor bolts, hot-dip galvanized according to ASTM A 153/A 153M and ASTM F 2329.

2.2 AUTOMATIC BARRIER GATES

- A. General: Provide UL-approved parking control device consisting of operator and controller housed in a weathertight, tamper-resistant cabinet enclosure with gate arm. Device shall be activated by a signal from access or revenue control device. Fabricate unit with gate-arm height in down position of not more than 35 inches above pavement to prevent even small vehicles from passing under gate arm.
 - 1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. Amano McGann, Inc.
 - b. Amtel Security System Inc.
 - c. Ascom Transport Systems Inc.
 - d. Automatic Control Systems Inc.
 - e. Came America.
 - f. Canadian Parking Equipment Ltd./American Parking Equipment Inc.
 - g. Delta Scientific Corporation.
 - h. DoorKing, Inc.
 - i. Engineered Parking Systems, Inc.
 - j. Federal APD, Inc.
 - k. LiftMaster; The Chamberlain Group, Inc.
 - l. Link Controls, Inc.
 - m. Magnetic Automation Corporation.
 - n. Operator Specialty Co., Inc.; Linear LLC group member.
 - o. Parking Products, Inc.
 - p. Parking Systems, Inc.
 - q. PTC Industries.
 - r. Traf-Park Inc.; Subsidiary of Cubic Transportation Systems, Inc.
 - s. WPS North America Inc.
- B. Standard: Provide barrier gates and gate operators that are listed and labeled according to UL 325 by a qualified testing agency.
- C. Controller: Factory-sealed, solid-state, plug-in type, with galvanized-steel box for wiring connections.
 - 1. Type: Communicating.
 - a. Real-time communication of lane counts, status messages, and execute commands.
 - b. Monitor illegal entries and exits, tailgates, tickets, monthlies, and backouts.
 - c. Status messages for gate up too long, backouts, ticket in chute, and gate-arm rebound.

- d. Communication commands for resetting loops, turning "Full" signs on/off, raising and lowering gate arm, and disabling ticket dispensers and card readers.
2. Features: Equip unit with the following:
 - a. Able to store successive inputs and sequentially processing each one.
 - b. Automatic instant-reversing obstacle detector mechanism that stops downward motion of gate arm if arm contacts or nears an object and that immediately returns arm to upward position. Include a 0- to 60-second, variable-time reset device.
 - c. On-off power supply switch.
 - d. Automatic-manual switch.
 - e. Differential counter.
 - f. Directional arming logic.
 - g. RS-422 communication port.
 - h. Broken gate-arm monitoring.
 - i. Programmable timer.
 - j. Internal resettable counters.
 - k. Thermal-overload protection with manual reset.
 - l. Plug-in connectors for two vehicle loop detectors.
 - m. Thermostatically controlled heater with on/off/auto switch.
 - n. Diagnostic mode for on-site testing.
 - o. Automatic and continuous testing of inputs and outputs.
 - p. Switch to test motor and limit switches.
 - q. Emergency manual disconnect.
 - r. Battery backup.
 - s. Single, 115-V ac grounded power receptacle.
 - t. Reversible arm capability for right- or left-handed operation.
- D. Cabinets: Fabricated from metal sheet with seams welded and ground smooth; approximately 15 inches square by 40 inches tall. Provide single, gasketed access door for each cabinet with flush-mounted locks. Furnish two keys for each lock, all locks keyed alike. Fabricate cabinet with internal reinforcing and four mounting holes accessible only from inside cabinet.
1. Material: Not less than 0.097-inch-thick, steel sheet or 0.125-inch-thick aluminum sheet.
 - a. Finish cabinet, interior and exterior, with manufacturer's standard yellow baked-enamel finish over primer.
 2. Material: Not less than 0.109-inch-thick, stainless-steel sheet.
 - a. Finish cabinet, interior and exterior, with manufacturer's standard yellow baked-enamel finish over primer.
- E. Folding Gate Arm: Two pieces of 1-by-4-inch nominal size pine or redwood joined together with metal side brackets; with painted finish and black diagonal stripes on traffic-side face. Provide mounting flange with breakaway feature to ensure clean break if arm is struck by vehicle.
1. Length: 10 feet.
- F. Operator: 1/3 hp; 60-Hz, single-phase, instant-reversing, continuous-duty motor for operating gate arm. Transmit power to gate-arm drive shaft through speed reducer to harmonic-acting crank and connecting rod. Fabricate crank, rod, and drive shaft of galvanized solid bar steel. Provide an operable cam for adjusting arm travel.
1. Opening Time: Three seconds.
 2. Inherently adjustable torque limiting clutch for safety.
- G. Accessories:
1. Audible alarm that activates as part of a safety device system.

2. Additional obstruction detector; noncontact infrared.
3. Barrier-arm warning safety signs on both sides of unit limiting traffic to vehicular traffic.
4. Low-voltage red warning lights that illuminate when gate is in down position.
5. Low-voltage light on cabinet top that flashes or changes from red to green when barrier gate is operating.
6. Manually operated crank for emergency operation.
7. Local authorities' emergency access by radio frequency
8. Gate-arm tip support with electromagnetic lock.

2.3 VEHICLE DETECTORS

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
1. Amano McGann, Inc.
 2. Amtel Security System Inc.
 3. Delta Scientific Corporation.
 4. Engineered Parking Systems, Inc.
 5. Federal APD, Inc.
 6. Magnetic Automation Corporation.
 7. Operator Specialty Co., Inc.; Linear LLC group member.
 8. Parking Systems, Inc.
 9. PTC Industries.
- B. Vehicle Loop Detector System: Provide self-tuning electronic presence detector with adjustable detection patterns, adjustable sensitivity and frequency settings, and panel indicator light designed to detect presence or transit of a vehicle over an embedded loop of wire and to emit signal activating gate-arm operator. Include automatic closing timer with adjustable time delay before closing, and vehicle loop detector designed to open and close gate arm. Provide number of loops consisting of multiple strands of wire, number of turns, loop size, and method of placement at location shown on Drawings, as recommended in writing by detection system manufacturer for function indicated.
1. Factory-Formed Loop: Wire, preformed in size indicated; style for pave-over installation.
 2. System Performance: Capable of the following:
 - a. Recognize two vehicles within 6 inches of each other on standard-sized loop.
 - b. Recognize vehicle direction by detecting vehicle moving from one loop to another.
 - c. Generate reverse count if vehicle backs up after generating directional count in forward direction.
 - d. Continuous diagnostic monitoring for intermittently operating and failed loops.
 - e. Crosstalk test between adjacent loops.
- C. Active Infrared Vehicle Detector: Provide emitter/receiver type presence detector with adjustable detection zone pattern and sensitivity, designed to detect the presence or transit of vehicle in gate-arm pathway by interrupting infrared beam in zone pattern and to emit signal activating gate-arm operator. Include automatic closing timer with adjustable time delay before closing and vehicle presence detector designed to open and close gate arm.

2.4 ENTRY TERMINAL AUTOMATIC TICKET DISPENSERS

- A. General: Provide entry terminal ticket dispensers with integrated intercom system, consisting of ticket-printing and issuing mechanisms, ticket magazines, thermal printers, and controllers housed in cabinet enclosures.
1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. Amano McGann, Inc.
 - b. Amtel Security System Inc.
 - c. Ascom Transport Systems Inc.
 - d. Came America.
 - e. Canadian Parking Equipment Ltd./American Parking Equipment Inc.
 - f. Engineered Parking Systems, Inc.
 - g. Federal APD, Inc.

- h. Magnetic Automation Corporation.
 - i. Parking Products, Inc.
 - j. Parking Systems, Inc.
 - k. PTC Industries.
 - l. Traf-Park Inc.; Subsidiary of Cubic Transportation Systems, Inc.
 - m. WPS North America Inc.
 - n. Zeag USA Inc.
2. Features: Include the following:
- a. Time and date display.
 - b. Time Indicator: 24-hour cycle with A.M. and P.M. clock mechanism.
 - c. Voice annunciation.
 - d. Tickets: Magnetic-stripe type.
 - e. Removable ticket tray with capacity of 5000 fan-folded tickets.
 - f. Operation: Online communication to remote computer.
 - g. Battery backup for clock and RAM memory.
 - h. RS-422 communication port.
 - i. Thermostatically controlled heater with on/off/auto switch.
 - j. Multiple ticket option for valet parking.
 - k. Intercom.
- B. System Performance: Activation by vehicle detector. On activation, unit automatically records entry time and date on ticket and dispenses ticket.
- 1. Automatic ticket validation.
 - 2. Program ticket numbering.
 - 3. Low-ticket alarm.
 - 4. Out-of-ticket alarm.
 - 5. Ticket jam detection.
 - 6. Print test ticket.
- C. Cabinets: Fabricated from metal sheet with seams welded and ground smooth, approximately 15 inches square by 40 inches tall; consisting of base and top components. Provide single, gasketed access door for each base component with flush-mounted locks. Furnish two keys for each lock, all locks keyed alike. Fabricate cabinet with internal reinforcing and four mounting holes accessible only from inside cabinet. Fabricate top component so it can be unlocked and opened for ticket loading and maintenance. Include flush-mounted lock in rear of top, keyed the same as base component lock.
- 1. Material: Not less than 0.097-inch-thick, steel sheet or 0.125-inch-thick aluminum sheet.
 - a. Finish cabinet, interior and exterior, with manufacturer's standard baked-enamel finish over primer.
- D. Ticket-Dispensing Mechanisms: Removable assembly, with self-sharpening ticket cutter and plug-in controller.

2.5 ACCESS CONTROL UNITS

- A. General: Provide access control unit with integrated intercom system that activates barrier gates.
- B. Automatic Vehicle Identification (AVI) Unit: Functions only when authorized tag is presented.
 - 1. Manufacturers: Subject to compliance with requirements, provide Transcore Products or comparable product by approved equal.
 - 2. System: Programmable, multiple code capability permitting, validating, or voiding of individual tags.
 - 3. Reader: Proximity type (Transcore eGo 2210 Reader)

4. Mounting: Provide AVI antennas at locations indicated per plan.
 5. Antenna: Ultra-high frequency remote antenna for automatic vehicle identification. Capable of 25'-0" range (Transcore Amtech Antenna)
 6. Tags: Provide (Quantity TBD by Owner) (Transcore eGo Windshield Sticker Tags)
- C. Card Reader Controlled Unit: Functions only when authorized card is presented.
1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. Amano McGann, Inc.
 - b. Amtel Security System Inc.
 - c. Ascom Transport Systems Inc.
 - d. Canadian Parking Equipment Ltd./American Parking Equipment Inc.
 - e. DoorKing, Inc.
 - f. Engineered Parking Systems, Inc.
 - g. Federal APD, Inc.
 - h. LiftMaster; The Chamberlain Group, Inc.
 - i. Magnetic Automation Corporation.
 - j. Operator Specialty Co., Inc.; Linear LLC group member.
 - k. Parking Products, Inc.
 - l. Parking Systems, Inc.
 - m. PTC Industries.
 - n. Sentex Systems; The Chamberlain Group, Inc.
 - o. Traf-Park Inc.; Subsidiary of Cubic Transportation Systems, Inc.
 - p. WPS North America Inc.
 - q. Zeag USA Inc.
 2. System: Programmable, multiple-code capability permitting validating or voiding of individual cards.
 3. Reader: Proximity type for proximity cards.
 4. Operation: Online communication to remote security access control system computer.
 5. Features: Timed anti-passback capable of monitoring and auditing barrier gate activity.
 6. Integrated Intercom.
 7. Mounting: With pedestal.
 8. Cards: Provide (Quantity TBD by Owner).
 - a. Imprint cards with the following: (TBD by Owner)
 9. Unit Housing: Fabricate from welded cold-rolled steel or aluminum sheet with weatherproof front access panel equipped with flush-mounted lock and two keys. Provide face-lighted unit fully visible at night.
 - a. Steel Finish: Manufacturer's standard baked-enamel coating system.

2.6 EXIT TERMINAL

- A. General: Provide self-contained exit pay stations designed for self-service operation; consisting of magnetic-stripe ticket readers/validators, displays, fee computers, controllers, and thermal printers housed in a combined enclosure.
1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. Amano McGann, Inc.
 - b. Amtel Security System Inc.
 - c. Ascom Transport Systems Inc.
 - d. Canadian Parking Equipment Ltd./American Parking Equipment Inc.
 - e. Engineered Parking Systems, Inc.
 - f. Federal APD, Inc.

- g. Magnetic Automation Corporation.
 - h. Parking Products, Inc.
 - i. Parking Systems, Inc.
 - j. PTC Industries.
 - k. Traf-Park Inc.; Subsidiary of Cubic Transportation Systems, Inc.
 - l. WPS North America Inc.
 - m. Zeag USA Inc.
2. Features: Include the following:
- a. Operation Online communication to remote computer.
 - b. Battery backup for clock and RAM memory.
 - c. Thermostatically controlled heater with on/off/auto switch.
 - d. Intercom.
- B. System Performance: Capable of the following:
- 1. Compute multiple parking fees based on entry times on ticket from ticket dispenser.
 - 2. Compute multiple taxes by percent and fixed amount.
 - 3. Program lost ticket function.
 - 4. Display fee.
 - 5. Accept payment by credit card, debit card and validated ticket.
 - 6. Print receipts on demand.
 - 7. Print validation on ticket.
 - 8. Voice annunciation.
 - 9. Print audit trail.
 - 10. Program six fee structures.
 - 11. Program time.
 - 12. Program tenant validations.
 - 13. Test mode to verify accuracy of fee structure program.
 - 14. Built-in service diagnostics.
 - 15. Print cash audit, revenue, operational, and statistical reports on demand.
 - 16. Duress alarm output for emergencies.
 - 17. Battery backup.
- C. Cabinets: Fabricated from cold-rolled steel sheet with seams welded and ground smooth, approximately 18 inches wide by 21 inches deep by 50 inches tall. Provide single, gasketed access door with flush-mounted locks. Furnish two keys for each lock, all locks keyed alike. Fabricate cabinet with internal reinforcing and four mounting holes accessible only from inside cabinet.
- 1. Material: Not less than 0.097-inch-thick, steel sheet or 0.125-inch-thick aluminum sheet.
 - a. Finish cabinet, interior and exterior, with manufacturer's standard baked-enamel finish over primer.

2.7 CENTRAL PAY STATION (Pay on Foot)

- A. General: Provide PCI compliant self-contained cashiering central pay stations designed for self-service operation; consisting of magnetic-stripe ticket readers/validators, LCD display, fee computers, and thermal printers housed in a combined enclosure.
- 1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. Amano McGann, Inc.
 - b. Amtel Security System Inc.
 - c. Ascom Transport Systems Inc.
 - d. Canadian Parking Equipment Ltd./American Parking Equipment Inc.
 - e. Engineered Parking Systems, Inc.
 - f. Federal APD, Inc.

- g. Magnetic Automation Corporation.
 - h. Parking Products, Inc.
 - i. Parking Systems, Inc.
 - j. PTC Industries.
 - k. Traf-Park Inc.; Subsidiary of Cubic Transportation Systems, Inc.
 - l. WPS North America Inc.
 - m. Zeag USA Inc.
2. Features: Include the following:
- a. Operation Online communication to remote computer.
 - b. Battery backup for clock and RAM memory.
 - c. Thermostatically controlled heater with on/off/auto switch.
 - d. Intercom.
- B. System Performance: Capable of the following:
- 1. Compute multiple parking fees based on entry times on ticket from ticket dispenser.
 - 2. Compute multiple taxes by percent and fixed amount.
 - 3. Program lost ticket function.
 - 4. Display fee.
 - 5. Accept payment by cash, credit card, debit card and tenant validated ticket.
 - 6. Print receipts on demand.
 - 7. Print validation on ticket.
 - 8. Voice annunciation.
 - 9. Print audit trail.
 - 10. Program six fee structures.
 - 11. Program time.
 - 12. Program tenant validations.
 - 13. Test mode to verify accuracy of fee structure program.
 - 14. Built-in service diagnostics.
 - 15. Print cash audit, revenue, operational, and statistical reports on demand.
 - 16. Duress alarm output for emergencies.
 - 17. Battery backup.
- C. Cabinets: Fabricated from cold-rolled steel sheet with seams welded and ground smooth, approximately 32 inches wide by 28 inches deep by 65 inches tall. Provide single, gasketed access door with flush-mounted locks. Furnish two keys for each lock, all locks keyed alike. Fabricate cabinet with internal reinforcing and four mounting holes accessible only from inside cabinet.
- 1. Material: Not less than 0.097-inch-thick, steel sheet or 0.125-inch-thick aluminum sheet.
 - a. Finish cabinet, interior and exterior, with manufacturer's standard baked-enamel finish over primer.

2.8 PARKING FACILITY MANAGEMENT SOFTWARE

- A. General: Manufacturer's standard software that is compatible with security access control system and that provides automatic facility monitoring, supervision, and remote control of parking control equipment from one or more locations.
- 1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. Amano McGann, Inc.
 - b. Amtel Security System Inc.
 - c. Ascom Transport Systems Inc.
 - d. Automatic Control Systems Inc.
 - e. Canadian Parking Equipment Ltd./American Parking Equipment Inc.
 - f. Federal APD, Inc.

- g. Magnetic Automation Corporation.
 - h. Parking Products, Inc.
 - i. Parking Systems, Inc.
 - j. Traf-Park Inc.; Subsidiary of Cubic Transportation Systems, Inc.
 - k. WPS North America Inc.
 - l. Zeag USA Inc.
2. System Performance: Capable of the following:
- a. Collect data for revenue and activity reporting.
 - b. Collect data for access and space control.
 - c. Track tickets.
 - d. Program parking control equipment.

2.9 ALUMINUM FINISHES

- A. Baked-Enamel or Powder-Coat Finish: AAMA 2603 except with a minimum dry film thickness of 1.5 mils. Comply with coating manufacturer's written instructions for cleaning, conversion coating, and applying and baking finish.
1. Color and Gloss: As selected by Architect from manufacturer's full range.

2.10 STEEL FINISHES

- A. Galvanizing: Hot-dip galvanize items as indicated to comply with the following:
1. ASTM A 123/A 123M for iron and steel parking control equipment.
 2. ASTM A 153/A 153M and ASTM F 2329 for iron and steel hardware for parking control equipment.
- B. Galvanized-Steel and Steel Finish: Immediately after cleaning and pretreating, apply manufacturer's standard two-coat, baked-on finish consisting of prime coat and thermosetting topcoat.
1. Color and Gloss: As selected by Architect from manufacturer's full range.

2.11 STAINLESS-STEEL FINISHES

- A. Surface Preparation: Remove tool and die marks and stretch lines, or blend into finish.
- B. Polished Finishes: Grind and polish surfaces to produce uniform finish, free of cross scratches.
1. Run grain of directional finishes with long dimension of each piece.
 2. When polishing is completed, passivate and rinse surfaces. Remove embedded foreign matter and leave surfaces chemically clean.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for installation tolerances, including equipment bases; accurate placement, pattern, and orientation of anchor bolts; critical dimensions; and other conditions affecting performance of the Work.
- B. Examine roughing-in for electrical systems to verify actual locations of connections before parking control equipment installation.
- C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Excavation for Traffic Controllers: Saw cut existing pavement for recessed traffic controllers and hand-excavate recesses to dimensions and depths and at locations as required by traffic controller manufacturer's written instructions and as indicated on Drawings.

3.3 INSTALLATION

- A. General: Install parking control equipment as required for a complete and integrated installation.
 - 1. Rough-in electrical connections according to requirements specified in Division 26 Sections.
- B. Automatic Barrier Gates: Anchor cabinets to concrete bases with anchor bolts or expansion anchors and mount barrier gate arms.
 - 1. Install barrier gates according to UL 325.
- C. Access Control System: Mount per manufacturers specifications.
 - 1. Ensure that reader and antenna are correctly installed to accurately read transponders presence.
- D. Vehicle Loop Detectors: Cut grooves in pavement and/or bury and seal wire loop at locations indicated on Drawings according to manufacturer's written instructions. Connect to parking control equipment operated by detector.
- E. Entry Terminal Ticket Dispensers and Pay Stations: Attach cabinets to concrete bases with anchor bolts or expansion anchors.
 - 1. Connect equipment to remote computer.
 - 2. Load ticket dispenser with supply of tickets.
- F. Connect wiring according to Division 26 Section "Low-Voltage Electrical Power Conductors and Cables."
- G. Ground equipment according to Division 26 Section "Grounding and Bonding for Electrical Systems."

3.4 FIELD QUALITY CONTROL

- A. Testing Agency: Owner will engage a qualified testing agency to perform tests and inspections.
- B. Tests and Inspections:
 - 1. Perform each visual and mechanical inspection and electrical test stated in NETA Acceptance Testing Specification. Certify compliance with test parameters.
 - 2. Operational Test: After electrical circuitry has been energized, start units to confirm proper motor rotation and unit operation.
 - 3. Test and adjust controls and safeties. Replace damaged and malfunctioning controls and equipment.
- C. Parking control equipment will be considered defective if it does not pass tests and inspections.
- D. Prepare test and inspection reports.

3.5 ADJUSTING

- A. Adjust parking control equipment to function smoothly and lubricate as recommended by manufacturer.
- B. Confirm that locks engage accurately and securely without forcing or binding.

- C. After completing installation of exposed, factory-finished parking control equipment, inspect exposed finishes and repair damaged finishes.

3.6 PROTECTION

- A. Remove barrier gate arms during the construction period to prevent damage, and install them immediately before Substantial Completion.

3.7 DEMONSTRATION

- A. Engage a factory-authorized service representative to train Owner's maintenance personnel to adjust, operate, and maintain parking control equipment.

3.8 PARKING CONTROL EQUIPMENT SCHEDULE

- A. Provide parking control equipment for each lane as follows:
 - 1. Refer to Drawings.

END OF SECTION