

**SECTION 11 12 00
PARKING CONTROL EQUIPMENT**

SPEC WRITER NOTE:

- 1. Delete text between // // not applicable to project. Edit remaining text to suit project.
- 2. Section includes parking gate arm and activator units, devices for card, key, and remote controlled access, and vehicle detection activators.
- 3. Section is for employee access to restricted employee parking areas. Do not use parking control equipment for patient parking areas.

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes: Automatic barrier gates with vehicle detectors and control units at //employee// parking areas with the following operations:

SPEC WRITER NOTE: Provide one or more of following subparagraph types appropriate to site equipment requirements. Provide a schedule when differing components may be required at different locations.

- 1. //Name Street Gate: Automatic key card operation, single gate arm, single gate exit arm activated with loop detector in pavement, and heated cabinets.//
- 2. //Employee Gate: Automatic coded card operation, double entrance, each with gate arms, double gate exit arm activated with key card //and/or fences//.//

1.2 RELATED WORK

SPEC WRITER NOTE: Update and retain references only when specified elsewhere in this section.

- A. Section 01 91 00 - GENERAL COMMISSIONING REQUIREMENTS: Training Plan.
- B. Section 03 30 00, CAST-IN-PLACE CONCRETE: Concrete Foundation Work.
- C. Section 09 06 00, SCHEDULE FOR FINISHES: Color and Texture.
- D. Section 11 05 12, GENERAL MOTOR REQUIREMENTS FOR EQUIPMENT: Motor Requirements.
- E. Section 26 05 19, LOW-VOLTAGE ELECTRICAL POWER CONDUCTORS AND CABLES (600 VOLTS AND BELOW): Power Supply To Disconnect, Junction Box, In Gate Arm Unit.

- F. Section 26 05 33, RACEWAY AND BOXES FOR ELECTRICAL SYSTEMS: Conduit Placement for Equipment.
- G. Section 26 27 26, WIRING DEVICES: Electrical Characteristics and Wiring Connections.
- H. Section 26 29 21, ENCLOSED SWITCHES AND CIRCUIT BREAKERS: Disconnect Switches.
- I. Section 27 05 33, RACEWAYS AND BOXES FOR COMMUNICATIONS SYSTEMS: Conduit Placement for Equipment.
- J. Section 27 10 00, STRUCTURED CABLING: Power Supply To Disconnect, Junction Box, In Gate Arm Unit.
- K. Section 28 05 13, CONDUCTORS AND CABLES FOR ELECTRONIC SAFETY AND SECURITY: Power Supply To Disconnect, Junction Box, In Gate Arm Unit.
- L. Section 28 05 28.33, CONDUITS AND BACKBOXES FOR ELECTRONIC SAFETY AND SECURITY: Conduit Placement for Equipment.
- M. Section 28 13 00 PHYSICAL ACCESS CONTROL SYSTEM: Card and access control.
- N. Section 32 05 23, CEMENT AND CONCRETE FOR EXTERIOR IMPROVEMENTS: Concrete Paving.
- O. Section 32 12 16, ASPHALT PAVING: Asphaltic Paving.
- P. Section 32 31 13 CHAINI LINK FENCES AND GATES: Fence and gates.
- Q. Section 32 31 40 HIGH SECURITIT FENCES AND GATES: High security fences and gates.

1.3 APPLICABLE PUBLICATIONS

- A. Comply with references to extent specified in this section.
- B. ASTM International (ASTM):
 - A153/A153M-16a.....Zinc Coating (Hot-Dip) on Iron and Steel Hardware.
 - A500/A500M-20.....Cold-Formed Welded and Seamless Carbon Steel Structural Tubing in Rounds and Shapes.
 - A653/A653M-20.....Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
- C. National Electrical Manufacturers Association (NEMA):
 - MG-1-11.....Motors and Generators.
- D. National Fire Protection Association (NFPA):
 - 70-14.....National Electrical Code.
- E. UL LLC (UL):
 - Listed - Online Certifications Directory.

1.4 PREINSTALLATION MEETINGS

- A. Conduct pre-installation meeting minimum 30 days before beginning Work of this section.

SPEC WRITER NOTE: Edit participant list to ensure entities influencing outcome attend.

1. Required Participants:
 - a. Contracting Officer's Representative.
 - b. //Architect/Engineer. //
 - c. Contractor.
 - d. Installer.
 - e. //Manufacturer's field representative. //
 - f. //VA Police//
2. Meeting Agenda: Distribute agenda to participants minimum 3 days before meeting.
 - a. Installation schedule.
 - b. Installation sequence.
 - c. Preparatory work.
 - d. Protection before, during, and after installation.
 - e. Installation.
 - f. Power locations and characteristics.
 - g. Control locations.
 - h. Security system interface.
 - i. Other items affecting successful completion.
3. Document and distribute meeting minutes to participants to record decisions affecting installation.

1.5 SUBMITTALS

- A. Submittal Procedures: Section 01 33 23, SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES.
- B. Submittal Drawings:
1. Show plan layout of equipment access lanes, mounting bolt dimensions, conduit and outlet locations, power requirements, and conformation of building electrical requirements.
 2. Wiring Diagrams: Detailing wiring for parking control equipment operator, signal, and control systems differentiating between factory-installed wiring and field-installed wiring.
 - a. Show locations of connections to electrical service.
 - b. Indicate locations for connections and requirements for ingress/egress magnetic safety loops.

- C. Manufacturer's Literature and Data:
 - 1. Description of parking control equipment material and accessories to be provided.
 - 2. Provide data on operating equipment, characteristics and limitations, and operating temperature ranges.
- D. Samples: Submit two samples of access cards and security program, illustrating size, and coding method.
- E. Certificates: Certify products comply with specifications.
 - 1. Show access control is UL Listed for specified application.
- F. Qualifications: Substantiate qualifications comply with specifications.
 - 1. Manufacturer // with project experience list //.
 - 2. Installer // with project experience list //.
- G. Operation and Maintenance Data:
 - 1. Care instructions for each exposed finish product.
 - 2. Start-up, maintenance, troubleshooting, emergency, and shut-down instructions for each operational product.

1.6 QUALITY ASSURANCE

- A. Manufacturer Qualifications:
 - 1. Regularly manufactures specified products.
 - 2. Manufactured specified products with satisfactory service on five similar installations for minimum five years.
 - a. Provide contact names and addresses for completed projects when requested by Contracting Officer's Representative.
- B. Installer Qualifications:
 - 1. Regularly installs specified products.
 - 2. Approved by manufacturer.
 - 3. Maintains maintenance facilities within two hours normal travel time from site.

1.7 DELIVERY

- A. Deliver materials to site in original sealed packages or containers; labeled for identification with manufacturer's name and brand.

1.8 STORAGE AND HANDLING

- A. Store products indoors in dry, weathertight // conditioned // facility.
 - 1. Prevent contamination and corrosion of electrical and electronic components.
- B. Protect products from damage during handling and construction operations.

1.9 WARRANTY

SPEC WRITER NOTE: Always retain construction warranty. FAR includes Contractor's one year labor and material warranty.

- A. Construction Warranty: FAR clause 52.246-21, "Warranty of Construction."

PART 2 - PRODUCTS**2.1 SYSTEM DESCRIPTION**

- A. Parking Control System: // Attended // Automatic // operation at entrance and // attended // automatic // operation at exit.
- B. Design: Protect against interference or damage by lightning or other electrical influence; include fuse, over-voltage protection, flash-over protection, and line filter.
- C. Entry - Automatic Gate Arm //fence// Control: Electrically operated upon // insertion of coded card // insertion of pass key // in conjunction with// detection of vehicle by magnetic safety sensing loop buried in pavement //.
 - 1. Maintain gate //arm //fence// in raised //open// position until vehicle clears control area.
 - 2. Activate automatic arm //gate// reversing switch if an obstacle is sensed in downward //closing// motion.
- D. Exit - Automatic Gate Arm Control: Electrically operated upon // detection of vehicle by sensing loop buried in pavement // insertion of coded card // insertion of pass key //.
 - 1. Maintain gate arm //fence// in raised //open// position until vehicle clears control area.
 - 2. Activate automatic arm reversing switch if an obstacle is sensed in the downward //closing// motion.
- E. Conform to applicable code requirements for emergency vehicle access.

2.2 MATERIALS

- A. Iron and Steel Hardware: ASTM A153/A153M; Zinc coating (hot-dip).
- B. Steel: ASTM A653/A653M; Galvanized to // G90 //.
- C. Structural Tubing: ASTM A500/A500M.
- D. Wood: // Clear fir. // Clear cedar //.

2.3 PRODUCTS - GENERAL

- A. Basis of Design: Section 09 06 00, SCHEDULE FOR FINISHES.
- B. Provide parking control equipment from one manufacturer.

C. Electrical Components: UL Listed to suit application.

2.4 AUTOMATIC GATE

SPEC WRITER NOTE: Coordinate with manufacturer and revise next paragraph if aluminum cabinets are required.

- A. Cabinet: Minimum // 1.9 mm, (0.075 inch) // thick cold-rolled steel sheet cabinet, welded and weather tight seams, reinforced internally with welded steel angle framing, thermally insulated to permit heater to maintain cabinet interior temperature within required operating range, flush access doors and panels, tamper proof hardware, weather tight gaskets, // master keyed locks; provide two keys for each gate, keyed alike. Conceal mounting bolts inside units.
- B. Arm Control: Mechanism to raise and lower arm by electric motor, enclosed speed reducer operated by self-contained, plug-in replaceable controller. Design mechanism with slip clutch to prevent breakage if arm is forced, and to permit manual operation if required. Start and stop arm movement at reduced speed.
 - 1. Fabricate components of // zinc-coated // steel.
- C. Electrical Components: Self-contained, plug-in, replaceable type. Include wiring for control units, zinc plated connection box, grounded convenience outlet, switch for automatic or manual operation, switch to disconnect power unit, thermostatically controlled minimum // 250 // Watt heater strip with control switch and preset thermostat, and thermal protection disconnect for motor.

2.5 ELECTRICAL CHARACTERISTICS AND COMPONENTS

SPEC WRITER NOTE: Select one or more of following subparagraphs appropriate to equipment requirements.

- A. Operators:
 - 1. Gate Arm //Fence// Motors: NEMA MG-1; Instantly reversing; // 245 W (1/3 hp.) // 115 Volt AC, single phase, 60-Hz, complying with Section 11 05 12, GENERAL MOTOR REQUIREMENTS FOR EQUIPMENT.
- B. Controls: Transmit power to gate arm //fence// drive shaft through harmonic acting crank and connecting rod. Fabricate crank, connecting rod, and drive shaft of galvanized solid bar steel.
- C. Wiring Terminations: Provide terminal lugs to match branch circuit conductor quantities, sizes, and materials indicated. Enclose terminal lugs in terminal box sized to NFPA 70.

- D. Disconnect Switch: Factory mount disconnect switch // in control panel.
// on equipment under provisions of Section 26 29 21, ENCLOSED SWITCHES
AND CIRCUIT BREAKERS. //

2.6 ARM AND SUPPORT

- A. Gate Arm: // Wood // Aluminum // Fiberglass // with // one piece arm // articulating gate arm with internal counterbalance //.
1. Provide gate arms with // safety rubber bottom edge // and automatic instant reversing arm mechanism. Equip mechanism with a 0 to 60 second variable time reset device //.
 2. Finish with manufacturer's standard coating system with black diagonal stripes on traffic side face.
- B. Arm Clamp: Quick change clamp and hub bracket, to permit rapid replacement of arm without fitting or drilling. Provide breakaway feature to ensure clean break if arm is struck.

SPEC WRITER NOTE: Retain end support posts if special length constructed assembly applies to project.

- C. End Support Post for gate arm of 4.3 m (14 feet) and longer:
1. 50 mm (2 inch) // square // round // steel tubular section; 940 mm (37 inches) high by 3.4 mm (0.04 inch) minimum wall thickness with aligning bracket, closed cap, and baseplate.
- D. Padlocking Feature: To lock gate arm in either open or closed position.

2.7 ACCESS CONTROL

- A. General: Provide pedestal mounted card control units to activate barrier gates.
- B. Control Unit: Activate gate arm by // insertion of coded card // pass key //.
- C. Cabinet: 1.9 mm (0.075 inch) thick minimum welded cold-rolled steel sheet, weather tight seams; thermally insulated to permit heater to maintain interior cabinet temperature within required operating range, flush access doors and panels, tamper proof flush mounted lock hardware and two keys // master keyed // to operate access panel, weather tight gaskets. Conceal mounting bolts inside units.
1. Mount housing on a 50 mm (2 inch) square steel tube pedestal with a curved top to receive housing, and trim plate to cover anchor bolts.
- D. Slot Mounting: Mount // card // key // slots at heights indicated on drawings.
1. // Illuminate and protect with projecting weather shield. //

SPEC WRITER NOTE: Select one of following subparagraphs appropriate to equipment requirements.

- E. Coded Cards: Laminated plastic with magnetic coding for // one month // validation periods. // Include anti-pass-back card control. //
- F. Pass Keys: Provide // <number> // keys.

2.8 VEHICLE DETECTION

- A. Vehicle Detection: For use in temperature range of -40 to 71 degrees C (-40 to 160 degrees F) to consist of detector unit in conjunction with sensing loop to activate // card control // barrier gate // when vehicle //enters// or //exits//.
- B. Loop Wire: 14 gage, XHWN or THWN copper; loop size of 1200 mm by 1800 mm (48 inches by 72 inches).
- C. Loop Groove Fill: // Same material as pavement. // Hot poured asphalt. // Cold poured rubberized asphalt emulsion. //
- D. Treadle Plate: // Galvanized steel, // Stainless steel, // 300 mm by 1800 mm (12 inches by 72 inches) in size, to consist of weatherproof sensor detector to activate // card control // barrier gate // when vehicle enters or exits.

2.9 FINISHES

SPEC WRITER NOTE: Select gate arm color and markings with code requirements.

- A. Gate Arm: Two coat enamel with // reflective // black and // yellow // white // diagonal stripes on both sides of gate arm.
- B. Gate Posts and Cabinets:
 - 1. Powder-Coat Finish: Manufacturer's standard two-coat finish system consisting of the following:
 - a. One coat primer.
 - b. One coat thermosetting topcoat.
 - c. Dry-film Thickness: 0.05 mm (2 mils) minimum.
 - d. Color: Refer to Section 09 06 00, SCHEDULE FOR FINISHES.

2.10 ACCESSORIES

- A. Touch-Up Paint: Match shop finish.

PART 3 - EXECUTION

3.1 PREPARATION

- A. Examine and verify substrate suitability for product installation.
 - 1. Verify dimensions required for parking control installation are correct.

2. Verify electric power is available, with correct characteristics, and at correct locations.

B. Provide templates for anchor bolts and other items encased in concrete or below finished surfaces in time to prevent delays.

3.2 INSTALLATION

A. Install products according to manufacturer's instructions // and approved submittal drawings //.

1. When manufacturer's instructions deviate from specifications, submit proposed resolution for Contracting Officer's Representative consideration. Contractor shall be responsible for any additional work at no additional cost to the Government.

B. Cut grooves in pavement surface, install vehicle detection loops and lead-in wires. Fill grooves with loop filler.

C. Install internal electrical wiring, conduit, junction boxes, transformers, circuit breakers, and auxiliary components required.

1. Coordinate placement of conduit, accessories, and power wiring to operating equipment.

2. Sequence installation to ensure utility connections are achieved in an orderly and expeditious manner.

D. Touch up damaged factory finishes: Repair painted surfaces with touch up paint.

3.3 ADJUSTING

A. Before final acceptance of project adjust system components for smooth operation.

B. Fit and adjust hardware for proper operation.

1. Lubricate hardware and other moving parts.

3.4 FIELD QUALITY CONTROL

A. Tests:

1. Test operating functions according to manufacturer's instructions.

2. Correct defects. Retest until functions are performing properly.

3.5 CLEANING

A. Clean exposed metal surfaces. Remove contaminants and stains.

B. Follow manufacturer instructions for cleaning agents. Do not use cleaning agents containing ammonia or other compounds capable of damaging finished metal surfaces and electrical components.

3.6 DEMONSTRATION AND TRAINING

A. Instruct VA personnel in proper parking control operation and maintenance.

1. Trainer: Manufacturer approved instructor.
 2. Training Time: // Eight // hours minimum.
- B. Train personnel in procedures to follow during operational failures or malfunctions.
- C. Submit training plan and trainer qualifications. See Section 01 91 00 - GENERAL COMMISSIONING REQUIREMENTS.
- D. Acceptance Condition: After completing work, operate parking control 15 consecutive calendar days without breakdown.

3.7 PROTECTION

- A. Protect parking control equipment from construction operations.
- B. Repair damage.

- - E N D - -