

SECTION 11 12 00
PARKING CONTROL EQUIPMENT

PART 1 GENERAL:

1.1 DESCRIPTION:

- A. Section Includes:
1. Automatic Barrier Gates.
 2. Vehicle Detectors.
 3. Card Control Units.
 4. Full Sign
 5. Rolling Gate Motor

1.2 RELATED WORK:

- A. Asphaltic paving: Section 32 12 16, ASPHALT PAVING.
- B. Concrete paving: Section 32 05 23, CEMENT AND CONCRETE FOR EXTERIOR IMPROVEMENTS.
- C. Concrete foundation work: Section 03 30 00, CAST-IN-PLACE CONCRETE.
- D. Color and texture: Section 09 06 00, SCHEDULE FOR FINISHES.
- E. Conduit placement for equipment: Section 26 05 33, RACEWAY AND BOXES FOR ELECTRICAL SYSTEMS, Section 27 05 33, RACEWAYS AND BOXES FOR COMMUNICATIONS SYSTEMS and Section 28 05 33, RACEWAYS AND BOXES FOR ELECTRONIC SAFETY AND SECURITY.
- F. Power supply to disconnect, junction box, in gate arm unit: Section 26 05 21, LOW-VOLTAGE ELECTRICAL POWER CONDUCTORS AND CABLES (600 VOLTS AND BELOW), Section 27 10 00, STRUCTURED CABLING and Section 28 05 13, CONDUCTORS AND CABLES FOR ELECTRONIC SAFETY AND SECURITY.
- G. Electrical characteristics and wiring connections: Section 26 27 26, WIRING DEVICES.

1.3 QUALITY CONTROL:

- A. Qualifications:
1. Approval by Contracting Officer is required of products or service of proposed manufacturer, suppliers, and installers, and will be based upon submission by Contractor of certification that:
 - a. Installer: Approved by manufacturer of materials and has technical qualifications, experience, trained personnel and facilities to install specified items.

- b. Manufacturer's product submitted has been in satisfactory operation, on three installations similar and equivalent in size to this project, for three years. Submit list of installations.
2. Maintenance Proximity: Installer shall maintain a place of business with maintenance facilities not more than two (2) hours normal travel time from project site.
3. UL and NEMA Compliance: Provide internal electrical components required as part of parking control equipment that are listed by UL and comply with applicable NEMA standards.
4. Single-Source Responsibility: Obtain parking control equipment from one source and from a single manufacturer.

1.4 SUBMITTALS:

- A. In accordance with Section 01 33 23, SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES, submit following:
 1. Manufacturer's Literature and Data:
 - a. Description of parking control equipment material and accessories to be provided.
 - b. Provide data on operating equipment, characteristics and limitations, and operating temperature ranges.
 2. Samples:
 - a. Submit two samples of access cards and security program, illustrating size, and coding method.
 3. Shop Drawings and Certificates: Indicate plan layout of equipment access lanes, mounting bolt dimensions, conduit and outlet locations, power requirements, and conformation of building electrical requirements. Provide Contractor with mounting bolt template in time for installation.
 4. Wiring Diagrams: Detailing wiring for parking control equipment operator, signal, and control systems differentiating clearly between manufacturer-installed wiring and field-installed wiring.
 - a. Show locations of connections to electrical service provided as a unit of work under other Divisions.
 5. Maintenance Data: For parking control equipment components for inclusion in Operating and Maintenance Manuals, include the following:
 - a. Maintenance Instructions: Provide manufacturer's instructions for maintenance of parking control equipment.

- 1) Include recommended methods and frequency for maintaining equipment in optimum operating condition under anticipated traffic and use conditions.
- 2) Include precautions against materials and methods that may be detrimental to finishes and performance.
- 3) Lubrication Schedule and Information: Provide lubrication and periodic maintenance requirement schedules including parts list and parts numbers.
6. Operation Data: Provide operating data for operating equipment, including clock timer, changing security access code, and any other pertinent information required for Government operation.
7. Certificates: Quality Control Certificate Submittals and lists specified in paragraph, QUALIFICATIONS.
- B. In accordance with Section 00 72 00, GENERAL CONDITIONS, submit following at project closeout: Guaranty.
- C. In accordance with Section 01 00 00, GENERAL REQUIREMENTS, submit following at project closeout:
 1. Project Record Documents: Record actual locations of concealed conduit and vehicle detection activators.

1.5 REGULATORY REQUIREMENTS:

- A. Conform to applicable code for fire/ambulance emergency vehicle access.
- B. Products Requiring Electrical Connection: Listed and classified by UL as suitable for purpose specified and indicated.

1.6 PROJECT CONDITIONS:

- A. Coordinate placement of conduit, accessories, and power wiring to operating equipment.
- B. Sequence installation to ensure utility connections are achieved in an orderly and expeditious manner.

1.7 DELIVERY, STORAGE AND HANDLING:

- A. Deliver materials to site in original sealed packages or containers; labeled for identification with manufacturer's name and brand.
- B. Store materials in weathertight and dry storage facility. Protect from damage due to handling, weather, and construction operations before, during and after installation.

1.8 APPLICABLE PUBLICATIONS:

- A. Publications listed below form a part of this specification to extent referenced. Publications are referenced in text by basic designation only.
- B. American Society for Testing Materials (ASTM):
 - A153/A153M-09.....Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware.
 - A500-10.....Standard Specification for Cold-Formed Welded and Seamless Carbon Steel Structural Tubing in Rounds and Shapes.
 - A653/A653M-10.....Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) by the Hot-Dip Process, Structural (Physical) Quality.
- C. National Electrical Manufacturers Association (NEMA):
 - MG 1-09(R2010).....Motors and Generators.
- D. National Fire Protection Association (NFPA):
 - 70-11.....National Electrical Code.
- E. Underwriters Laboratories Inc. (UL):
 - Electrical Appliance and Utilization Equipment Directory.

1.9 SYSTEM DESCRIPTION:

- A. Parking Control System: Automatic operation at entrance and 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 Control: Electrically operated upon detection of valid staff proximity/swipe card. Activate automatic arm reversing switch if an obstacle is sensed in downward motion.
- D. Exit - Automatic Gate Arm Control: Electrically operated upon detection of vehicle by sensing loop buried in pavement. Activate automatic arm reversing switch if an obstacle is sensed in the downward motion.

1.10 SCHEDULING:

- A. Employee Entrance Gates: Automatic coded card operation, single gate arm, single gate exit arm activated with loop detector in pavement.
- B. Exit Gate: Single and double exit, each with gate arms activated by vehicle detector loop.

1.11 WARRANTY

- A. Submit manufacturer's written warranty for materials and installation in accordance with FAR clause 52.246-21.
 - 1. Warranty: Cover keeping equipment operational.
 - 2. Final Acceptance: Requirement for final acceptance shall be continued acceptable use of parking control equipment without a breakdown or stoppage for a period of fifteen (15) calendar days after final acceptance of project by Government.

PART 2 PRODUCTS

2.1 MATERIALS:

- A. Iron and Steel Hardware: ASTM A153; Zinc coating (hot-dip) on iron and steel hardware.
- B. Steel: ASTM A653/A653M; Galvanized to G90.
- C. Structural tubing in rounds and shapes: A500; Cold-Formed Welded and Seamless Carbon Steel Structural Tubing in Rounds and Shapes.

2.2 AUTOMATIC GATE:

- A. Provide UL approved automatic barrier gate parking access-control system.
- C. Arm Control: Mechanism to raise and lower arm by instant reversing 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. Arm movement to stop and start at reduced speed.
- D. Electrical Components: Self-contained, plug-in, replaceable components. 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.

2.3 ELECTRICAL CHARACTERISTICS AND COMPONENTS:

- A. Electrical Characteristics:
 - 1. Provide electrical requirements meeting Manufacturer's product data.
 - 5. Refer to Section 26 27 26, WIRING DEVICES: Electrical connections.
- B. Motor: Instant reversing motor for operation of gate arm.
- C. Controls: Transmit power to gate arm drive shaft through a harmonic acting crank and connecting rod. Fabricate cranks, rod, and drive shaft of galvanized solid bar steel.

- D. 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.
- E. Disconnect Switch: Factory mount disconnect switch on equipment under provisions of Section 26 29 21, DISCONNECT SWITCHES.

2.5 CARD CONTROL:

- A. General: Provide pedestal mounted card control units to activate barrier gates.
- B. Control Unit: To activate gate arm by validation of employee proximity/swipe card.
- C. Housing: 1.9 mm (0.075 inch) minimum welded cold-rolled steel sheet, weather tight seams; thermally insulated as needed to maintain temperature to equipment operating minimum, flush access doors and panels, tamper proof flush mounted lock hardware and two (2) keys 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 a trim plate to cover anchor bolts.
 - 2. Finish interior and exterior of housing with manufacturer's standard baked enamel finish over primer. Color as indicated in Section 09 06 00, SCHEDULE FOR FINISHES.
 - 3. Housing to include camera unit compatible with existing site systems, and weather protected.

2.6 VEHICLE DETECTION:

- A. Vehicle Detection: For use in temperature range of -40 to 160 °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 48 X 72 inches.
- C. Loop Groove Fill: Same material as pavement. Cold poured rubberized asphalt emulsion.
- D. Electronic/Illuminated Full Sign to be located on exterior wall of parking structure and to be controlled by differential counting system as follows:
 - 1. Vehicle detection in the entry and exit lanes to be via in-pavement detector loops.

2. Loops to be connected to count/detector box at back of adjacent precast spandrel panel. Count system to be stand alone and installed in protected, weather proof box. Signal-Tech Redstorm or equivalent system.

3. Full sign to be bracket mounted on wall as indicated on Drawings, and connected to count system indicated above.

2.7 ROLLING GATE MOTOR

- A. Gate Motor: For use in temperature range of -40 to 160 °F to consist of gate motor unit to operate rolling gate at vehicle drive.
- B. Gate motor to be capable of handling rolling gate of up to 25' in length and 1500 lbs. System to be chain or spoke driven with an operating speed of 1.75 to 2.25 feet per second.
- C. Controls to have override system at unit in field and to be operated on a per use basis from a central control system in the VA security office. System to have a network gateway with single form factor fiber post.
- D. Control sensors to be provided to identify vehicles or pedestrians in path of gate during operation.

PART 3 EXECUTION

3.1 EXAMINATION:

- A. Verification of existing conditions before starting work:
 - 1. Prior to beginning installation, examine areas to receive parking control equipment. Verify that critical dimensions are correct and that conditions are acceptable:
 - a. Do not proceed with installation of parking control equipment until unsatisfactory conditions have been corrected.
- B. Verify that anchor bolts, and are ready to receive work and dimensions are as indicated on shop drawings, instructed by manufacturer.
- C. Verify that electric power is available and of correct characteristics.

3.2 PREPARATION

Provide templates for anchor bolts and other items encased in concrete or below finished surfaces in sufficient time so as not to delay work.

3.3 INSTALLATION

- A. Install parking control system and components in accordance with manufacturer's instructions and placement drawings.

- B. Cut grooves in pavement surface, install vehicle detection loops and lead-in wires, and fill grooves with loop filler.
- C. Install internal electrical wiring, conduit, junction boxes, transformers, circuit breakers, and auxiliary components required.

3.4 ADJUSTING

- A. Prior to final acceptance of project adjust system components for smooth operation.
- B. Fit and adjust hardware for ease of operation.
 - 1. Lubricate hardware and other moving parts.
 - 2. Readjust parking control system and components at completion of project.

3.5 CLEANING

- A. Clean metal surfaces promptly after installation, exercising care to avoid damage to coatings. Touch up damaged shop-applied finishes as required to restore damaged areas.
- B. Follow recommendations of manufacturer in selection of cleaning agents. Do not use cleaning agents containing ammonia or other compounds that might damage finished metal surfaces.

3.6 FIELD QUALITY CONTROL

- A. Tests:
 - 1. Test operating functions in accordance with manufacturer's printed checklist.
 - 2. Correct defects revealed by tests. Retest corrected areas until functions are operating properly.

3.7 DEMONSTRATION, TESTING AND ACCEPTANCE

- A. Instruct Owner's personnel in proper operation and maintenance of parking control equipment. Train personnel in procedures to follow in event of operational failures or malfunctions.
- B. Acceptance: At completion of project, and as a condition of acceptance, parking control equipment and systems shall be operated for a period of 15 consecutive calendar days without breakdown.

3.8 PROTECTION:

- A. Protect parking control equipment finished surfaces from damage during erection, and after completion of work until final inspection and acceptance.

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