SECTION 11 12 00
PARKING CONTROL EQUIPMENT

SPEC WRITER NOTES:
1. Delete between //----// if not applicable to project. Also delete any other items or paragraphs not applicable in section and renumber paragraphs.
2. This section includes parking gate arm and activator units, devices for card, key, or remote controlled access, and vehicle detection activators.
3. This section is for employee access to restricted employee parking areas. Can not use parking control equipment for patient parking areas.

PART 1 GENERAL:

1.1 DESCRIPTION:
A. Section Includes:
   1. Automatic Barrier Gates.
   2. Vehicle Detectors.
   3. Card Control Units.

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.


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.

   SPEC WRITER NOTE: Use Article below if special code, regulation, applies to the project; delete this article if none apply.

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 // testing firm acceptable to authority having jurisdiction // 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 weather-tight 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):
   A500-10 .................... Standard Specification for Cold-Formed Welded and Seamless Carbon Steel Structural Tubing in Rounds and Shapes.
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:
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 // insertion of coded card // insertion of pass key // detection of vehicle by sensing loop buried in pavement //. // 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 // insertion of
encoded card // insertion of pass key //. // Activate automatic arm
reversing switch if an obstacle is sensed in the downward motion. //

1.10 SCHEDULING:

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.

A. Name Street Gate: Automatic key card operation, single gate arm, single
gate exit arm activated with loop detector in pavement, and heated
cabinets.

B. Employee Gate: Automatic coded card operation, double entrance, each
with gate arms, double gate exit arm activated with key card.

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 // 2275 //_______//.

C. Structural tubing in rounds and shapes: A500; Cold-Formed Welded and
Seamless Carbon Steel Structural Tubing in Rounds and Shapes.

D. Wood: // Clear fir. // Clear cedar. //___________________.//

2.2 AUTOMATIC GATE:

A. Provide UL approved automatic barrier gate parking access-control
system.

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

B. Cabinet: 1.9 //_______// mm, (// 0.075 //_______// inch) minimum 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 temperature to equipment operating minimum, flush access doors and panels, tamper proof hardware, weather tight gaskets, // master keyed //_____// locks; furnish two (2) keys for each gate, keyed alike. Conceal mounting bolts inside units:

1. Finish cabinet, interior and exterior, with manufacturer’s standard // white baked enamel finish over primer system. // color as indicated in Section 09 06 00, SCHEDULE FOR FINISHES. //

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. Components of // zinc //________// coated steel.

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:

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

A. Electrical Characteristics:

1. Provide 1/3 //_______// hp (//_______// W.) ( //_______// rated load amperes.)
2. Provide 115 //_______// volts AC, // single // three // phase, 60 Hz.
3. Provide //_______// amperes maximum // fuse size // circuit breaker size // overcurrent protection //. (//_______// minimum circuit capacity.)
4. Provide //_______// percent minimum power factor at rated load.
5. Refer to Section 26 27 26, WIRING DEVICES: Electrical connections.

B. Motor: Instant reversing motor for operation of gate arm. // Refer to Section 11 05 12, GENERAL MOTOR REQUIREMENTS FOR EQUIPMENT, Section 21 05 12, GENERAL MOTOR REQUIREMENTS FOR FIRE-SUPPRESSION, Section 22 05 12, GENERAL MOTOR REQUIREMENTS FOR PLUMBING EQUIPMENT, Section 23 05
12, GENERAL MOTOR REQUIREMENTS FOR HVAC AND STEAM GENERATION EQUIPMENT
and Section 26 29 21, DISCONNECT SWITCHES. // NEMA MG1, //______//.

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 // in control panel.
// on equipment under provisions of Section 26 29 21, DISCONNECT
SWITCHES. //

2.4 ARM AND SUPPORT:

A. Gate Arm: Fabricate gate arm of nominal 25 mm (1 inch) thick, length as
indicated, of // Wood // Aluminum //______//, one piece arm, //
articulating arm with internal counterbalance //, (// with safety
rubber bottom edge // and automatic instant reversing arm mechanism
that stops downward motion of gates if arm strikes an object, and
returning arm immediately to upward position. Equip mechanism with a 0
to 60 second variable time reset device. //).

1. Finish with manufacturer’s standard coating system with black
diagonal stripes on traffic side face.

B. Arm Clamp: // Cast metal //______//, 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: Use Articles below if
special length constructed assembly
applies to project; delete this article
if none apply.

C. End support post required for gate arm of 4.3 m (14 feet) or longer.

D. End Support Post: 50 //______// mm (// 2 //______// inch) // square //
round // steel tubular section; 1940 //______// mm (// 37 //______//
inches) high, 3.4 mm, (0.135 inch) minimum wall thickness; with
alignment bracket, closed cap and baseplate.

E. Padlocking Feature: To lock gate arm in either open or closed position,
if required.

2.5 // CARD // KEY // CONTROL:

A. General: Provide pedestal mounted card control units to activate
barrier gates.
B. Control Unit: To activate gate arm by // insertion of coded card // pass key //; //_______// manufactured by //_______//.

C. Cabinet: 1.9 mm (0.075 inch) minimum welded cold-rolled steel sheet, weather tight seams; thermally insulated to permit heater to maintain cabinet temperature to equipment operating minimum, flush access doors and panels, tamper proof flush mounted lock hardware and two (2) 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 a trim plate to cover anchor bolts.

2. Finish interior and exterior of cabinet with manufacturer’s // standard baked enamel finish over primer. // color as indicated in Section 09 06 00, SCHEDULE FOR FINISHES. //

D. // Card // Key // Slot: Mount //_______// mm, //_______ inches // above vehicle pavement surface, // illuminate and protect with projecting weather shield//.

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

E. Coded Cards: // Laminated plastic // Cardboard // with // embossed // or // magnetic // coding // for // one //_______// month validation periods //. // Include anti-pass-back card control. //

F. Pass Keys: Supply //_______// keys.

2.6 VEHICLE DETECTION:

A. Vehicle Detection: For use in temperature range of -40 to 71 //_______// °C; ((-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 1 200 X 1 800 //_______ X ______// mm. ((48 X 72) //_______ X ______// inches.)

C. Loop Groove Fill: // Same material as pavement. // Hot poured asphalt. // Cold poured rubberized asphalt emulsion. //

D. Treadle Plate: // Steel, galvanized, // Stainless steel, // 3300 X 1800 //_______ X ______// mm size, ((12 X 72) //_______ X ______// inches //; to consist of weatherproof sensor detector to activate // card control // barrier gate // when vehicle enters or exits.
2.7 FINISHES:

SPEC WRITER NOTE: Select following subparagraphs appropriate to equipment requirements. Coordinate gate arm color and markings with code requirements, if required.

A. Gate Arm: Two coat enamel with // reflective // black and // yellow // white // diagonal stripes //_____// both sides of arm.

B. Gate Posts and Cabinets: Baked enamel on steel, //_____// color // as selected //.

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.
LISTED MANUFACTURERS

SPEC WRITER NOTE:
Verify manufacturers’ capability to comply with indicated requirements each time the Section is edited.

PARKING CONTROL EQUIPMENT:

American Parking Equipment Inc.
535 Oxford Street
Etobicoke, Toronto, Ontario M8Y 1E5
(800) 565-4666.

Amano Parking Systems (Headquarters)
140 Harrison Avenue
Roseland, NJ 07068
(800) 367-6649

Amano Parking Systems (Factory)
130 Commerce Boulevard
Loveland, OH 45140
(513) 697-9000

Delta Scientific Corporation
24901 West Avenue Stanford
Valencia, CA 91335
(800) 521-9330

Federal APD
24700 Crestview Court
Farmington Hills, MI 48335
(800) 521-9330

Magnetic Automation Corporation
1715 Independence Blvd., Suite. B-7
Sarasota, FL 34234
(941) 351-7116

Parking Products, Inc.
2517 Wyandotte Road
Willow Grove, PA 19090
(215) 657-7500