

SECTION 323119
DECORATIVE METAL FENCES AND GATES

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Decorative steel fences.
- B. Manual Pedestrian Gates
- C. Powered Vehicle Gates
- D. Automatic gate operators.

1.02 REFERENCE STANDARDS

- A. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process; 2023.
- B. ASTM F2200 - Standard Specification for Automated Vehicular Gate Construction; 2024.
- C. ASTM F2408 - Standard Specification for Ornamental Fences Employing Galvanized Steel Tubular Pickets; 2016 (Reapproved 2023).
- D. NEMA EN 10250 - Enclosures for Electrical Equipment (1000 Volts Maximum); 2024.
- E. NFPA 70 - National Electrical Code; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.
- F. UL 50 - Enclosures for Electrical Equipment, Non-Environmental Considerations; Current Edition, Including All Revisions.
- G. UL 325 - Standard for Door, Drapery, Gate, Louver, and Window Operators and Systems; Current Edition, Including All Revisions.
- H. UL 50E - Enclosures for Electrical Equipment, Environmental Considerations; Current Edition, Including All Revisions.

1.03 SUBMITTALS

- A. Product Data: Submit manufacturer's data sheets on each product to be used.

- B. Gate Operator: Show locations and details for installing operator components, switches, and controls. Indicate motor size, electrical characteristics, drive arrangement, mounting, and grounding provisions.
- C. Wiring Diagrams: Include diagrams for power, signal, and control wiring.
- D. Shop Drawings:
 - 1. Indicate plan layout, spacing of components, post foundation dimensions, hardware anchorage, gates, and schedule of components.
 - 2. Foundation details.
- E. Maintenance Materials: Furnish the following for Owner's use in maintenance of project:
 - 1. For gate operators to include in maintenance manuals.

PART 2 PRODUCTS

2.01 FENCES

- A. Fences: Complete factory-fabricated system of posts and panels, accessories, fittings, and fasteners; finished with electrodeposition coating, and having the following performance characteristics:
 - 1. Capable of resisting vertical load, horizontal load and infill performance requirements for fence categories defined in ASTM F2408.
- B. Electro-Deposition Coating: Multistage pretreatment/wash with zinc phosphate, followed by epoxy primer and acrylic topcoat.
 - 1. Total Coating Thickness: 2 mils, minimum.
 - 2. Color: As selected by Architect from manufacturer's standard range.
- C. Steel: ASTM A653/A653M; tensile strength 45,000 psi, minimum.
 - 1. Hot-dip galvanized; ASTM A653/A653M, G60.
- D. Hinges: Finished to match fence components.

2.02 MECHANICALLY FASTENED STEEL FENCE

- A. Provide fence meeting requirements for Residential class as defined by ASTM F2408.

B. Fence Panels: Mechanically fastened with internal reinforcement and tamperproof fasteners; height as indicated on drawings by minimum 6 feet long panels.

1. Panel Style: Two rail.
2. Panel Strength: Capable of supporting 600 pound load applied at midspan without deflection.
3. Attach panels to posts with manufacturer's standard panel brackets.

C. Posts: Steel tube.

1. Size: 2 inches square by 16 gauge with manufacturer's standard cap.
2. Post Cap: Ball.

D. Rails: Manufacturer's standard, double-wall steel channel; 1 inch square by 18 gauge with pre-punched picket holes.

1. Picket Retaining Rods: 1/8 inch galvanized steel.
2. Picket-to-Rail Intersection Seals: PVC grommets.

E. Pickets: Steel tube. 5/8 inch square, 18 gauge.

1. Spacing: 4.175 inch on center.
2. Size: 1 inch square by 14 gauge, 0.0747 inch
3. Style: Square top pickets extend above top rail.

F. Flexibility: Capable of following variable slope of up to 1:4.

G. Swing Gates

1. Gate Configuration: Single Leaf.
2. Gate Frame Height: Match adjoining fence height.
3. Gate Opening Width: 36 Inches with clear opening width with 32 inches clear minimum to meet accessibility standards.
4. Steel Frames and Bracing: Match materials and finish of adjoining decorative metal fencing.

5. Frame Corner Construction: Welded.
6. Infill: Comply with requirements for adjacent fence.
7. Picket Size, Configuration, and Spacing: Comply with requirements for adjacent fence.
8. Hardware:
 - a. Gates without Access Control: Latches permitting operation from both sides of gate with padlock hasp. See Specialty Hardware for hinges.
 - b. Gates with Access Control: See Specialty Hardware for hinges, access control housing, and gate boxes. See Division 08 Hardware for balance of gate hardware.

H. Horizontal Slide Gates.

1. Gate Configuration: Bi-parting Cantilever slide gates with hanger assembly and bottom glide as indicated on drawings.
2. Height: Match fence height.
3. Automated vehicular gates shall comply with ASTM F2200 Class II.
4. Galvanized-Steel Frames and Bracing: Fabricate members from square tubing.
5. Frame and Bracing Members: Square tubes 2 inches x 2 inches minimum formed from 0.108-inch nominal-thickness, metallic-coated steel sheet or formed from 0.105-inch nominal-thickness steel sheet and hot-dip galvanized after fabrication.
6. Welded frame with 5/16-inch diameter, adjustable truss rods for panels 5 feet wide or wider
7. Infill and Pickets: Comply with requirements for adjacent decorative metal fence.
8. Finish: To match adjacent decorative metal fence.

2.03 SPECIALTY HARDWARE

- A. Hinges: Finished to match fence components.
1. Closing: Self.
 2. Mechanism: Spring, adjustable tension and pitch.

3. Material: Steel.

B. Access Control Housing

1. Steel box, 14 gauge, with black powdercoat finish and 18 gauge stainless steel faceplate for mounting two single gang devices, with tubular key lock, for welding to fencepost or mounting to remote pedestal, to house Knox key switch and access control card reader as scheduled.
2. Manufacturer: Keedex.com. Model: # iCan.
3. Provide one adjacent to jamb fencepost of each pedestrian gate with access control, welded to fencepost on non-secure side, and one for each remote pedestal. Where only one device is scheduled, provide 18 gauge stainless steel blank cover plate over unused opening.

C. Panic Device Gate Box

1. Weldable steel gate box to for panic device mounting, 12 gauge steel.
2. Manufacturer: Keedex.com. Model: As required for scheduled panic device.
3. Provide one each pedestrian gate, welded to gate.

D. Electric Strike Device Gate Box

1. Weldable steel gate box to for electric strike mounting, 12 gauge steel.
2. Manufacturer: Keedex.com. Model: As required for scheduled device.
3. Provide one for each pedestrian gate with access control, welded to fencepost on latch side of gate.

E. Remote Pedestal

1. Gooseneck pedestal, 42 inches tall, with 5 x 5 x 1/4" inch baseplate and two 4 x 4 inch 14 gauge universal face plates. 2 x 2 inch 12 gauge steel tube, powdercoated. Face plate for mounting access control housing and mounting intercom. With concealed wireway and removable pull covers for wiring.
2. Provide one for each sliding vehicle gate.

2.04 AUTOMATIC GATE OPERATORS

- A. Sliding Gates: Prewired, pedestal-mounted gate operators for bi-parting horizontal sliding gates, per ASTM F2200 and UL 325.
 - 1. Class: Class I.
 - 2. Operating type: Roller chain.
 - 3. Control Functions: Open, Pause, Close. Provide contacts for gate operation by Knox key switch, access control system, vehicle presence detector, and all safeties.
 - 4. Maximum Open/Close Time: 10 seconds.
 - 5. Access: Access control system and Knox key switch on remote pedestal .
 - 6. Maximum gate weight: 800 pounds.
 - 7. Horsepower Rating: Suitable for connected load, 110 VAC, single phase.
 - 8. Provide one point of contact for 110 v power for gate operator and all controls. Provide transformer for all low voltage controls.
 - 9. Frequency of Use: 25 cycles per hour.
 - 10. Entrapment Protection Devices: Provide sensing devices and safety mechanisms complying with UL 325.
 - a. Primary Device: Provide NEMA 4X photo eye sensors as required with momentary-contact control device.
 - b. Secondary Device: Provide electric sensing edge with wireless edge kit
 - 11. Vehicle Presence Detector for "Free Exit": System includes automatic closing timer with adjustable time delay and timer cutoff switch, and presence detector designed to open and close gate. System includes emitter/receiver detector with adjustable detection zone pattern and sensitivity, designed to detect the presence or transit of a vehicle in gate pathway when infrared beam in zone pattern is interrupted, and to emit a signal activating the gate operator.

12. Ground Loop Detector: System that includes automatic closing timer with adjustable time delay before closing and loop detector designed to hold gate open until traffic clears.. Provide electronic 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 a signal activating the gate operator. Provide number of loops consisting of multiple strands of wire, number of turns, loop size, and method of placement at location shown on Drawings, and as recommended in writing by detection system manufacturer for function indicated.
 - a. Loop: for pave-over or saw-cut and epoxy-grouted installation at contractor's option.
13. Warning Module: Audio and visual alarm sounding three to five seconds in advance of gate operation and continuing until gate stops moving; compliant with the United States Access Board's ADA-ABA Accessibility Guidelines.
14. Emergency Release Mechanism: Quick-disconnect release of operator drive system of the following type, permitting manual operation if operator fails. Design system so control-circuit power is disconnected during manual operation
 - a. Type: Integral fail-safe release, allowing gate to be pushed open without mechanical devices, keys, cranks, or special knowledge.
15. Instructional, Safety, and Warning Labels and Signs: According to UL 325 and Manufacturer's standard for components and features specified.
16. Enclosures: Comply with NEMA EN 10250, and list and label as complying with UL 50 and UL 50E.
 - a. Environment Type per NEMA EN 10250: Unless otherwise indicated, as specified for the following installation locations:
 - 1) Outdoor Locations: Type 3R.

2.05 ACCESSORIES

- A. Electrical: Low voltage wiring and raceways UL listed for exterior exposure.
- B. Equipment Bases/Pads: Precast concrete, depth not less than 12 inches, size and reinforced to support gate motor and operator.

- C. Concrete: Normal-weight, air-entrained, ready-mix concrete complying with requirements in Section 033000 "Cast-in-Place Concrete" with a minimum 28-day compressive strength of 3000 psi, 3-inch slump, and 1-inch maximum aggregate size[or dry, packaged, normal-weight concrete mix complying with ASTM C387/C387M mixed with potable water according to manufacturer's written instructions.
- D. Nonshrink Grout: Factory-packaged, nonstaining, noncorrosive, nongaseous grout complying with ASTM C1107/C1107M and specifically recommended by manufacturer for exterior applications.
- E. Welded wire security mesh, finished to match fence, 1/2 inch x 1/2 inch, 16 gauge minimum.
 - 1. Provide on full width pedestrian gates x 3 feet tall, centered on panic device, and in 18 inch radius half-moon area of fence directly adjacent to latch side of pedestrian gates, aligned to prevent outside access to panic device.
 - 2. Provide on sliding vehicle gates, full height, to meet ASTM F2200 requirements.

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PART 3 EXECUTION

3.01 INSTALLATION

- A. Install in accordance with manufacturer's instructions.
- B. Set fence posts in concrete, in accordance with the manufacturer recommended size spacing.
- C. Set intermediate posts plumb , in concrete footings with top of footing 2 inches above finish grade. Slope top of concrete for water runoff. Depth: Minimum footing frost depth per code.
- D. Repair finish at all field welded locations with cold applied galvanizing, primer, and painted finish to match factory finish.
- E. Install operator in accordance with manufacturer's instructions and in accordance with NFPA 70. Adjust and verify proper operation of all devices which operate motor operated gates, including access control, intercome, all safety devices, safety resets, alarms, and manual over-ride.

- F. Provide low voltage wiring and terminations from gate operator to all activation devices: access control switch, intercom, Knox key switch, vehicle presence detector, and safety devices, in weathertight raceways.

3.02 TOLERANCES

- A. Maximum Variation From Plumb: 1/4 inch.
- B. Maximum Offset From Indicated Position: 1 inch.
- C. Minimum Distance from Property Line: 6 inches.

3.03 CLEANING

- A. Clean jobsite of excess materials; scatter excess material from post hole excavations uniformly away from posts. Remove excess material if required.
- B. Clean fence with mild household detergent and clean water rinse well.

3.04 CLOSEOUT ACTIVITIES

- A. Demonstrate proper operation of equipment to Owner's designated representative.
- B. Training: Train Owner's personnel on operation and maintenance of system.
 - 1. Use operation and maintenance manual as training reference, supplemented with additional training materials as required.

3.05 PROTECTION

- A. Protect installed products until completion of project.
- B. Touch-up, repair, or replace damaged products before Date of Substantial Completion.

END OF SECTION

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