

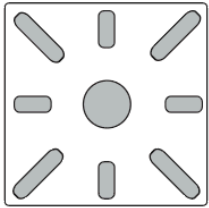
STRONGPOLES

Keypad & Reader Pedestal Drawings



3/16"

13"



Face Plate
4 1/2" x 4 1/2"

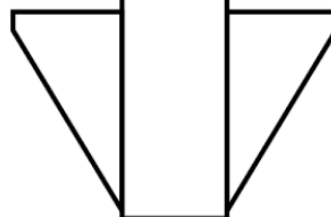
66" Direct-Burial
Gooseneck
Pedestal

Cut 76.5"

42"

66"

24" Burial

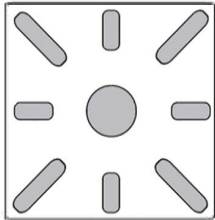


3/16"

13"

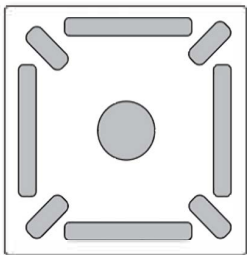
48" Pad-Mount
Gooseneck
Pedestal

Cut 58.5"



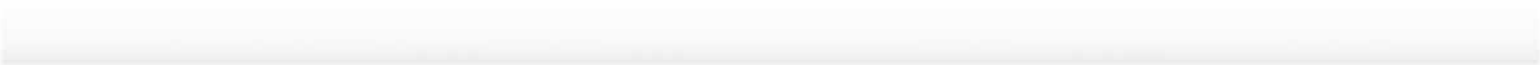
Face Plate
4 1/2" x 4 1/2"

48"



Base Plate 5" x 5"

1/4"

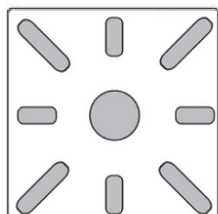


3/16"

13"

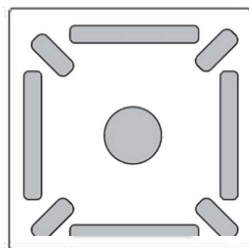
42" Pad-Mount
Gooseneck
Pedestal

Cut 52.5"



Face Plate
4 1/2" x 4 1/2"

42"



Base Plate 5" x 5"

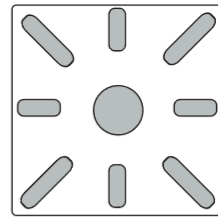
1/4"



16"

13"

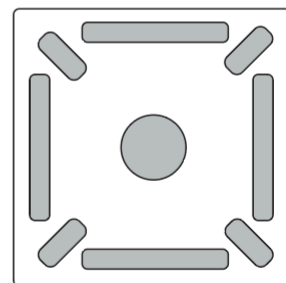
36"



FacePlate 4 1/2" x 4 1/2"

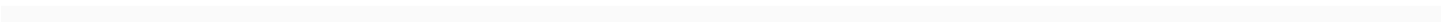
36" Curb-Mount
Gooseneck
Pedestal

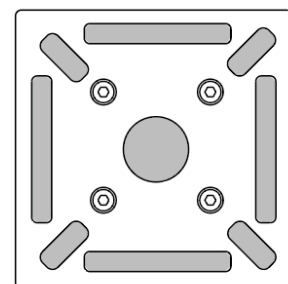
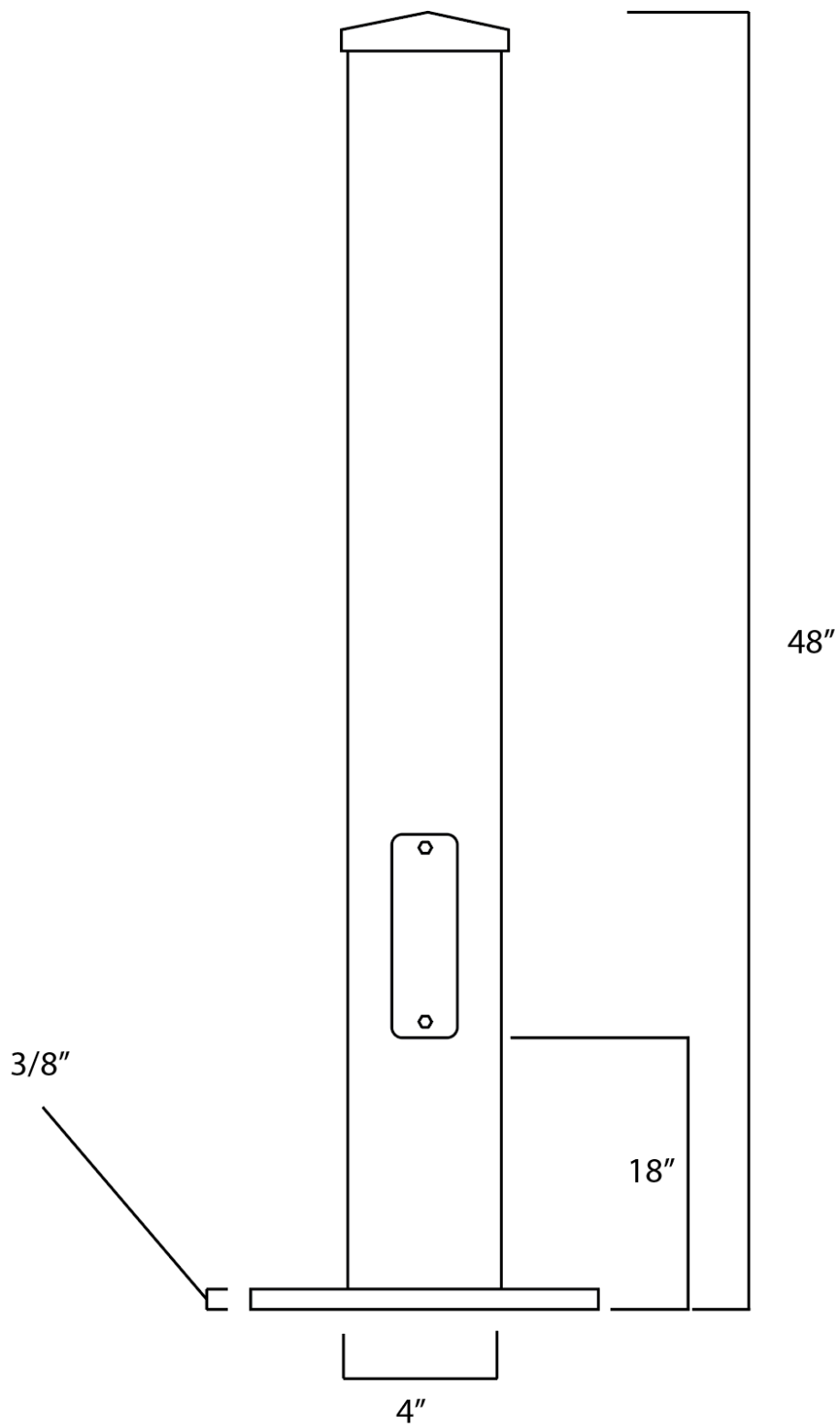
Cut 46.5"



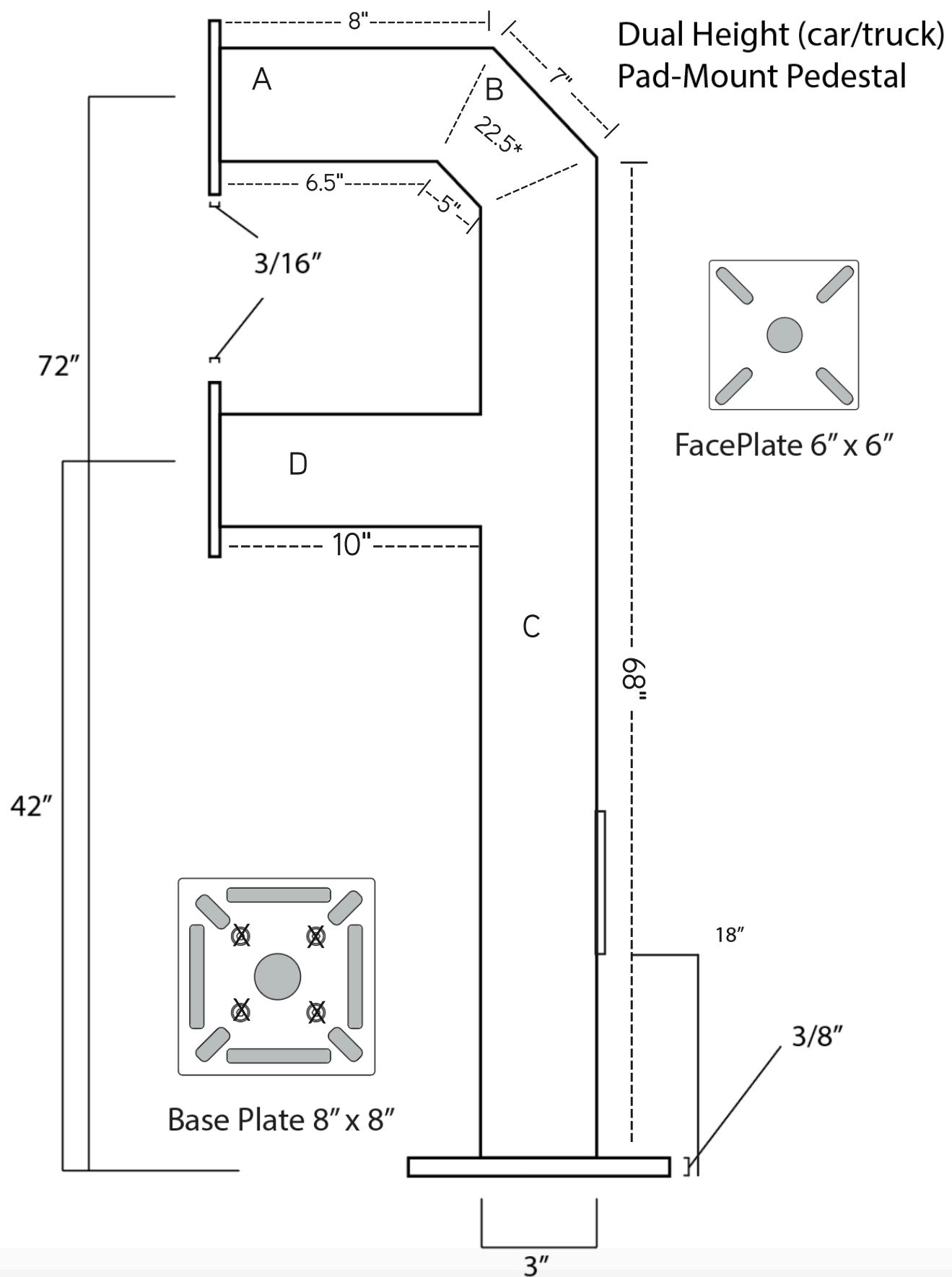
Base Plate 5" x 5"

1/4"

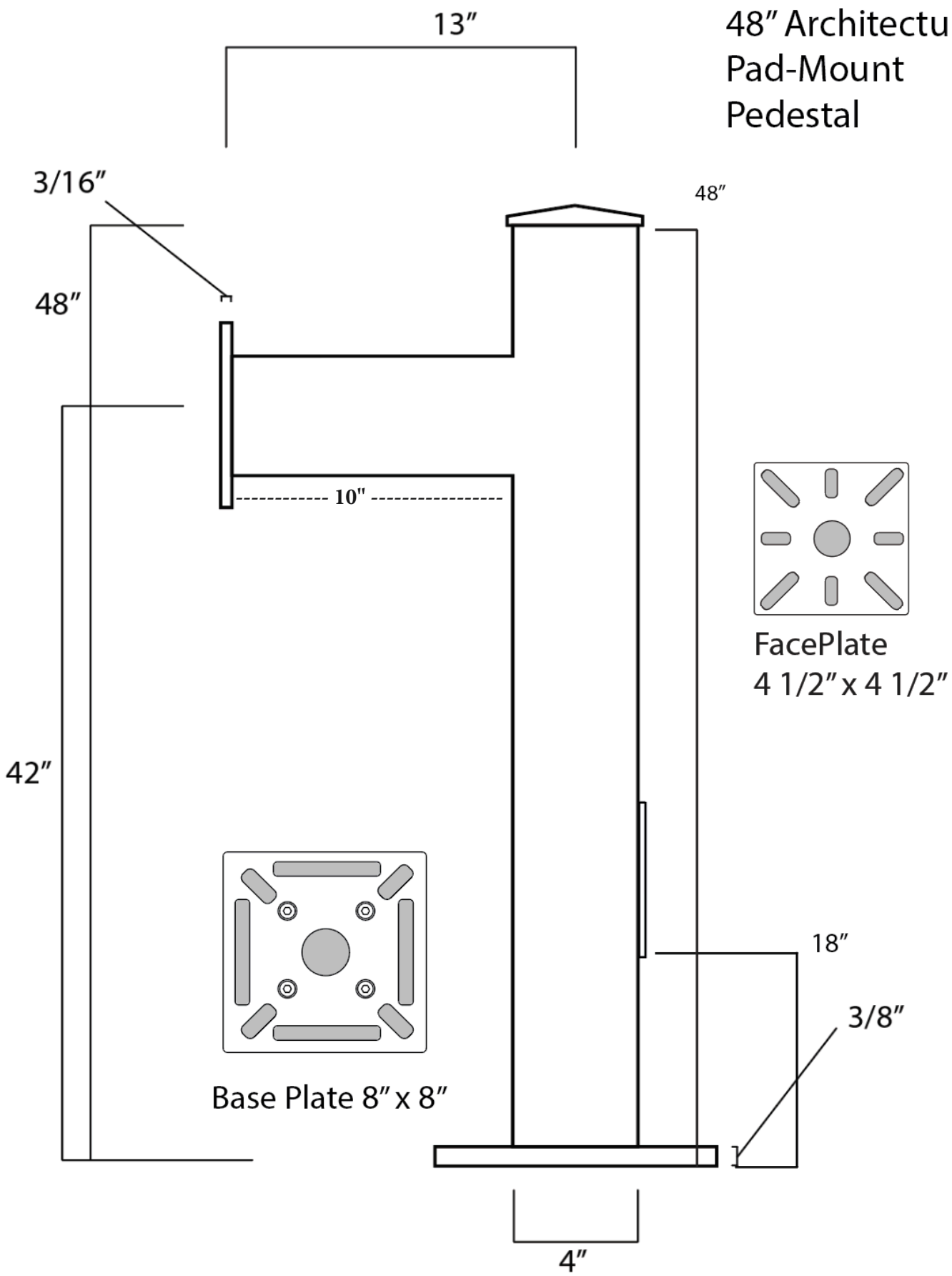




Base Plate 8" x 8"



48" Architectural
Pad-Mount
Pedestal



SECTION 323119 - DECORATIVE METAL FENCES AND GATES

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Decorative steel fences.
- B. Decorative aluminum fences.
- C. Automatic gate operators.

1.02 RELATED REQUIREMENTS

- A. Section 033000 - Cast-in-Place Concrete.
- B. Section 312316 - Excavation.

1.03 PRICE AND PAYMENT PROCEDURES

- A. Allowances: See Section 012100 - Allowances, for cash allowances affecting this section.
- B. Unit Prices: See Section 012200 - Unit Prices, for additional unit price requirements.
 - 1. Provide the work under the unit price method.
 - 2. Fencing: Measurement and payment by the linear foot (meter), to the fence height specified, based on the specified post spacing. Includes posts, rails, tension wire, fabric, accessories, attachments.
 - 3. Post Footings: Measurement and payment by each unit of footing, to the depth specified. Includes excavation, concrete placed, finishing.
 - 4. Gates: Measurement and payment by square foot (by square meter). Includes frame posts, fabric, accessories, and hardware.
- C. Alternates: See Section 012300 - Alternates, for product alternatives affecting this section.
 - 1. This section describes a base bid product; refer to Section [] for an alternative product.
 - 2. This section describes an alternative product; refer to Section [] for the base bid product.

1.04 REFERENCE STANDARDS

- A. ASTM A276/A276M - Standard Specification for Stainless Steel Bars and Shapes 2017.
- B. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process 2020.
- C. ASTM B117 - Standard Practice for Operating Salt Spray (Fog) Apparatus 2019.
- D. ASTM B221 - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes 2021.
- E. ASTM C94/C94M - Standard Specification for Ready-Mixed Concrete 2021b.
- F. ASTM D523 - Standard Test Method for Specular Gloss 2014 (Reapproved 2018).
- G. ASTM D714 - Standard Test Method for Evaluating Degree of Blistering of Paints 2002 (Reapproved 2017).
- H. ASTM D822/D822M - Standard Practice for Filtered Open-Flame Carbon-Arc Exposures of Paint and Related Coatings 2013 (Reapproved 2018).
- I. ASTM D1654 - Standard Test Method for Evaluation of Painted or Coated Specimens Subjected to Corrosive Environments 2008, with Editorial Revision (2017).
- J. ASTM D2244 - Standard Practice for Calculation of Color Tolerances and Color Differences from Instrumentally Measured Color Coordinates 2021.
- K. ASTM D2794 - Standard Test Method for Resistance of Organic Coatings to the Effects of Rapid Deformation (Impact) 1993 (Reapproved 2019).
- L. ASTM D3359 - Standard Test Method for Rating Adhesion by Tape Test 2017.
- M. ASTM F2200 - Standard Specification for Automated Vehicular Gate Construction 2020.

- N. ASTM F2408 - Standard Specification for Ornamental Fences Employing Galvanized Steel Tubular Pickets 2016.
- O. ASTM F2656/F2656M - Standard Test Method for Crash Testing of Vehicle Security Barriers 2020.
- P. CLFMI WLG 2445 - Wind Load Guide for the Selection of Line Post and Line Post Spacing 2018.
- Q. NEMA 250 - Enclosures for Electrical Equipment (1000 Volts Maximum) 2020.
- R. NFPA 70 - National Electrical Code Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.
- S. UL 50 - Enclosures for Electrical Equipment, Non-Environmental Considerations Current Edition, Including All Revisions.
- T. UL 50E - Enclosures for Electrical Equipment, Environmental Considerations Current Edition, Including All Revisions.
- U. UL 325 - Standard for Door, Drapery, Gate, Louver, and Window Operators and Systems Current Edition, Including All Revisions.

1.05 ADMINISTRATIVE REQUIREMENTS

- A. Preinstallation Meeting: Conduct a preinstallation meeting one week prior to start of work of this section; require attendance by affected installers.

1.06 SUBMITTALS

- A. See Section 013000 - Administrative Requirements, for submittal procedures.
- B. Product Data: Submit manufacturer's data sheets on each product to be used, including:
 - 1. Preparation instructions and recommendations.
 - 2. Storage and handling requirements and recommendations.
 - 3. Installation methods.
- C. Design Calculations: For high wind load areas, provide calculations for fence panels and accessory selection as well as line post spacing and foundation details. See CLFMI WLG 2445 for line post and spacing guidance.
- D. Shop Drawings:
 - 1. Indicate plan layout, spacing of components, post foundation dimensions, hardware anchorage, gates, and schedule of components.
 - 2. Foundation details, concrete design mix and reinforcing schedule for anti-ram barrier system.
- E. Samples: Submit two samples of fence panels, slat infill, [] inch ([] mm) by [] inch ([] mm) in size illustrating construction and colored finish.
- F. Manufacturer's Installation Instructions: Indicate installation requirements, post foundation anchor bolt templates, and [].
- G. Manufacturer's Qualification Statement.
- H. Installer's Qualification Statement.
- I. Project Record Documents: Accurately record actual locations of property perimeter posts relative to property lines [].
- J. Field Inspection Records: Provide installation inspection records that include post settings, framework, fittings and accessories, gates, and workmanship.
- K. Manufacturer's Warranty.
- L. Maintenance Materials: Furnish the following for Owner's use in maintenance of project:
 - 1. See Section 016000 - Product Requirements, for additional provisions.
 - 2. Spare Parts: One [].
 - 3. Extra Stock Materials: One [].

4. Extra Stock Materials: [] linear feet ([] linear meters) of each kind of [].
5. Tools: One each of every special tool required for maintenance of [].

1.07 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Company specializing in manufacturing products specified in this section with minimum five years documented experience.
- B. Installer Qualifications: Experienced with type of construction involved and materials and techniques specified and approved by fence manufacturer.

1.08 DELIVERY, STORAGE AND HANDLING

- A. Store materials in a manner to ensure proper ventilation and drainage. Protect against damage, weather, vandalism and theft.

1.09 WARRANTY

- A. See Section 017800 - Closeout Submittals, for additional warranty requirements.
- B. Correct defective Work within a five year period after Date of Substantial Completion.
- C. Provide five year manufacturer warranty for [].

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Decorative Metal Fences and Gates:
 1. Alumi-Guard; []: www.alumi-guard.com/#sle.
 2. Ameristar Perimeter Security, USA; []: www.ameristarfence.com/#sle.
 3. Ideal Aluminum Products; []: www.ideal-ap.com/#sle.
 4. Knotwood, a brand of OmniMax International; []: www.knotwood.com/#sle.
 5. Stewart Iron Works, LLC; []: www.stewartironworks.com/#sle.
 6. Superior Aluminum Products, Inc; []: www.superioraluminum.com/#sle.
 7. Ultra Aluminum Manufacturing Inc; []: www.ultrafence.com/#sle.
 8. [].
 9. Substitutions: See Section 016000 - Product Requirements.
- B. Automatic Gate Operators:
 1. Tymetal Corp; []: www.tymetal.com/#sle.
 2. [].
 3. [].
 4. Substitutions: See Section 016000 - Product Requirements.
- C. Specialty Hardware:
 1. DAC Industries, Inc; Detex Exit Bar: www.dacindustries.com/#sle.
 2. D&D Technologies USA, Inc ; []: www.ddtech.com/#sle.
 3. [].
 4. Substitutions: See Section 016000 - Product Requirements.

2.02 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 (0.058 mm), minimum.
 2. Color: As shown on drawings.
 3. Color: As selected by Architect from manufacturer's standard range.
 4. Coating Performance: Comply with general requirements of ASTM F2408.

- a. Adhesion: ASTM D3359 (Method B); Class 3B with 90 percent or more of coating remaining in tested area.
 - b. Corrosion Resistance: ASTM B117, ASTM D714 and ASTM D1654; 1/8 inch (15.8 mm) coating loss or medium No.8 blisters after 1,500 hours.
 - c. Impact Resistance: ASTM D2794; 60 inch pounds (6.8 N m).
 - d. Weathering Resistance: ASTM D523, ASTM D822/D822M and ASTM D2244; less than 60 percent loss of gloss.
- C. Steel: ASTM A653/A653M; tensile strength 45,000 psi (310 MPa), minimum.
 - 1. Hot-dip galvanized; ASTM A653/A653M, G60.
 - 2. 62 percent recycled steel, minimum.
- D. Aluminum: ASTM B221.
 - 1. Tubular Pickets, Rails and Posts: 6005-T5 alloy.
 - 2. Extrusions for Posts and Rails (Outer Channel): 6005-T5 alloy.
 - 3. Extrusions for Pickets and Rail (Inner Slide Channels): 6063-T5 alloy.
- E. Fasteners: ASTM A276/A276M, Type 302 stainless steel; finished to match fence components.
 - 1. Tamper-proof security bolts.
 - 2. Self-drilling hex-head screws.
 - 3. [_____].
- F. Hinges: Finished to match fence components.
 - 1. Brackets: Round.
 - 2. Mounting: Center.
 - 3. Closing: Manual.
- G. Latches: Finished to match fence components.
 - 1. Brackets: Round.
 - 2. Locking: Magnetic.

2.03 WELDED STEEL FENCE

- A. Provide fence meeting requirements for Industrial class as defined by ASTM F2408.
- B. Fence Panels: Fusion welded; 6 feet (1.8 m) high by 6 feet (1.8 m) long.
 - 1. Panel Style: Two rail.
 - 2. Attach panels to posts with manufacturer's standard panel brackets.
- C. Posts: Steel tube.
 - 1. Size: 2-1/2 inches (63 mm) square by 12 gauge, 0.109 inch (2.76 mm thick), with manufacturer's standard cap.
 - 2. Post Cap: Ball.
- D. Rails: Manufacturer's standard, double-wall steel channel 1-3/4 inch (44.5 mm) square by 12 gauge, 0.1094 inch (2.76 mm thick) with prepunched picket holes.
 - 1. Picket Retaining Rods: 0.125 inch (3.17 mm) galvanized steel.
 - 2. Picket-to-Rail Intersection Seals: PVC grommets.
- E. Pickets: Steel tube.
 - 1. Spacing: 3-3/4 inch (95.2 mm) clear.
 - 2. Size: 1 inch (25.4 mm) square by 18 gauge, 0.0478 inch (1.21 mm thick).
 - 3. Style: Pickets with finial extend above top rail.
 - 4. Finial: Spear point.
- F. Flexibility: Capable of following variable slope of up to 1:2.
- G. Color: Bronze.

2.04 MECHANICALLY FASTENED STEEL FENCE

- A. Provide fence meeting requirements for Industrial class as defined by ASTM F2408.
- B. Fence Panels: Mechanically fastened with internal reinforcement and tamperproof fasteners; 12 feet (3.65 m) high by 6 feet (1.8 m) long.
 - 1. Panel Style: Two rail.

2. Panel Strength: Capable of supporting 600 pound (272 kg) load applied at midspan without deflection.
3. Attach panels to posts with manufacturer's standard panel brackets.
- C. Posts: Steel tube.
 1. Size: 4 inches (101 mm) square by 12 gauge, 0.1094 inch (2.76 mm thick), with manufacturer's standard cap.
 2. Post Cap: Ball.
- D. Rails: Manufacturer's standard, double-wall steel channel; 1-3/4 inch (44.5 mm) square by 14 gauge, 0.0747 inch (1.90 mm thick) with pre-punched picket holes.
 1. Picket Retaining Rods: 1/8 inch (3.17 mm) galvanized steel.
 2. Picket-to-Rail Intersection Seals: PVC grommets.
- E. Pickets: Steel tube.
 1. Spacing: 4.175 inch (106 mm) on center.
 2. Size: 1 inch (25.4 mm) square by 14 gauge, 0.0747 inch (1.90 mm thick)
 3. Style: Pickets with finial extend above top rail.
 4. Finial: Spear point.
- F. Flexibility: Capable of following variable slope of up to 1:4.
- G. Color: Bronze.

2.05 HIGH-SECURITY STEEL FENCE

- A. Provide fence meeting requirements for Industrial class as defined by ASTM F2408 and capable of resisting impact from specified vehicle weight and speed when tested according to ASTM F2656/F2656M.
- B. Fence Panels: Mechanically fastened with internal reinforcement and tamperproof fasteners; 6 feet (1.8 m) high by 6 feet (1.8 m) long.
 1. Panel Style: Two rail.
 2. Panel Strength: Capable of supporting 400 pound (181 kg) load applied at midspan without deflection.
 3. Attach panels to posts with manufacturer's standard panel brackets.
- C. Posts: Double-wall, I-beam shape; prepunched for rails and cables.
 1. Bending Strength: 93,700 psi (64,600 kPa) load applied at midspan without deflection.
 2. Size: 1-3/4 inch (44.5 mm) by 4 inches (102 mm).
 3. Size: 4 inch (101 mm) square by 11 gauge, 0.1196 inch (3.04 mm thick).
 4. Post Cap: Manufacturer's standard cast aluminum.
- D. Rails: Steel channels with lower leg designed to carry cables, sensor wiring and alarm system components.
 1. Size: 2 inches (51 mm) by 2-1/2 inches (64 mm) by 1/10 inch (2.34 mm) nominal thickness.
 2. Pale Holes: 6 inches (152 mm) on center.
- E. Pales: Corrugated steel strips; 3/4 inch (19 mm) thick.
 1. Spacing: 6 inches (152 mm) on center.
 2. Size: 2-3/4 inches (70 mm) by 3/4 inch (19 mm).
 3. Style: Pales with trident finial extend above top rail.
- F. Color: Bronze.

2.06 HIGH-SECURITY STEEL FENCE WITH ANTI-RAM BARRIER

- A. Provide fence meeting requirements for Industrial class as defined by ASTM F2408 and capable of resisting impact from specified vehicle weight and speed when tested according to ASTM F2656/F2656M.
- B. Fence Panels: Mechanically fastened with internal reinforcement and tamperproof fasteners; 6 feet (1.8 m) high by 6 feet (1.8 m) long.
 1. Panel Style: Two rail.

2. Panel Strength: Capable of supporting 400 pound (181 kg) load applied at midspan without deflection.
3. Attach panels to posts with manufacturer's standard panel brackets.
- C. Posts: Double-wall, I-beam shape; prepunched for rails and cables.
 1. Bending Strength: 93,700 psi (646,039 kPa) load applied at midspan without deflection.
 2. Size: Above 10 feet (Above 3.0 m) high.
 - a. Ten Feet High or Less: 1-3/4 inch (44.5 mm) by 4 inches (102 mm).
 - b. Greater than Ten Feet: 4 inch (101 mm) square by 11 gauge, 0.1196 inch (3.04 mm thick).
 3. Post Cap: Manufacturer's standard cast aluminum.
- D. Rails: Steel channels with lower leg designed to carry cables, sensor wiring and alarm system components.
 1. Size: 2 inches (51 mm) by 2-1/2 inches (64 mm) by 1/10 inch (2.34 mm) nominal thickness.
 2. Pale Holes: 6 inches (152 mm) on center.
- E. Pales: Corrugated steel strips; 3/4 inch (19 mm) thick.
 1. Spacing: 6 inches (152 mm) on center.
 2. Size: 2-3/4 inches (70 mm) by 3/4 inch (19 mm).
 3. Style: Pales with trident finial extend above top rail.
- F. Anti-Ram Components:
 1. Cables: Braided stainless-steel.
 2. Proprietary Fasteners:
 - a. Carriage bolts with breakaway nut.
 - b. Cable clamps.
 3. Concrete Foundation Strength:
 - a. Line Posts: 3000 psi (20.68 MPa), minimum.
 - b. Bollard, Intermediate, End, Corner, Gate and Cable Termination Posts: 6000 psi (41.37 MPa), minimum.
 - c. Type specified in Section 033000.
 4. Anti-Ram Rating: ASTM F2656/F2656M; PU50, P2.
- G. Color: Bronze.

2.07 ALUMINUM FENCE

- A. Decorative Aluminum Fence System: Provide fence meeting the Test Load and Coating Performance requirements of ASTM F2408 for Industrial class.
 1. Fence Panels: 4 feet (1.2 m) high by 6 feet (1.8 m) long.
 - a. Panel Style: Two rail.
 - b. Panel Strength: Capable of supporting 270 pounds (122.5 kg) minimum load applied at midspan without deflection.
 - c. Attach panels to posts with manufacturer's standard panel brackets and recommended fasteners.
 - d. Posts: Aluminum extrusions; 2-1/2 inches (63 mm) square.
 - e. Rails: Extruded aluminum channels.
 - 1) Double-walled aluminum U-channel; outside cross-section dimensions of 1-3/4 inch (44.5 mm) square; interior guide channel forms lower limit of raceway for retaining rod.
 - 2) Single-wall aluminum U-channel; outside cross-section dimensions of 1-1/2 inch (38 mm) square.
 - 3) Enclosed Retaining Rod: 1/8 inch (3.17 mm) diameter galvanized steel with variable pitch connection system for high angle racking and elimination of external fasteners.
 - 4) Picket-to-Rail Intersection Seals: PVC grommets.
 - 5) Picket Spacing, Standard: 4.715 inch (120 mm) on center.
 - 6) Picket Spacing, Standard: 3-7/8 inch (98 mm) on center.

- 7) Picket Spacing, Specialty: Manufacturer's specialty option.
 - f. Pickets: Extruded aluminum tubes.
 - 1) Size: 1-1/4 inch (31.7 mm) square.
 - 2) Size: 1 inch (25.4 mm) square.
 - 3) Style: Pickets with finial extend above top rail.
 - 4) Integrally Formed Finial: Spear point.
 - g. Fasteners: Manufacturer's standard stainless steel bolts, screws, and washers; factory finish fasteners to match fence.
 - h. Accessories: Aluminum castings, extrusions, and cold-formed strips; factory finished to match fence.
 - 1) Flat post cap.
 - 2) Ball post cap.
 - 3) Decorative rings.
 - 4) Scrolls.
 - 5) Triad spear point finial.
 - 6) Quad spear point finial.
 - 7) Fleur-de-lis spear point finial.
 - 8) Custom finial.
 - i. Flexibility: Capable of following variable slope of up to 1:4.
 - j. Color: As selected by Architect from manufacturer's standard range.
 - k. Color: Manufacturer's standard, factory applied Dark Bronze.
 - l. Products:
 - 1) Alumi-Guard, Ornamental Picket Fences; Premier: www.alumi-guard.com/#sle.
 - 2) Ameristar Perimeter Security, USA; Echelon II: www.ameristarfence.com/#sle.
 - 3) [_____].
- B. Decorative Aluminum Fence System:
1. Fence Panels: 3 feet (917 mm) high by 6 feet (1.8 m) long.
 - a. Attach panels to posts with manufacturer's standard panel brackets and recommended fasteners.
 - b. Posts: Manufacturer's standard; extruded aluminum tubes.
 - c. Rails: Manufacturer's standard; extruded aluminum channels.
 - d. Pickets: Manufacturer's standard; extruded aluminum tubes.
 - 1) Style: Flat top.
 - 2) Integrally Formed Finial: Spear point.
 - e. Fasteners: Manufacturer's standard stainless steel bolts, screws, and washers; factory finish fasteners to match fence.
 - f. Accessories: Aluminum castings, extrusions and cold-formed strips; factory finished to match fence.
 - g. Color: As selected by Architect from manufacturer's standard range.
 - h. Color: Manufacturer's standard, factory applied Black.
 - i. Products:
 - 1) Ideal Aluminum Products; Commercial Fence: www.ideal-ap.com/#sle.
 - 2) Ideal Aluminum Products; Security Fence: www.ideal-ap.com/#sle.
 - 3) Ultra Aluminum Manufacturing Inc; UAS 100: www.ultrafence.com/#sle.
 - 4) Ultra Aluminum Manufacturing Inc; UAF 200: www.ultrafence.com/#sle.
 - 5) [_____].
- C. Decorative Aluminum Privacy Fence and Swinging Gates:
1. Fence Panels: Formed aluminum sheets; 5 feet (1.5 m) high by 6 feet (1.8 m) long.
 - a. Panel Style: Board-on-board.
 - b. Attach panels to posts with manufacturer's standard panel brackets and recommended fasteners.
 2. Posts: Aluminum extrusions; 3 inches (76 mm) square.
 3. Color: As selected by Architect from manufacturer's standard range.
 4. Color: Manufacturer's standard, factory applied Florida (Dark) Bronze.

5. Products:
 - a. Alumi-Guard, Privacy Fences; Fortress Shadowbox: www.alumi-guard.com/#sle.
 - b. Ideal Aluminum Products; Louver Panels: www.ideal-ap.com/#sle.
 - c. Ideal Aluminum Products; Aluminum Privacy Panels: www.ideal-ap.com/#sle.
 - d. Ultra Aluminum Manufacturing Inc; Eclipse Privacy Panels: www.ultrafence.com/#sle.
- D. Decorative Aluminum Post-and-Rail Fence and Swinging Gates:
 1. Style: Two-rail.
 2. Posts: Aluminum extrusions; [] inch ([] mm) square.
 3. Color: As selected by Architect from manufacturer's standard range.
 4. Color: Manufacturer's standard, factory applied Florida (Dark) Bronze.
 5. Products:
 - a. Alumi-Guard, Post and Rail Fences; Chariot 2 - Rail: www.alumi-guard.com/#sle.
- E. Decorative Aluminum Cantilever Gates:
 1. Gate Panels: Manufacturer's standard decorative aluminum fence panels.
 2. Posts: Aluminum extrusions; 2 inches (51 mm) square.
 3. Rails and Frame: Welded aluminum extrusions; 2 inches by 3 inches (51 mm by 76 mm).
 4. Hardware:
 - a. Latch: Manufacturer's standard mechanism; factory finished galvanized steel.
 - b. Truck Assembly: Manufacturer's standard, self-aligning, wheeled truck assembly supporting weight of gate plus 2,000 pound (910 kg) reaction load; provide number of truck assemblies per gate recommended by manufacturer.
 - c. Guide Wheel Assembly: Manufacturer's standard, adjustable, dual wheel assembly; provide number of guide wheels per gate recommended by manufacturer.
 5. Operation: Manual.
 - a. Operator: Comply with UL 325, Class I and ASTM F2200.
 - b. Manufacturer's standard electric operating system with integral controls, sensors, remote latching and unlatching, safety devices, communication devices, and emergency vehicle access.
 - c. Provide a separate clearly marked pedestrian access for each entrance with automated gate.
 6. Color: As selected by Architect from manufacturer's standard range.
 7. Color: Manufacturer's standard, factory applied Florida (Dark) Bronze.
 8. Products:
 - a. Alumi-Guard, Cantilever Gates; []: www.alumi-guard.com/#sle.
 - b. Ideal Aluminum Products; Cantilever Gates: www.ideal-ap.com/#sle.
 - c. Ultra Aluminum Manufacturing Inc; []: www.ultrafence.com/#sle.

2.08 SPECIALITY HARDWARE

- A. Hinges: Finished to match fence components.
 1. Closing: Manual.
 2. Mechanism: Spring.
 3. Material: Steel.
 4. Mounting: Center.
 5. Brackets: Round.
 6. Bearings: Plain.
 7. Products:
 - a. D&D Technologies USA, Inc; SureClose, Model []: www.ddtech.com/#sle.
- B. Latches: Finished to match fence components.
 1. Mechanism: Gravity.
 2. Locking: Mechanical.
 3. Material: Steel.
 4. Mounting: Center.
 5. Brackets: Round.
 6. Products:

- a. D&D Technologies USA, Inc; LokkLatch, Model [_____]: www.ddtech.com/#sle.
- C. Rollers: Finished to match fence components.
 - 1. Load Rating: 500 pounds (227 kg).
 - 2. Groove: Flat.
 - 3. Material: Steel.
 - 4. Bearings: Ball.
 - 5. Mounting: Center.
 - 6. Brackets: Round.
 - 7. Products:
 - a. D&D Technologies USA, Inc; SHUT IT, Model [_____]: www.ddtech.com/#sle.

2.09 AUTOMATIC GATE OPERATORS

- A. Swinging Gates: Pre-wired, pedestal mounted gate operator for horizontal swinging gates, per ASTM F2200 and UL 325.
 - 1. Class: Class I.
 - 2. Operating type: Swing arm.
 - 3. Control Functions: Open, pause, and close.
 - 4. Maximum Open/Close Time: 10 seconds.
 - 5. Access: Card.
 - 6. Maximum gate weight: 500 pounds (187 kilograms).
 - 7. Horsepower Rating: Suitable for connected load.
 - 8. Entrapment Protection Devices: Provide sensing devices and safety mechanisms complying with UL 325.
 - a. Primary Device: Provide electric sensing edge, wireless sensing, NEMA 1 photo eye sensors, or NEMA 4X photo eye sensors as required with momentary-contact control device.
 - b. Secondary Device: Provide electric sensing edge with wireless edge kit or non-monitored safety edge as an option along with continuous-constant control device.
 - 9. Enclosures: Comply with NEMA 250, and list and label as complying with UL 50 and UL 50E.
 - a. Environment Type per NEMA 250: Unless otherwise indicated, as specified for the following installation locations:
 - 1) Outdoor Locations: Type 3R.
 - 2) Outdoor Locations, direct splashing: Type 4.
 - b. Finish for Painted Steel Enclosures: Manufacturer's standard, factory applied grey unless otherwise indicated.
- B. Sliding Gates: Prewired, pedestal-mounted gate operator for horizontal sliding gates, per ASTM F2200 and UL 325.
 - 1. Class: Class I.
 - 2. Operating type: Drive belt.
 - 3. Control Functions: Open, Pause, Close.
 - 4. Maximum Open/Close Time: 10 seconds.
 - 5. Access: Card.
 - 6. Maximum gate weight: 500 pounds (187 kilograms).
 - 7. Horsepower Rating: Suitable for connected load.
 - 8. Entrapment Protection Devices: Provide sensing devices and safety mechanisms complying with UL 325.
 - a. Primary Device: Provide electric sensing edge, wireless sensing, NEMA 1 photo eye sensors, or NEMA 4X photo eye sensors as required with momentary-contact control device.
 - b. Secondary Device: Provide electric sensing edge with wireless edge kit or non-monitored safety edge as an option along with continuous-constant control device.
 - 9. Enclosures: Comply with NEMA 250, and list and label as complying with UL 50 and UL 50E.

- a. Environment Type per NEMA 250: Unless otherwise indicated, as specified for the following installation locations:
 - 1) Outdoor Locations: Type 3R.
 - 2) Outdoor Locations, direct splashing: Type 4.
- b. Finish for Painted Steel Enclosures: Manufacturer's standard, factory applied grey unless otherwise indicated.

2.10 ACCESSORIES

- A. Keypad Mounting Supports: Where not factory installed, provide mounting supports for keypad installation.
 - 1. Products:
 - a. StrongPoles, LLC; Architectural Keypad Pedestal: www.strongpoles.com/#sle.
 - b. StrongPoles, LLC; Dual Height Keypad Pedestal: www.strongpoles.com/#sle.
 - c. StrongPoles, LLC; Gooseneck Direct-Burial Keypad Pedestal: www.strongpoles.com/#sle.
 - d. StrongPoles, LLC; Gooseneck Utility Keypad Pedestal: www.strongpoles.com/#sle.
 - 2. Substitutions: See Section 016000 - Product Requirements.
- B. Caps: Cast steel galvanized; sized to post diameter, set screw retainer.
- C. Fittings: Sleeves, bands, clips, rail ends, tension bars, fasteners and fittings; steel.
- D. Extension Arms: Cast steel galvanized, to accommodate three strands of barbed wire, single arm, vertical.
- E. Privacy Slats: Aluminum strips, sized to fit fabric weave.
 - 1. Products:
 - a. PrivacyLink; Aluminum Slats: www.eprivacylink.com/#sle.
 - b. Substitutions: See Section 016000 - Product Requirements.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Do not begin installation until substrates have been properly prepared.
- B. If substrate preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.

3.02 PREPARATION

- A. Clean surfaces thoroughly prior to installation.

3.03 INSTALLATION

- A. Install in accordance with manufacturer's instructions.
- B. Set fence posts in accordance with the manufacturer recommended spacing.
- C. When cutting rails immediately seal the exposed surfaces by:
 - 1. Removing metal shavings from cut area.
 - 2. Apply zinc-rich primer to thoroughly cover cut edge and drilled hole; allow to dry.
 - 3. Apply two coats of custom finish spray paint matching fence color.
 - 4. Failure to seal exposed surfaces in accordance with manufacturer's instructions will negate manufacturer's warranty.
- D. Space gate posts according to the manufacturers' drawings, dependent on standard out-to-out gate leaf dimensions and gate hardware selected.
 - 1. Base type and quantity of gate hinges on the application, weight, height, and number of gate cycles.
 - 2. Identify the necessary hardware required for the application on the manufacturer's gate drawings.
 - 3. Provide gate hardware by the manufacturer of the gate and install in compliance with manufacturer's recommendations.
- E. Excavate post holes in accordance with Section 312316.

- F. Install operator in accordance with manufacturer's instructions and in accordance with NFPA 70.

3.04 TOLERANCES

- A. Maximum Variation From Plumb: 1/4 inch (6.3 mm).
- B. Maximum Offset From Indicated Position: 1 inch (25.4 mm).
- C. Minimum Distance from Property Line: 6 inches (152 mm).

3.05 FIELD QUALITY CONTROL

- A. See Section 014000 - Quality Requirements, for additional requirements.
- B. Layout: Verify that fence installation markings are accurate to design, paying attention to gate locations, underground utilities, and property lines.
- C. Post Settings: Randomly inspect three locations against design for:
 - 1. Hole diameter.
 - 2. Hole depth.
 - 3. Hole spacing.
- D. Fence Height: Randomly measure fence height at three locations or at areas that appear out of compliance with design.
- E. Gates: Inspect for level, plumb, and alignment.
- F. Workmanship: Verify neat installation free of defects.

3.06 CLEANING

- A. Leave immediate work area neat at end of work day.
- B. Clean jobsite of excess materials; scatter excess material from post hole excavations uniformly away from posts. Remove excess material if required.
- C. Clean fence with mild household detergent and clean water rinse well.
- D. Remove mortar from exposed posts and other fencing material using a 10 percent solution of muriatic acid followed immediately by several rinses with clean water.
- E. Touch up scratched surfaces using materials recommended by manufacturer. Match touched-up paint color to factory-applied finish.
- F. See Section 017419 - Construction Waste Management and Disposal, for additional requirements.

3.07 CLOSEOUT ACTIVITIES

- A. See Section 017800 - Closeout Submittals, for closeout submittals.
- B. See Section 017900 - Demonstration and Training, for additional requirements.
- C. Demonstrate proper operation of equipment to Owner's designated representative.
- D. Demonstration: Demonstrate operation of system to Owner's personnel.
 - 1. Use operation and maintenance data as reference during demonstration.
 - 2. Conduct walking tour of project.
 - 3. Briefly describe function, operation, and maintenance of each component.
- E. 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.
 - 2. Provide minimum of two hours of training.
 - 3. Instructor: Manufacturer's training personnel.
 - 4. Location: At project site.
 - 5. Location: Owner's offsite classroom facilities may be used.
 - 6. Location: Provide local classroom facilities.
 - 7. Location: At manufacturer's training facility; include travel expenses for one member of Owner's staff.

3.08 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