Part 1  General

01. Summary
   A. Section Includes:
      1. Series 500 bollard, 5" diameter column, illuminated
      2. Series 500 bollard, 5" diameter column, non-illuminated
      3. Series 600 bollard, 6" diameter column, illuminated
      4. Series 600 bollard, 6" diameter column, non-illuminated

02. Submittals
   A. Provide submittals in accordance with Section 01 33 00 – Submittal Procedures.
   B. Product data:
      1. Manufacturer’s standard product literature.
      2. Shop drawings.
      3. Installation instructions.

03. Quality Assurance
   A. Manufacturer Qualifications:
      1. Minimum 15 years experience in the manufacture of outdoor lighting.
      2. Provide reference list of at least ten major transportation authorities, municipalities, universities, or other high-use public environments currently using outdoor lighting fabricated by the manufacturer.

04. Delivery, Storage and Handling
   A. Handle products in accordance with manufacturer’s instructions.
   B. Store products in manufacturer’s original packaging until ready for installation.
   C. Protect products from impacts and abrasion during storage.

05. Warranty
   A. Provide manufacturer’s standard warranty.
      1. Warranty terms: one year from date of invoice against defects in materials and workmanship.

Part 2  Products

01. Manufacturer
   A. Basis-of-design product: provide bollards based on the product named.
      1. Light Column Bollard by Forms+Surfaces
   B. Manufacturer Contact:
      Forms+Surfaces
      30 Pine Street
      Pittsburgh, PA 15223
      phone: 800-451-0410
B. Bollards

1. Materials:

a. Light Column Body: tubular stainless steel.

b. Light Column Head (for illuminated bollards): .125” thick white-frosted acrylic tube with stainless steel cap.

c. Optional standard shield configurations (Choose one below, if desired):

   1) Kente:
       A) Series 600, 180° shield.

   2) Perforated:
       A) Series 500, 180° shield.
       B) Series 600, 180° shield.
       C) Series 500, 360° shield.
       D) Series 600, 360° shield.

   3) Scape:
       A) Series 500, 180° shield.
       B) Series 600, 180° shield.
       C) Series 500, 360° shield.
       D) Series 600, 360° shield.

   4) Bubbles:
       A) Series 500, 180° shield.
       B) Series 600, 180° shield.
       C) Series 500, 360° shield.
       D) Series 600, 360° shield.

d. Ballast (linear fluorescent only): electronic, thermally protected, 120/277V combination for two F14T5 or two F24T5/HO lamps, -18°C starting temperature, <10% THD, class A sound rating.

e. Driver (3000K, 4000K, RGBW LED): Input power is 100-277 V. Includes high efficiency constant output current with over-voltage, short circuit, and overload protection. Driver for 3000K and 4000K LED has 0-10V dimming capabilities. Certifications include: IP66 (waterproof) enclosure and Class 2 rated output (UL 8750).

f. Lamps (for illuminated bollards) (Choose one lamp below):

   1) 3000K LED:
       A) 17W custom LED light engine.
       C) Color temperature: 3,000K.

   2) 4000K LED:
       A) 17W custom LED light engine.
       C) Color temperature: 4,000K.

   3) RGBW LED:
       A) 78W custom LED light engine.
B) Luminaire lumens: Varies
C) Color temperature: 4,000K white, RGBW, dynamic white

4) (2) F14T5:
   A) 14W T5 linear fluorescent.
   B) Base: mini bi-pin.
   C) Luminaire lumens: Series 500: 2220, Series 600: 2194.
   D) Color temperature: 4,100K.

5) (2) F24T5/HO:
   A) 24W T5HO linear fluorescent.
   B) Base: mini bi-pin.
   D) Color temperature: 4,100K.

GFCI outlet (Series 600 illuminated, non-RGBW, non-security bollard only) (Optional)

2. Finish (Choose one finish below):
   a. Satin.
   b. Polyester powdercoat (Select one option below):
      1) Standard Texture/Gloss from Forms+Surfaces Powdercoat Chart.
      2) Premium Texture/Gloss from Forms+Surfaces Powdercoat Chart.
      3) Custom RAL powdercoat color.

3. Dimensions (Choose model(s) below):
   a. Series 500 bollard, illuminated:
      1) Surface Mount with J-bolts:
         A) 5" diameter x 45" high (linear fluorescent).
         B) 5" diameter x 45" high (LED).
         C) 5" diameter x 45" high (RGBW LED)
      1) Surface Mount with Removable Base:
         A) 5" diameter x 45" high.

   a. Series 500 bollard, non-illuminated:
      1) Surface Mount with J-bolts:
         A) 5" diameter x 45" high.

   b. Series 600 bollard, illuminated:
      1) Surface Mount with J-bolts:
         A) 6" diameter x 45" high (linear fluorescent).
         B) 6" diameter x 45" high (LED).
         C) 6" diameter x 45" high (RGBW LED)
      2) Surface Mount with Removable Base
         A) 6" diameter x 45" high.
3) Embedded Security Core:
   A) 6" diameter x 48" high (linear fluorescent).
   B) 6" diameter x 50" high (LED).

c. Series 600 bollard, non-illuminated:
   1) Surface Mount with J-bolts:
      A) 6" diameter x 45" high.
   2) Surface Mount with Removable Base
      A) 6" diameter x 45" high.
   3) Embedded Security Core:
      A) 6" diameter x 45" high.

4. Mounting (Choose one below):
   a. Standard: Surface Mount with J-bolts: .50" thick base plate, slotted for rotational capability.
      Provide stainless steel cover and necessary hardware, template available upon request.
   b. Optional: Removable Base (not available with RGBW LED option): .50" thick base plate
      with 1/2"-13 x 5" epoxy anchors, slotted for rotational capability, and lock hasp. Provide
      stainless steel cover and anchor bolts.
   c. Optional: Embedded Security Core (not available in Series 500 or RGBW LED).

5. RGBW Requirements
   a. DMX512 protocol via onboard decoder.
   b. DMX 512 compatible controller required (provided by others).

Part 3  Execution

01. Examination
   A. Verify that substrates are stable and capable of supporting the weight of items covered under this
   section.
   B. Verify that substrates have been adequately prepared to securely anchor those items that will be
   surface mounted.

02. Installation
   A. Install according to the manufacturer’s installation instructions.
   B. Install in conformance to applicable ADA guidelines and End User’s established Accessibility
   policies.

END OF SECTION