

# **SECTION 32 17 40 – Exterior Improvements - Walk, Road, and Parking Specialties**

## **Flexible Post System for Signs, Bollards, Delineators**

### **PART 1 GENERAL**

#### **1.01 WORK INCLUDED**

Work under this item shall consist of furnishing and installing signpost base, post, and specified anchoring method in accordance with the locations, dimensions, lines, grades, and design specified in the contract documents, approved drawings, and this written specification. Signs, Mailboxes, Bollard covers, or other specialty mounted items may be included as well. Please refer to scope of work listed in bidder's instructions.

#### **1.02 RELATED SECTIONS**

Section 10 14 00	Signage
Section 10 55 00	Postal Specialties
Section 11 12 00	Parking Control Equipment
Section 12 93 00	Site Furnishings
Section 32 19 00	Traffic Signs and Signals
Section 32 30 00	Site Improvements
Section 32 41 00	Bollards
Section 34 41 16	Traffic Control Equipment

#### **1.03 SYSTEM DESCRIPTION**

Flexible Post System shall be designed to support signage, bollard sleeves, mailboxes, or delineators for site safety and security needs, while providing extended usage as it can withstand repeated low velocity impacts from vehicles. This system provides many installation methods to accommodate varying site conditions. Concrete, Asphalt, or ground installation can be selected to ensure a proper install for every site condition. Drill free options utilizing adhesives are available as well. A variety of brackets and sizes allow for varied options of sign or bollard choices.

#### **1.04 QUALITY ASSURANCE**

During assembly and packaging, each component is thoroughly inspected for specification compliance and consistent manufacture. Once on site, the product Installers must have experience installing these products or similar products.

#### **1.05 STANDARDS AND REFERENCES**

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ASTM A36 – Carbon Structural Steel

ASTM A229 - Standard Specification For Steel Wire, Quenched And Tempered For Mechanical Springs

ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy Coated (Galvannealed) by the Hot-Dip Process

ASTM D7803 – Preparation of Zinc (Hot-Dip Galvanized) Coated Iron and Steel Product and Hardware Surfaces for Powder Coating

ASTM A500 – Steel Structural Tubing in Rounds and Squares

#### **1.06 SUBMITTALS**

##### **A. Shop Drawings**

- a. Standard product drawings of a single unit post with specification including all dimensions, details, and finishes.
- b. Detailed installation instructions to accommodate any site condition.
- c. Site layouts and placement as per Architectural Site Plan or Parking Plan.

##### **B. Samples (if required)**

- a. Samples are not provided, but a single unit may be purchased for review prior to placement of complete order, if required.

#### **1.07 PRODUCT HANDLING AND STORAGE**

##### **A. Handling**

- a. Product to be handled with care to avoid breakage or damage.

##### **B. Storage**

- a. Proper storage includes ventilation, drainage, as well as protection from weather, vandalism, theft, corrosive elements (salt, glycol, solvents, etc.) and any other mitigating factors present.

##### **C. Delivery and Acceptance**

- a. Delivery to be done by typical freight and carrier options. Upon receipt of material, visual inspection to insure no damage or defects.

#### **1.08 WARRANTY**

Includes 30-day full unconditional warranty. Extended 1-year product warranty with limitations as detailed in the manufacturer’s warranty statement. Product registration is required.

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### PART 2 PRODUCT DETAILS and MATERIALS

#### 2.01 MANUFACTURER

Must thoroughly meet the specification requirements.

#### 2.02 MATERIAL COMPONENTS

- A. Base Plate with Support Tube
  - a. 9" x 9" x .183" base plate with 4 each .75" holes placed 1" from 1" radius corner. 1.69" hole placed center of plate to accept 1.67" Tube x .27" wall x 3.43" long fully welded.
- B. Torsion Spring and Attachment Bolts
  - a. ½" ASTM A229 SPRING STEEL x 8.9" long.
  - b. ½" – 13 x 3" Tap Bolt, Zinc; with ½" x 1.375" Flat Washer, Zinc; and ½" – 13 Lock Nut, Zinc
- C. Standard Signpost or interior bollard post
  - a. 1 5/8" round .055" wall galvanized posts – Length as shown on drawings – Standard post is 6' or 8' long (78" or 102" finish height) for signs and 32" or 52" for bollard post only
- D. Double Sided Sign Bracket Kit
  - a. Includes per Post Kit –
    - i. 2 Square face sign brackets with 4 set screws and 4 Lock nuts to attach sign to set screw. Fully adjustable longitudinally along post to accommodate signs with 2 holes placed on center line. Sign can be installed on either or both sides.
- E. Ground anchor options (Please specify or determine based on field conditions)
  - a. Concrete Anchors
    - i. Standard Option - ½" x 4" screw in style galvanized anchors
    - ii. Heavy Duty Option for ½" x 4" SS threaded rod with epoxy
    - iii. Lighter Duty Option for ½" x 4" Mechanical Anchor
  - b. Asphalt Anchors
    - i. Standard Option – ½" x 5" Zinc Coated Steel Bolts and Washers with plastic Receiver Plug. Designed to fasten to all typical asphalt surfaces.
    - ii. Heavy Duty Asphalt Option - Zinc coated heavy-duty 6" long 3/8" female thread, asphalt anchors with bolt/washer. Pull-tested to resist 1,500 lbs. of force in asphalt. Expanding concrete included (2 bags).
  - c. Adhesive –High strength polyurethane adhesive, designed to adhere all units to new and bare concrete surfaces.
  - d. Ground Stake – 18" long black powder coated steel X style ground spike (can be placed into typical concrete poured foundation as well to provide a factory finish stem and attachment point.)
- F. Add Options (Please Specify or see drawings)
  - a. Bollard Sleeve Either stand alone as bollard or predrilled for signposts
    - i. 32" or 52" x 7" Diameter HDPE Bollard with Reflective Tape

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1. Bollard sleeve is available in Red, Yellow, Blue, Black
  2. Tape Stripe is available in Red, Orange, Yellow, Blue, Black, White
  3. All bollards include foam insert for placement around interior support post
  4. All bollards integrated with sign posts include 2.25" Aluminum Collar ring with set screw
  5. All standalone bollards include a custom Anti-Rotational Cap with set screw and attachment screw.
- b. Post Sleeve - Fits standard 6' or 8' posts
    - i. Brightly colored, UV resistant HDPE
    - ii. Available in Red, Yellow, Blue, Black, Grey, White,
  - c. Spring Cover – 18" Black HDPE Spring cover for Standard Post
  - d. Signs (See drawings)

#### 2.03 PERFORMANCE CRITERIA / QUALITY CONTROL

- A. Testing
  - a. All components produced and tested to the standards as purchased to the relative product standard at the point of manufacturer for each item.
- B. Inspection, Repair, and Rejection
  - a. The quality of materials, the process of assembly, and the finished units shall be subject to inspection by the Factory Foreman prior to shipment.
  - b. Any item found deficient in appearance or quality will be discarded. This includes -
    - i. Variations that substantially deviate from the approved model.
    - ii. Dimensions not conforming with tolerance of +/- 1/4" of any specified dimension.
    - iii. Any Defects, which would affect the structural integrity of the unit.
  - c. Small coating defects or minor handling marks to be touched up in factory prior to shipping.
- C. Handling, Storage, and Shipment
  - a. Care shall be taken during storage, transporting, and handling of all units to prevent damage.
- D. Field Performance
  - a. Deflection data
    - i. The following Degree of Deflection requires the subsequent force in Foot Pounds
      1. 10 degree – 26 ft/lbf
      2. 20 degree – 30 ft/lbf
      3. 25 degree – 32 ft/lbf
      4. 35 degree – 35 ft/lbf
      5. 40 degree – 40 ft/lbf

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6. 45 degree – 45 ft/lbf
- ii. The following wind speeds will produce subsequent deflection
  1. 30 MPH – 3 degrees
  2. 45 MPH – 5 degrees
  3. 75 MPH – 9 degrees

#### **PART 3 EXECUTION**

##### **3.01 PREPARATION**

- A. Site Grading and Preparation
  - a. Surface shall be clean and free of obstruction or debris.
- B. Determine ground anchor option – See material component descriptions
  - a. Concrete Anchors – Used when anchoring to concrete surface minimum 4” thick
  - b. Asphalt Anchors – Used when attaching to asphalt surface minimum 3” thick
  - c. Adhesive – Used when anchoring to smooth surface where drilling or material breach is prohibited. Verify performance capability for composition of the material you are anchoring to. Some wood, composite, or coated concrete may not work with adhesives.
  - d. Ground Stake – Used for anchoring to earth, gravel, or other natural surface, either driven or inserted into a cylindrical foundation.

##### **3.02 INSTALLATION AND SETUP**

- A. Install desired anchor system, plates, assemble post and attach any above grade chosen options as per manufacturer’s standard installation instructions.
- B. Tolerances
  - a. +/- 1/8” to any prescribed dimensions

##### **3.03 FIELD REPAIRS AND QUALITY CONTROL**

- A. Cosmetic repairs can be made at the site using the following methods and materials
  - a. Clean surfaces
  - b. Use Matte Black touch up Paint Pen or galvanized pen where required for coating breaches
  - c. Use Matte Black Spray Paint or Galvanized Spray Paint only when necessary, being sure to protect adjacent assets and property from overspray.

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#### **3.04 CLEANING AND MAINTENANCE**

Once installed, the Flexible Post System requires minimal maintenance. Make sure product is free from external debris to ensure an extended life span, this includes animal droppings, tree sap, and other environmental factors. Also making sure and vegetation is not growing underneath, immediately adjacent to, or upon the posts. Inspect semi annually for damage and performance. Pushing on the post with minimal force will demonstrate a working spring and properly attached post and signs. Inspect surfaces to identify potential unknown strikes and cosmetic or structural damage. Defective or damaged parts should be immediately replaced.

**END OF SECTION**