

# TWO-PIECE FLEXIBLE DELINEATOR SPECIFICATION

## SURFACE MOUNT TWIST LOCK POST

### 1.0 DESCRIPTION

The two-piece delineator post shall consist of a flexible, surface mounted post made from durable, non-discoloring polyethylene plastic to which reflective sheeting is applied, and a thermoplastic base which is secured to the pavement with epoxy or a butyl pad. The post shall be capable of recovering from repeated vehicle impacts. The post shall insert and be secured into the plastic base by twist lock feature of the base. It is required that when the post is no longer serviceable, it can be removed and a new post can be manually inserted into the existing twist lock base. The posts are to be of a size and have a locking mechanism compatible with the bases in service. Posts that are not compatible will be rejected for use.

### 2.0 GENERAL REQUIREMENTS

The post shall be tubular in shape and two and one-quarter ( $2\frac{1}{4}$ ) inches in diameter. A one and three quarter ( $1\frac{3}{4}$ ) inch diameter interior reinforcement tube shall be located and secured in the lower portion of the post. The upper 14 inches shall be flattened to an oval shape at least three (3) inches in width at the major axis by one (1) inch at the minor axis. The total above ground height of the post shall be delivered as required. The post shall be white in color and resistant to ultraviolet and infrared radiation.

Reflective sheeting per Federal Highway Specification FP-92, Type III, Class 2 shall be applied to the flattened area. The post shall be capable of providing 360 degree visibility by applying reflective sheeting to the round portion of the post. The reflective sheeting shall be white (silver) or yellow (amber) in color and applied to one or both sides of the flattened area and the round portion as required.

### 3.0 PERFORMANCE REQUIREMENTS

A. **HEAT RESISTANCE:** Three (3) posts shall be conditioned in a test chamber for 4 hours at  $150 \pm 3$  degrees F. The posts shall be bent 180 degrees at their midpoint around a 2 inch diameter mandrel. The posts shall be bent 10 times within one and one half minutes after removal from the chamber and return to within 10 degrees of their original position within 10 seconds after the last bend. Any post cracking, splitting, or not returning to within 10 degrees in the allotted time constitutes a failure.

B. **COLD RESISTANCE:** Three (3) posts shall be conditioned in a test chamber for 24 hours at  $-20 \pm 3$  degrees F. The posts shall be bent 90 degrees at their midpoint around a 2 inch diameter mandrel. The posts shall be bent 10 times within one and one half minutes after removal from the chamber and return to within 10 degrees of their original position within 10 seconds after the last bend. Any post cracking, splitting, or not returning to within 10 degrees in the allotted time constitutes a failure.

C. **VEHICLE IMPACT PERFORMANCE:** Ten (10) posts shall be impacted at 55 to 60 mph by a typical passenger sedan weighing approximately 3500 lbs. and having no unusual sharp hood ornaments or other projections. Each post shall be impacted 5 times with bumper hits and 5 times with combined bumper/direct wheel hits at both  $85 \pm 5$  degrees F and  $32 \pm 5$  degrees F for a total of 20 impacts per post. Five of the ten posts shall be tested head on (0 degrees) and five posts shall be tested at an angle 45 degrees to head on. At the conclusion of both high and low temperature testing, at least 4 of the 5 head on and 4 of the 5, 45 degree angle tested posts shall remain intact, securely anchored, return to their original vertical orientation within an angle of  $\pm 10$  degrees and retain a minimum of 50% of the total initial reflective sheeting.

D. **HIGH TEMPERATURE RESISTANCE:** Three posts shall be placed in a  $180 \pm 3$  degrees F test chamber. They shall be sufficiently rigid to withstand two hours at this temperature without wilting. Any post observed to wilt shall constitute a failure.

E. **LOW TEMPERATURE RESISTANCE:** Three posts shall be conditioned in a test chamber for four hours at  $-20 \pm 3$  degrees F. A steel dart with a one inch hemispherical end, weighing five pounds, shall be dropped a distance of five feet through a virtually frictionless vertical guide to impact the surface of the post. The post shall be struck at the midpoint by the steel dart. The post shall be in a horizontal position and supported only at the ends. The height of the supports shall be such that the post will not be sandwiched against any surface by the impact. The posts shall be subjected to five impacts. Each impact must be completed within 30 seconds after removal from the chamber and the post must be returned to the chamber for a minimum of one hour between impacts. Fracturing, cracking or splitting of any of the posts shall constitute a failure.

F. **STATIC RIGIDITY:** Three posts 36 inches in length shall be tested by suspending a five pound weight at the free end. The posts shall be cantilevered horizontally with the weight within two inches from the unsupported end. Any post with a deflection greater than 60 degrees from horizontal shall constitute a failure. The test shall be conducted at  $77 \pm 5$  degrees F.

G. **COLORFASTNESS:** The post shall be exposed to 1000 hours weatherometer exposure per ASTM G53 or equivalent test. Significant yellowing, darkening, fading or changes in average tensile strength or elongation greater than 35% shall constitute a failure.

H. **CERTIFICATION:** Test reports shall be certified by a professional engineer and be made available upon request.