XX006522 FURNISH WITNESS POST (LCDOT) For use on LCDOT let projects only - do not include in IDOT let projects. Delete this note from the Contract Specifications.

Effective: August 1, 2011
Revised: December 18, 2019

Description: This item consists of furnishing witness posts for installation by the Lake County Division of Transportation.

Materials: The markers shall be the either the CBM-250 Boundary/Id Marker manufactured by Carsonite; the Vikimatic Fiberglass Marker manufactured by ACP International; or an approved equal. The posts shall be white in color and six feet long with the specified decal applied.

The Carsonite Markers can be purchased from:

- Berntsen, 800-356-7388, (Ordering data: CBM2507201 with decal 5566-ROWSM applied).
- Traffic Safety Supply Co., 503-235-8531, (Ordering data: 11600100 with decal 5566ROWSM applied).

The Vikimatic 2-sided Fiberglass Markers can be purchased from:

- TVC Communications, 888-644-6075, (Ordering data: ACP-072 white with LCDOT Decal applied).

The following are the minimum material, mechanical and performance requirements for the Carsonite CBM-250 Composite Marker and reflect the minimum specifications that an equivalent marker shall meet.

The post shall be a single piece marker capable of simple, permanent installation by one person using a manual-driving tool. The marker upon proper installation shall resist displacement from wind and vehicle impact forces. It shall be of a constant “T” cross sectional design which provides a flat surface for sheeting application and a reinforcing rib incorporated longitudinally along the back midsection to provide structural rigidity. The bottom end of the marker shall be pointed for ease of ground penetration.

The post shall be constructed of a durable, UV resistant continuous glass fiber and resin reinforced, thermosetting composite material which is resistant to impact, ozone and hydrocarbons within a service temperature range of –40°F to +140°F.

The post shall exhibit good workmanship and shall be free of burns, discoloration, cracks, bulges or other objectionable marks which would adversely affect the marker’s performance or serviceability.

A black line shall be stamped horizontally across the front of the marker near the bottom to indicate proper burial depth. A minimum burial depth of 18" is required.

The post shall conform to the shape and overall configuration shown in the standard detail drawing. The post shall be 2.6" wide in order to accommodate a 2.5" wide decal and provide adequate daytime delineation.

The post shall have the following minimum mechanical properties:

PROPERTY VALUE	ASTM TEST METHOD	MINIMUM
Ultimate Tensile Strength	*D-638*	*50,000 psi*
Ultimate Compressive Strength	*D-638*	*45,000 psi*
Specific Gravity	*D-792*	*1.7*
Weight & Glass Reinforcement	*D-2584*	*50%*
Barcol Hardness	*D-2583*	*47*

The post shall be pigmented throughout the entire cross-section so as to produce a uniform color as an integral part of the material. Ultraviolet resistant materials shall be incorporated in the construction to inhibit fading or cracking of the marker upon field exposure.

The post shall have a maximum free end deflection of 4" when tested as follows:

> The Deflection tests shall consist of a two-pound load suspended from one end of the post while the other end is clamped to a support in cantilevered fashion. Horizontally, the distance from the fulcrum to the weight shall be 48 inches. The maximum allowable free end deflection shall be 4".

The post shall not fracture, crack or split when subjected to the following cold impact tests:

> The post shall be conditioned a minimum of two hours at –40°F ± 3°F. A minimum two-pound spherical weight shall be dropped a distance of five feet through a virtually frictionless vertical guide to impact the surface of the marker at midsection. The surface of the post being struck by the steel ball shall be in a horizontal position with the marker supported and held in position at both ends. The marker shall be subjected to five impact tests concentrated near the middle of the marker within 10 minutes from the removal from the environmental chamber. Fracturing, cracking, or splitting of the posts shall constitute failure.
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> A second marker after conditioning shall be struck flush against a flat solid surface three times within two minutes after removal from the conditioning chamber. To strike the delineator it should be manually swung through a 90° arc. The marker shall not fracture or shatter upon impact.

The post shall be self-erecting and remain functional after being subjected to an impact by a typical passenger sedan at 35 mph without substantially damaging the vehicle.

Before delivery the manufacturer shall apply a pressure sensitive vinyl reflective decal to the post.

The applied decal shall be as shown on the LCDOT standard LC6650 and meet the following general requirements for the materials of construction; and the mechanical and physical properties for reflective and non-reflective pressure-sensitive decals.

The decal shall consist of either cast vinyl or acrylic/urethane retro-reflective sheeting, which has been printed with UV-stabilized inks for outdoor application. The decal shall have a high tack, aggressive, permanent, pre-applied layer of pressure-sensitive adhesive, protected by a removable release film.

UV Shield® over-laminating film shall be applied to the decal for long term ultraviolet and abrasion protection. Clear coating shall not be allowed as a substitute for the UV Shield®.

The decal shall exhibit good workmanship and shall be free of visible cracks, burns, discoloration, foreign inclusions or other objectionable marks that would affect its performance.

The maximum allowable width for decals shall be 5”. The minimum total decal thickness with adhesive and UV Shield® shall not be less than four mils for vinyl decals and six mils for reflective decals. Both decal styles shall consist of a minimum adhesive thickness of one mil.

The clear UV Shield® over-laminating film shall be a minimum of 0.75 mils in thickness.

Decals shall exhibit negligible color change, legend fading, blistering, or edge curl upon exposure to ultra-violet light. Decal appearance and adhesion shall not be appreciably affected over a temperature range of –40°F to +140°F and shall allow for application at temperatures above 40°F.

The decals shall exhibit no effect when applied to a clean fiberglass composite and immersed in water or SAE 20 motor oil for 24 hours at 73°F.

The decals shall exhibit a minimum of 4.5 lb./in. when tested for adhesion by 180° pullback at 12 in./min. after application and conditioning to a clean aluminum surface of 73°F ± 5°F for 24 hours.

The minimum decal tensile strength shall be 4.5 lb./in. at 73°F when measured at 12-in./min. jaw separation. The minimum decal elongation shall be 40% at 73°F when measured at above condition.

Basis of Payment: This work will be paid for at the contract unit price per each for FURNISH WITNESS POST. *The unit price shall include all equipment, materials and labor required to furnish the witness posts.*