



## Florida Department of Transportation

CHARLIE CRIST  
GOVERNOR

605 Suwannee Street  
Tallahassee, FL 32399-0450

STEPHANIE KOPELOUSOS  
SECRETARY

July 14, 2010

Monica Gourdine  
Program Operations Engineer  
Federal Highway Administration  
545 John Knox Road, Suite 200  
Tallahassee, Florida 32303

Re: Office of Design, Specifications  
Section 972  
Proposed Specification: **9720300 Recycled Plastic Products - Materials.**

Dear Ms. Gourdine:

We are submitting, for your approval, two copies of the above referenced Supplemental Specification.

These changes were proposed by Chester Henson of the State Roadway Design Office. The material requirements for recycled plastic fence posts have been moved to Design Standard Index 801, and the material requirement for recycled flexible delineators have been moved to Section 993.

Please review and transmit your comments, if any, within two weeks. Comments should be sent via Email to ST986RP or rudy.powell@dot.state.fl.us.

If you have any questions relating to this specification change, please call Rudy Powell, State Specifications Engineer at 414-4280.

Sincerely,

Rudy Powell, Jr., P.E.  
State Specifications Engineer

RP/cah

Attachment

cc: Gregory Jones, Chief Civil Litigation  
Florida Transportation Builders' Assoc.  
State Construction Engineer

**RECYCLED PLASTIC PRODUCTS.****(REV ~~75-817-10~~)**

ARTICLE 972-1 (Page 936) is deleted and the following substituted:

**972-1 Description.**

~~Recycled plastic products used shall be included on the Qualified Products List. Manufacturers seeking evaluation of their product shall submit an application in accordance with Section 6 and include certified test reports from an approved independent test laboratory that shows the material meets all specifications herein and the manufacturer shall certify the following:~~

- a. The source of the recycled plastic waste, including the state (FL, GA, etc.) from which the recycled plastic was obtained, and type of waste (consumer or industrial).
- b. The total percent of recycled plastic in the final product.

ARTICLE 972-3 (Page 937) is deleted and the following substituted:

**972-3 Materials.**

The materials used for recycled plastic products shall consist of a minimum of 70% by weight of recycled plastic. The products shall exhibit good workmanship and shall be free of burns, discoloration, contamination, and other objectionable marks or defects which affect appearance or serviceability. Only chemicals, including fillers and colorants, designed to inhibit photo degradation, biological/biochemical decomposition, insect infestation, or burning will be permitted to enhance durability. The use of sufficient additives to inhibit photo degradation over the lifetime of the product is required.

~~**972-3.1 Fence Posts:** The posts shall be brown, approximating tree bark, to blend with the surroundings. They shall have no cracking, chipping, flaking, peeling or splintering in the final product. The product shall contain no more than 20% voids, by weight, over its length.~~

~~**972-3.2 Delineator Posts:** The product shall contain no more than 51% voids, by weight, over its length.~~

ARTICLE 972-4 (Page 937-938) is deleted:

~~**972-4 Physical Requirements.**~~

~~**972-4.1 Line Post Physical Requirements:**~~

~~**972-4.1.1 Minimum dimensions for line posts:**~~

~~Length: 8 feet.~~

~~Cross-section (Round post): 4 inch diameter;~~

~~Cross-section (Square post): 4 by 4 inch minimum.~~

~~**972-4.1.2 Straightness:** The straightness of the post shall comply with 954-5 for timber fence posts.~~

~~972-4.1.3 Flexural Strength:~~ The post shall meet the requirements of the latest edition of the Southern Pine Inspection Bureau's Standard Grading Rules for Southern Pine Lumber for No. 2SR Stress Rated Grade Timber.

~~972-4.1.4 Surface Finish:~~ The post shall exhibit a homogeneous and smooth surface finish and be relatively free of indents or other surface imperfections.

~~972-4.2 Delineator Post Physical Requirements:~~

~~972-4.2.1 Marking:~~ The top of the post on the side away from traffic shall be date stamped showing the month and year of fabrication. The numerals shall be at least 1/2 inch in height and shall be either die stamped or legibly stamped with permanent ink.

~~972-4.2.2 Dimensions:~~ The post shall have a minimum width of 3 inches facing traffic and of such length to generally provide a height of 48 inches above the pavement surface.

~~972-4.2.3 Color:~~ The post shall be opaque white. The yellowness index shall not exceed 12 when tested in accordance with ASTM D 1925 or ASTM E 313. The daylight 45 degree, 0 degree luminous directional reflectance shall be a minimum of 70 when tested in accordance with ASTM E 1347.

~~972-4.2.4 Retroreflective Sheeting:~~ The reflective sheeting shall be Types III, IV, V or VII and meet the requirements of Section 994. The reflective sheeting shall have a minimum width of 3 inches and have a minimum area of 30 inch<sup>2</sup>.

~~972-4.2.5 Heat Resistance:~~ The post shall be conditioned a minimum of two hours in an oven at 140 ± 30°F. The conditioned post shall be capable of straightening itself within 30 seconds when bent 180 degrees at the midpoint for each of four bends. The test on each post shall be completed within two minutes of removal from oven.

~~972-4.2.6 Cold Resistance:~~ The post shall be conditioned a minimum of two hours at 5 ± 3°F in an environmentally controlled test chamber. Testing shall be performed in the environmental chamber.

~~972-4.2.7 Impact Resistance:~~

~~(1) The post shall not be adversely affected when a device approximately at the center of the post, bends the free half of the post to a 90 degree angle with the remaining section being held stationary. The post shall return to its original shape within 60 seconds for each of four separate bends.~~

~~(2) A steel ball weighing 2 pounds shall be dropped a distance of 5 feet through a virtually frictionless vertical guide to impact the surface of the post. The surface of the post being struck by the steel ball shall be in a horizontal position with the post supported and held in position at both ends. The post shall be subjected to five impact tests concentrated near the middle of the post. Fracturing, cracking or splitting of the post shall constitute failure.~~

~~972-4.2.8 Impact Performance:~~ The post, installed according to manufacturer's recommendations, shall be capable of returning to a vertical position ±5 degrees and remain serviceable after receiving ten vehicle impacts at 55 mph at a 20 degree angle. The ambient temperature must be no less than 40°F.

~~972-4.2.9 Resistance to Herbicides:~~ The posts shall be sprayed or receive a coating of the herbicide(s) currently being used by the Department, and this coating shall remain on the posts for a minimum of 48 hours and then thoroughly rinsed. The

~~posts shall show no significant change in color, flexibility, nor integrity when subjected to this herbicide exposure.~~

ARTICLE 9-5 (Page 938) is deleted:

**~~972-5 Predicted Service Life.~~**

~~———— In service line posts shall provide a minimum acceptable performance life of 35 years. Conditions to be considered in establishing the minimum acceptable performance life shall include, but are not limited to, the following:~~

- ~~———— a. Insect infestations, especially by fire ants and termites causing a weight reduction resulting in a loss in strength exceeding 10% of its original strength.~~
- ~~———— b. Rotting or erosion due to soil micro organisms.~~
- ~~———— c. Any cracks, breaks or stress cracks.~~
- ~~———— d. Water uptake exceeding 10% by weight of its original weight over its predicted lifetime.~~
- ~~———— e. Non-flammability retarded susceptibility to burning via appropriate additives.~~
- ~~———— f. Straightness as noted in 972-4.2.~~

~~———— The test methods to comply with the above shall be in accordance with FM 5-557.~~

ARTICLE 972-6 (Page 939) is deleted and the following substituted:

**972-6~~4~~ Sampling.**

One additional product per 1,000, or a minimum of one per order shall be included in the order for Department testing.

**RECYCLED PLASTIC PRODUCTS.****(REV 7-8-10)**

ARTICLE 972-1 (Page 936) is deleted and the following substituted:

**972-1 Description.**

Recycled plastic products shall include certified test reports from an approved independent test laboratory that shows the material meets all specifications herein and the manufacturer shall certify the following:

- a. The source of the recycled plastic waste, including the state (FL, GA, etc.) from which the recycled plastic was obtained, and type of waste (consumer or industrial).
- b. The total percent of recycled plastic in the final product.

ARTICLE 972-3 (Page 937) is deleted and the following substituted:

**972-3 Materials.**

The materials used for recycled plastic products shall consist of a minimum of 70% by weight of recycled plastic. The products shall exhibit good workmanship and shall be free of burns, discoloration, contamination, and other objectionable marks or defects which affect appearance or serviceability. Only chemicals, including fillers and colorants, designed to inhibit photo degradation, biological/biochemical decomposition, insect infestation, or burning will be permitted to enhance durability. The use of sufficient additives to inhibit photo degradation over the lifetime of the product is required.

ARTICLE 972-4 (Page 937-938) is deleted:

ARTICLE 9-5 (Page 938) is deleted:

ARTICLE 972-6 (Page 939) is deleted and the following substituted:

**972-4 Sampling.**

One additional product per 1,000, or a minimum of one per order shall be included in the order for Department testing.