



## Florida Department of Transportation

**CHARLIE CRIST**  
GOVERNOR

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**STEPHANIE KOPELOUSOS**  
SECRETARY

August 11, 2008

Dr. Leslie McCarthy, PhD, P.E.  
Program Operations Engineer  
Federal Highway Administration  
545 John Knox Road, Suite 200  
Tallahassee, Florida 32303

Re: Office of Design, Specifications  
Section 700  
Proposed Specification: 7000202-Highway Signing

Dear Dr. McCarthy:

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

Please review and transmit your comments, if any, within four 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 414-4110.

Sincerely,

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

RP/dm

Attachment

cc: Gregory Jones, General Counsel  
Florida Transportation Builders' Assoc.  
State Construction Engineer

**HIGHWAY SIGNING-SIGN ASSEMBLY DESIGN REQUIREMENTS.****(REV 11-9-07 REV 6-12-08) (FA 12-19-07) (7-08)**

SUBARTICLE 700-2.2 (of the Supplemental Specifications) is deleted and the following substituted:

**700-2.2 Sign Panels:** *All sign panels shall be aluminum unless otherwise designated in the plans.*

~~Use either aluminum or galvanized steel for any sign panel shown in the plans, regardless of its mounting type.~~

~~\_\_\_\_\_ If using galvanized steel for the sign panels, provide the same dimensions, including the thickness, as those shown in the Contract Documents for aluminum.~~

Fabricate standard sign panel messages in accordance with details included in the Standard Highway Signs Manual published by the U.S. Department of Transportation. The Engineer will not require the submittal of shop drawings for these signs or for non-standard sign panels and messages fabricated in accordance with details shown in the plans. Submit seven copies of shop drawings indicating detailed layout of the sign legend, spacing, and border for all other signs to the Engineer prior to fabrication.

If the size of a sign is not specified in the plans, provide the size sign for conventional roadways as shown in the MUTCD.

SUBARTICLE 700-3.9 (of the Supplemental Specifications) is deleted.

~~**700-3.9 Demountable Sign Face Materials:** For demountable sign face materials, meet the requirements of Section 995.~~

ARTICLE 700-4 (of the Supplemental Specifications) is deleted and the following substituted:

**700-4 Preparation of Sign Blanks.****700-4.1 De-greasing and Etching for Aluminum Sign Blanks:**

**700-4.1.1 General:** Prior to the application of reflective sheeting, use any of the methods shown below to de-grease and etch the aluminum sign blanks.

**700-4.1.2 Hand Method:** Under this method, de-grease and etch the blanks in one operation, using steel wool (medium grade) with any of the following combinations of materials:

(1) An abrasive cleanser of a commercial grade kitchen scouring powder.

(2) Acid and a suitable detergent solution.

(3) An alkaline solution.

Thoroughly rinse the blanks with clean water following all hand de-greasing operations.

**700-4.1.3 Power-Washer Method:** Under this method, de-grease the blanks with an inhibited alkaline cleanser, by spraying for 90 seconds with the solution between 135 and 249°F, the exact temperature to be as recommended by the manufacturer of the cleanser. After the spraying, rinse the blanks with clean water. Then etch the blanks by immersing them in a 6 to 8% solution of phosphoric acid at a temperature of 100 to 180°F for 60 seconds. After immersion, rinse the blanks in clean water.

**700-4.1.4 Immersion Method:** Under this method, de-grease the blanks by immersing them in a solution of inhibited alkaline cleanser at a temperature between 160 and 180°F for three to five minutes, and then rinsing with clean water. Then etch blanks by immersing them in a 6 to 8% solution of phosphoric acid at a temperature of 100°F for three minutes. After immersion, rinse the blanks in clean water.

**700-4.1.5 Vapor De-greasing Method:** Under this method, de-grease the blanks by totally immersing them in a saturated vapor of trichloroethylene. Remove trademark printing with lacquer thinner or a controlled alkaline cleaning system.

**700-4.1.6 Alkaline De-greasing Method:** De-grease the blanks by totally immersing them in a tank containing an alkaline solution, controlled and titrated in accordance with the solution manufacturer's directions. Adapt immersion time to the amount of soil present and the thickness of the metal. After immersion, thoroughly rinse the blanks with running water.

**700-4.1.7 Etching Method when De-greasing is Separate Operation:** If using either of the de-greasing methods described under 700-4.1.5 and 700-4.1.6, accomplish etching by one of the following alternate methods:

(1) Acid Etch: Etch well in a 6 to 8% phosphoric acid solution at 100°F, or in a proprietary acid etching solution. Rinse thoroughly with running cold water, which may be followed by a hot water rinse.

(2) Alkaline Etch: Etch aluminum surfaces in an alkaline etching material that is controlled by titration. Meet the time, temperature, and concentration requirements specified by the solution manufacturer. After completing etching is complete, rinse the panel thoroughly.

~~**700-4.2 Preparation of Surface for Steel Sign Blanks:** Clean and prepare galvanized steel sign blanks for painting or for application of reflective sheeting in accordance with the recommendations of the manufacturer of the material to be applied to the sign blanks.~~

~~**700-4.3.2.2 Drying:** Dry the panels using a forced-air drier. Use a device or clean canvas gloves, to handle the material between all cleaning and etching operations and the application of reflective sheeting. Do not allow the metal to come in contact with greases, oils or other contaminants prior to the application of reflective sheeting.~~

~~**700-4.4.3 Fabrication of Sign Blanks:** Fabricate all metal parts to ensure a proper fit of all sign components. Complete all fabrication, with the exception of cutting and punching of holes, prior to metal de-greasing and applying the reflective sheeting. Cut metal panels to size and shape and keep free of buckles, warp, dents, burrs, and defects resulting from fabrication. Provide all sign panels with a flat surface. Where signs are to be fabricated from galvanized steel, cut the plates to the required size and drill prior to galvanizing.~~

SUBARTICLE 700-6.1 (of the Supplemental Specifications) is deleted and the following substituted:

**700-6.1 Manufacturer's Certification and Recommendations:** ~~Ensure that the sign manufacturer provides producer's certifications of materials incorporated into the signs.~~ Ensure that the sign manufacturer certifies that the delivered signs conform to this Section and provides recommendations for storing and repairing signs.

ARTICLE 700-10 (of the Supplemental Specifications) is deleted and the following substituted:

***700-10 Overlay Existing Sign Panels.***

*Use 0.040-inch thick aluminum sheeting for overlays larger than 3 square feet placed on a sign panel. Replace hex head bolts on the sign surface using stainless steel flat head machine screws with nuts and lock washers to give a flat surface for the overlay panel. Install the overlay panels starting at the edge away from traffic. Place each panel against the sign using a clamp at the top to hold the panel in place. Drill 1/8-inch holes 1-inch inside the panel edge every 6-inches to 8-inches and install 1/4-inch to 3/8-inch length pop rivets. Install additional rivets along the outer edge 6-inches to 8-inches. Place the remaining panels using the same procedure with the overlap in the direction away from the traffic and with rivets along the overlap on 12-inch centers.*

ARTICLE 700-11 (of the Supplemental Specifications) is deleted and the following substituted:

**700- ~~10~~11 Method of Measurement.**

The quantities to be paid for will be:

- (1) The number of ground traffic signs of each designated class of assembly, complete.
- (2) The number of lighted overhead traffic signs of each designated class of assembly, complete.
- (3) The number of existing signs removed, relocated, modified of each designated class of assembly, complete.
- (4) The number of overhead signs span wire mounted, bridge mounted, and lighted sequential, of each designated class of assembly, complete.

For the purpose of payment, a sign assembly consists of all the signs mounted on a single structure (one, two or three posts, or overhead structure) or all the signs on a bridge mounted sign structure and the sign structure.

SECTION 700 (of the Supplemental Specifications) is expanded by the following:

**700-11~~12~~ Basis of Payment.**

Price and payment will be full compensation for furnishing and installation of all materials necessary to complete the signs in accordance with the details shown in the plans; including sign panels complete with sheeting, painting, and message; sign posts and supports, footings, excavation, etc.; for the lighted signs, all costs of the electrical installation for lighting, up to the point of connection by others; and all other work specified in this Section, including all incidentals necessary for the complete item.

**HIGHWAY SIGNING-SIGN ASSEMBLY DESIGN REQUIREMENTS.  
(REV 6-12-08)**

SUBARTICLE 700-2.2 (of the Supplemental Specifications) is deleted and the following substituted:

**700-2.2 Sign Panels:** All sign panels shall be aluminum unless otherwise designated in the plans.

Fabricate standard sign panel messages in accordance with details included in the Standard Highway Signs Manual published by the U.S. Department of Transportation. The Engineer will not require the submittal of shop drawings for these signs or for non-standard sign panels and messages fabricated in accordance with details shown in the plans. Submit seven copies of shop drawings indicating detailed layout of the sign legend, spacing, and border for all other signs to the Engineer prior to fabrication.

If the size of a sign is not specified in the plans, provide the size sign for conventional roadways as shown in the MUTCD.

SUBARTICLE 700-3.9 (of the Supplemental Specifications) is deleted.

ARTICLE 700-4 (of the Supplemental Specifications) is deleted and the following substituted:

**700-4 Preparation of Sign Blanks.**

**700-4.1 De-greasing and Etching for Aluminum Sign Blanks:**

**700-4.1.1 General:** Prior to the application of reflective sheeting, use any of the methods shown below to de-grease and etch the aluminum sign blanks.

**700-4.1.2 Hand Method:** Under this method, de-grease and etch the blanks in one operation, using steel wool (medium grade) with any of the following combinations of materials:

(1) An abrasive cleanser of a commercial grade kitchen scouring powder.

(2) Acid and a suitable detergent solution.

(3) An alkaline solution.

Thoroughly rinse the blanks with clean water following all hand de-greasing operations.

**700-4.1.3 Power-Washer Method:** Under this method, de-grease the blanks with an inhibited alkaline cleanser, by spraying for 90 seconds with the solution between 135 and 249°F, the exact temperature to be as recommended by the manufacturer of the cleanser. After the spraying, rinse the blanks with clean water. Then etch the blanks by immersing them in a 6 to 8% solution of phosphoric acid at a

temperature of 100 to 180°F for 60 seconds. After immersion, rinse the blanks in clean water.

**700-4.1.4 Immersion Method:** Under this method, de-grease the blanks by immersing them in a solution of inhibited alkaline cleanser at a temperature between 160 and 180°F for three to five minutes, and then rinsing with clean water. Then etch blanks by immersing them in a 6 to 8% solution of phosphoric acid at a temperature of 100°F for three minutes. After immersion, rinse the blanks in clean water.

**700-4.1.5 Vapor De-greasing Method:** Under this method, de-grease the blanks by totally immersing them in a saturated vapor of trichloroethylene. Remove trademark printing with lacquer thinner or a controlled alkaline cleaning system.

**700-4.1.6 Alkaline De-greasing Method:** De-grease the blanks by totally immersing them in a tank containing an alkaline solution, controlled and titrated in accordance with the solution manufacturer's directions. Adapt immersion time to the amount of soil present and the thickness of the metal. After immersion, thoroughly rinse the blanks with running water.

**700-4.1.7 Etching Method when De-greasing is Separate Operation:** If using either of the de-greasing methods described under 700-4.1.5 and 700-4.1.6, accomplish etching by one of the following alternate methods:

(1) Acid Etch: Etch well in a 6 to 8% phosphoric acid solution at 100°F, or in a proprietary acid etching solution. Rinse thoroughly with running cold water, which may be followed by a hot water rinse.

(2) Alkaline Etch: Etch aluminum surfaces in an alkaline etching material that is controlled by titration. Meet the time, temperature, and concentration requirements specified by the solution manufacturer. After completing etching is complete, rinse the panel thoroughly.

**700-4.2 Drying:** Dry the panels using a forced-air drier. Use a device or clean canvas gloves, to handle the material between all cleaning and etching operations and the application of reflective sheeting. Do not allow the metal to come in contact with greases, oils or other contaminants prior to the application of reflective sheeting.

**700-4.3 Fabrication of Sign Blanks:** Fabricate all metal parts to ensure a proper fit of all sign components. Complete all fabrication, with the exception of cutting and punching of holes, prior to metal de-greasing and applying the reflective sheeting. Cut metal panels to size and shape and keep free of buckles, warp, dents, burrs, and defects resulting from fabrication. Provide all sign panels with a flat surface. Where signs are to be fabricated from galvanized steel, cut the plates to the required size and drill prior to galvanizing.

SUBARTICLE 700-6.1 (of the Supplemental Specifications) is deleted and the following substituted:

**700-6.1 Manufacturer's Certification and Recommendations:** Ensure that the sign manufacturer certifies that the delivered signs conform to this Section and provides recommendations for storing and repairing signs.

ARTICLE 700-10 (of the Supplemental Specifications) is deleted and the following substituted:

**700-10 Overlay Existing Sign Panels.**

Use 0.040-inch thick aluminum sheeting for overlays larger than 3 square feet placed on a sign panel. Replace hex head bolts on the sign surface using stainless steel flat head machine screws with nuts and lock washers to give a flat surface for the overlay panel. Install the overlay panels starting at the edge away from traffic. Place each panel against the sign using a clamp at the top to hold the panel in place. Drill 1/8-inch holes 1-inch inside the panel edge every 6-inches to 8-inches and install 1/4-inch to 3/8-inch length pop rivets. Install additional rivets along the outer edge 6-inches to 8-inches. Place the remaining panels using the same procedure with the overlap in the direction away from the traffic and with rivets along the overlap on 12-inch centers.

ARTICLE 700-11 (of the Supplemental Specifications) is deleted and the following substituted:

**700- 11 Method of Measurement.**

The quantities to be paid for will be:

- (1) The number of ground traffic signs of each designated class of assembly, complete.
- (2) The number of lighted overhead traffic signs of each designated class of assembly, complete.
- (3) The number of existing signs removed, relocated, modified of each designated class of assembly, complete.
- (4) The number of overhead signs span wire mounted, bridge mounted, and lighted sequential, of each designated class of assembly, complete.

For the purpose of payment, a sign assembly consists of all the signs mounted on a single structure (one, two or three posts, or overhead structure) or all the signs on a bridge mounted sign structure and the sign structure.

SECTION 700 (of the Supplemental Specifications) is expanded by the following:

**700-12 Basis of Payment.**

Price and payment will be full compensation for furnishing and installation of all materials necessary to complete the signs in accordance with the details shown in the plans; including sign panels complete with sheeting, painting, and message; sign posts and supports, footings, excavation, etc.; for the lighted signs, all costs of the electrical installation for lighting, up to the point of connection by others; and all other work specified in this Section, including all incidentals necessary for the complete item.