ORIGINATION FORM

THE INFORMATION BELOW IS TO BE PROVIDED BY THE ORIGINATOR (The person who receives or originates the issue and needs to forward the issue for action.)

Specification: SECTION 700

Subject: 700 Highway Signing

Origination date: August 17, 2010

Originator: Andre Pavlov
Office/Phone: 850-414-4293

Problem statement: 1. The specification does not mention fabricator quality control requirements.
2. Alternates to the single post ground sign are not encouraged for general use on the state highway system.
3. Alternate proprietary sign slip bases are not encouraged for general use on the state highway system.
4. Districts no longer allow contractor design of overhead sign structures.

Proposed solution: 1. Add a requirement to the Section 700-1 of the specifications requiring the fabricator to be listed on the Department's list of metal producers with an accepted quality control program.
2. Remove the QPL requirements from Section 700-2.3.1 of Specifications allowing alternates to the single post aluminum tube. Alternates to the single post aluminum tube can be proposed for consideration on a project specific basis.
3. Remove the QPL requirements from Section 700-2.3.2 of the Specifications allowing alternate sign slip bases. Alternate sign slip bases can be proposed for consideration on a project specific basis.
4. Remove Section 700-2.4.2 from the Specifications.

Information source: Structures Design Office, District Structures Design Engineers

Recommended Usage Note:

Estimated fiscal impact, if implemented: None

Implementation of these changes, if and when approved, will begin with July 2011 lettings.

For State Specifications Office Use Only

Begin date: 9-27-10
File Number: 7000100

Scheduled completion date: 12-31-10
Implementation date: 7/11
Implementation team member: Frances Thomas
Usage Note: All Jobs

Notes: When approved, roll into SS7000000.

Florida Department of Transportation

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M E M O R A N D U M

DATE: October 8, 2010

TO: Specification Review Distribution List

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

SUBJECT: Proposed Specification: 7000100 Highway Signing

In accordance with Specification Development Procedures, we are sending you a copy of a proposed specification change.

The changes are proposed by Andre Pavlov to:

1. Require fabricators to be listed on the Department's list of metal producers with an accepted quality control program;
2. To remove Qualified Products List requirements for single post aluminum tube and for slip bases;
3. Remove contractor design of overhead sigh structures because these structures are always detailed in the plans.

Please share this proposal with others within your responsibility. Review comments are due within four weeks and should be sent to Mail Station 75 or to my attention via e-mail at ST986RP or rudy.powell@dot.state.fl.us. Comments received after **November 5, 2010** may not be considered. Your input is encouraged.

RP/ft
Attachment

HIGHWAY SIGNING.

(REV ~~8-11-10~~*8-17-10*) ~~(FA 8-16-10) (1-11)~~

ARTICLE 700-1 (of the Supplemental Specification) is deleted and the following substituted:

700-1 Description.

Furnish and erect roadway signs, at the locations shown in the plans, in accordance with the details shown in the plans. All overhead cantilever and truss mounted signs are to be lighted and retroreflective unless otherwise noted in the plans.

The Department designates Ground Traffic Signs as signs erected on the shoulders, slopes, or medians, but not extending over the traveled roadway.

The Department designates signs erected partially or completely over the traveled roadway or mounted on bridges as Overhead Traffic Signs, and may further classify some of these signs as Overhead Cantilever *or Span* Traffic Signs.

The Department designates signs that include certain electronic display components as Electronic Display Signs (EDS) and may further classify them as Electronic Warning Signs (EWS), Electronic Regulatory Signs (ERS), Electronic Speed Feedback Signs (ESFS), or Blank Out Signs (BOS). EDS may be erected on the shoulders, slopes, or in the medians, or installed on mast arms, monotube assemblies, or span wires.

Obtain multi-post and overhead sign structures from a fabrication facility that is listed on the Department's list of metal producers with an accepted quality control program, meeting the requirements of 105-3.

ARTICLE 700-2 (of the Supplemental Specification) is deleted and the following substituted:

700-2 Sign Assembly Design Requirements.

700-2.1 General: Sign assemblies as specified in the plans fall into three general categories: ground sign assemblies, overhead sign assemblies, and electronic display signs.

700-2.2 Sign Panels: All sign panels shall be 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.

700-2.3 Breakaway Support Mechanisms for Ground Traffic Signs:

700-2.3.1 Frangible Supports: Provide posts for all frangible sign assemblies consisting of aluminum tubes up to 3 1/2 inches outside diameter with 3/16 inch wall thickness. ~~Alternatives to the round aluminum tubes shall meet the requirements of NCHRP 350, Structures Manual for wind load requirements and be listed on the Qualified Products List (QPL).~~

700-2.3.2 Slip Bases: For posts with slip base assemblies, use galvanized steel in accordance with the requirements in the Design Standards. ~~Alternative slip plane, plastic hinge, fracture elements, or combination sign support systems meeting the requirements of NCHRP 350~~

~~and Structures Manual wind load requirements may be used, subject to approval by the Department and listing on QPL. The QPL shall classify these systems as directional or omni-directional systems.~~

700-2.4 Overhead Sign Structures:

700-2.4.1 ~~Department's Design~~*Shop Drawings*: ~~When the overhead sign structure is detailed in the plans, s~~*S*ubmit shop drawings to the Department for approval as specified in Section 5. Prior to the submittal of the shop drawings, determine the actual length of support columns for all sign structures on the basis of existing field conditions and include these lengths on the shop drawings.

~~**700-2.4.2 Contractor's Design:** When the overhead sign structure is not detailed in the plans, submit to the Department a foundation design and a sign structure design utilizing steel structural members. Meet the requirements of this Section and the FDOT Structures Manual.~~

~~Have designs and shop drawings prepared by a Specialty Engineer or the Contractor's Engineer of Record, and submit them to the Department for review and approval in accordance with Section 5.~~

~~Determine the actual length of support columns for all sign structures on the basis of existing field conditions, and include these lengths in the shop drawings and calculations.~~

700-2.4.~~3~~ *2* Installation: Install nuts on anchor bolts in accordance with 649-5 and 649-6. Use ASTM A325 bolt, nut and washer assemblies for all installations other than anchor bolts as follows. Use bolt, nut and washer assemblies that are free of rust and corrosion and that are lubricated properly as demonstrated by being able to easily hand turn the nut on the bolt thread for its entire length. Tighten nuts to the full effort of an ironworker using an ordinary spud wrench to bring the faying surfaces of the assembly into full contact which is referred to as snug tight condition. After bringing the faying surfaces of the assembly into full contact and to a snug tight condition, tighten nuts to achieve the minimum torque as specified in Table 700-1 unless the connection is an alternate splice connection of a span sign structure, in which case, tighten nuts in accordance with the turn-of-nut method of Table 460-7 of Section 460. Maintain uniform contact pressure on the faying surfaces during snugging and the subsequent final tightening process, by using a bolt tightening pattern that balances the clamping force of each bolt, as closely as possible, with the equal clamping force of a companion bolt. Within 24 hours after final tightening, the Engineer will witness a check of the minimum torque using a calibrated torque wrench for 3 bolts or a minimum of 10% of the bolts, whichever is greater, for each connection; however, do not perform this check on alternate splice connections of span sign structures.

Table 700-1

Bolt Diameter (in.)	Minimum Torque (ft.-lbs.)
3/8	15
1/2	37
5/8	74
3/4	120
7/8	190
1	275

1 1/8	375
1 1/4	525

700-2.5 Sign Retroreflective Sheeting: Meet the requirements of Section 994. Use Type III, IV, V or VII sheeting for background sheeting, white legends, borders and shields on all signs, excluding STOP, DO NOT ENTER, and WRONG WAY. Use Type VII sheeting for STOP, DO NOT ENTER and WRONG WAY signs. Use Type III, IV, V or VII yellow-green fluorescent sheeting for S1-1 school advance signs and supplemental panels used with S1-1, S3-1 and S4-5 school signs. Do not mix signs having fluorescent yellow-green sheeting with signs having yellow retroreflective sheeting.

Use fluorescent orange Type VI or VII for all orange work zone signs.

Mesh signs shall meet the color, daytime luminance and nonreflective property requirements of Section 994, Type VI.

700-2.6 Breakaway Support Mechanisms for Electronic Display Signs: Provide posts or posts with slip bases as shown in the plans.