



U.S. Department
of Transportation

**Federal Highway
Administration**

400 Seventh St., S.W.
Washington, D.C. 20590

June 21, 1999

Refer to: HMHS

Mr. Kevin Farrell
President
Saint Louis Steel Products
133 McDonnell Blvd.
St. Louis, MO 63042

Dear Mr. Farrell:

This is in further response to your February 8 letter to Mr. Nicholas Artimovich of my office requesting acceptance of your company's tubular steel posts as breakaway sign supports on the National Highway System (NHS). In support of your request you included information on the geometric, chemical, and physical properties of the posts which indicate that they will be in reasonably close conformity with perforated square steel tube sign supports that we have previously found acceptable by virtue of full-scale crash testing, and/or by comparison with posts found acceptable by engineering analysis.

You indicated that the sheet steel used to fabricate your company's posts will conform to the specification ASTM A653. Your product literature indicates that the rolled 14 gage tubes will conform to ASTM A570, Grade 50, steel, and the 12 gage tubes will conform to ASTM A570, Grade 40. Perforated square steel tube sign supports meeting these specifications for the steel and the rolled product have been previously found acceptable for use. The 7/16-inch (11.1-mm) perforations punched 1-inch (2.54-mm) on-center on all four sides are identical to those on perforated square steel tube breakaway sign supports previously found acceptable.

You also provided the results of mill certifications for the chemical and physical properties of the steel. The results compared favorably with the steel specification ASTM A653-94. (A653 replaced the steel tube specification that was used in the past, namely A446.) The following table summarizes the sizes and materials you intend to use:

Wall Thickness	14 Gage (2.11 mm)	12 Gage (2.66 mm)
Steel (ASTM)	A570, Grade 50	A570 Grade 40
Sizes (SI units) mm	44.45, 50.80, 57.15	44.45, 50.80, 57.15, 63.50
Sizes (conventional US units) inches	1.75, 2.00, 2.25	1.75, 2.00, 2.25, 2.50

After reviewing our records of experience with similar posts we find that there are a number of combinations of post size, material, and foundation conditions which are acceptable for use on the NHS, if proposed by a State. These combinations are shown in the enclosed table.

Our acceptance is limited to the breakaway characteristics of the supports and does not cover the structural features. Presumably, you will provide users with sufficient information on structural design and installation requirements to ensure proper performance of your supports. We anticipate that the transportation agencies will require certification from St. Louis Steel that the hardware furnished will have essentially the same chemistry, mechanical properties, and geometry as those covered by this acceptance and that they will meet Federal Highway Administration (FHWA) change in velocity requirements. To prevent misunderstanding by others, this letter of acceptance, designated as number SS-82, shall not be reproduced except in full.

Sincerely yours,

Dwight A. Horne

Dwight A. Horne
Director, Office of Highway Safety Infrastructure

Enclosure

OPTIONAL FORM 99 (7-90)

FAX TRANSMITTAL

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To TORI KINNE	From DICK POWERS	
Dept./Agency	Phone #	
Fax # <i>see your request to Nick</i>	Fax #	

NSN 7540-01-317-7368 5099-101 GENERAL SERVICES ADMINISTRATION

Acceptable Uses of Perforated Square Steel Tube Sign Posts, Per request of Saint Louis Steel Products

14 Gage posts are fabricated from ASTM A653 SQ Grade 50, Modified to "Grade 55", certified to 414 MPa min yield¹

12 Gage posts are fabricated from ASTM A653 SQ Grade 40¹

Post Size mm x mm (in x in)	One Post in a 2.1-m Path						Two Posts in a 2.1-m Path					
	Standard Soil			Weak Soil			Standard Soil			Weak Soil		
	With Anchor Base ⁽²⁾	Direct Burial	With Anchor Base ⁽²⁾	Direct Burial	With Anchor Base ⁽²⁾	Direct Burial	With Anchor Base ⁽²⁾	Direct Burial	With Anchor Base ⁽²⁾	Direct Burial	With Anchor Base ⁽²⁾	Direct Burial
63.5x63.5 (2.5x2.5)	2.10 mm ⁽³⁾	2.66 mm ⁽³⁾	2.10 mm ⁽³⁾	2.66 mm ⁽³⁾	2.10 mm ⁽³⁾	2.66 mm ⁽³⁾	2.10 mm ⁽³⁾	2.66 mm ⁽³⁾	2.10 mm ⁽³⁾	2.66 mm ⁽³⁾	2.10 mm ⁽³⁾	2.66 mm ⁽³⁾
57.2x57.2 (2.25x2.25)*	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
50.8x50.8 (2.0x2.0)*	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
44.5x44.5 (1.75x1.75)*	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
38.1x38.1 (1.5x1.5)	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes

1. 413.69 MPa = 60,000 psi. The ultimate tensile strength of the steel coil used to produce the tube should not exceed 550 MPa (79,800 psi) or have an elongation measured over 50 mm (2 inches) greater than 20%. The Grade 40 steel used to fabricate the 12 gage posts is expected to show strengths proportionately less, with the same maximum elongation. In any event, the steel strengths should not exceed those in this note.

2. The anchor base may or may not have a strengthening sleeve at groundline. The anchor bases shall be sized to fit closely around the post. For 63.5x63.5 posts of both wall thicknesses and 57.2x57.2x2.66 posts the anchor bases shall be made of steel comparable to that of the posts and have wall thicknesses equal 4.55 mm (7 ga) or greater. For 57.2x57.2x2.10 posts and all 55.6x55.6 and smaller posts the anchor bases shall be made of steel comparable to that of the posts and have wall thicknesses equal 2.66 mm (12 ga) or greater.

3. The dimension shown is the wall thickness of the post. 2.10 mm = 14 ga and 2.66 mm = 12 ga.

* These three sizes are the only ones expected to be produced with a 14 ga wall thickness. The 38.1 x 38.1 mm post size is acceptable because it is smaller, and likely to be crashworthy.