

TWO SISTERS INC
D/B/A SIGNS BY TONORR
3525 S NASON ST
FORT COLLINS CO

80525-2616

C5505400000/V132157

UNIVERSAL SPECIALTIES & SUPPLIES
1715 MONTEREY ROAD SUITE 102
COLORADO SPRINGS CO
80910-1871

C5505400000/V111620

WESTERN SIGN MANUFACTURING INC
1910 W STANFORD AVE UNIT 2
ENGLEWOOD CO
80110-5495

SAINT LOUIS STEEL
133 MCDONNELL BLVD.
ST. LOUIS, MO 63042

Attn: Joe Frazzetta

UNISTRUT WESTERN
UNISTRUT CORPORATION
601 S JASON STREET
DENVER CO

80223-2305

C5505400000/V104125

VULCAN SIGNS & STAMPING INC
PO BOX 850
GOLF BLVD
36536-0850

C5505400000/V102041

ZUMAR INDUSTRIES INC
5371 RANDOLPH STREET
LOS ANGELES CA
90040-3508

S SQUARE TUBE PRODUCTS
5495 EAST 69th AVENUE
COMMERCE CITY, CO 80022

WESTERN HIGHWAY PRODUCTS
P.O. BOX 7
STANTON, CA 90680

Attn: Nick Calvi

C5505400000/V109482

STRATEGIC SUPPLY INC
14252 W 44TH AVF
GOLDEN CO

80403-1800

C5505400000/V103514

TRAFFIC PARTS INC
P O BOX 837
SPRING TX

77383-0837

C5505400000/V125998

TWO SISTERS INC
D/B/A SIGNS BY TOMORROW
3525 S MASON ST
FORT COLLINS CO

80525-2816

C5505400000/V102907

UNISTRUT WESTERN
UNISTRUT CORPORATION
601 S JASON STREET
DENVER CO

80223-2305

C5505400000/V132157

UNIVERSAL SPECIALTIES & SUPPLIES
1715 MONTFREY ROAD SUITE 192
COLORADO SPRINGS CO

80910-1871

C5505400000/V104125

VULCAN SIGNS & STAMPING INC
PO BOX 850
FOLEY AL

38536-0850

C5505400000/V111620

WESTERN SIGN MANUFACTURING INC
1910 W STANFORD AVE UNIT 2
ENGLEWOOD CO

80110-5405

C5505400000/V102041

ZUMAR INDUSTRIES INC
6371 RANDOLPH STREET
LOS ANGELES CA

90040-3500

NUMBER OF LABELS PRINTED. 0022



October 18, 1999

Mr John Stephens
City of Fort Collins
PO Box 580
Ft Collins, CO 80521

Via Fax (970) 221-6707

Dear John,

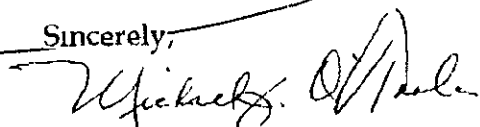
Thank you for inquiring about St Louis Steel Products today As I mentioned to you on the phone, St. Louis Steel Products is a full line manufacturer of small to medium steel sign supports. We encourage our customers to think of mixing truckloads of our quality highway products to maximize distribution efficiency. Included on the following pages are the specifications of our square tube steel sign supports, the federal acceptance letter from the FHWA, and some product literature information.

As we discussed, please forward your "MAPO" bid requirements to

Mr Joe Frazzetta
Sales Manager
St Louis Steel Products
133 McDonnell Blvd
St. Louis, MO 63042

We look forward to working with you!

Sincerely,


Michael J. O'Toole
St Louis Steel Products

cc J Frazzetta



Fax Cover Sheet

To: MR JOHN STEPHENS
Company: CITY OF FORT COLLINS
Phone: (970) 221-6777
Fax: (970) 221-6707

From: MIKE O'TOOLE
Company: ST. LOUIS STEEL PRODUCTS
Phone: 314-731-8000
Fax: 314-731-7577

Date: OCTOBER 18, 1999
Pages including this cover page: 9

Comments:

IF YOU DO NOT RECEIVE ANY OF THE FOLLOWING PAGES, PLEASE CALL 314-731-8000

133 MC DONNELL BLVD ST LOUIS MISSOURI 63042



12 GAUGE TUBULAR STEEL SIGN POST

Last Rev. 3 25 99

SPECIFICATIONS

Material Steel posts furnished shall conform to the Standard Specification for Hot Rolled Carbon Sheet Steel, structural quality, ASTM designation A570, Grade 40

Shape The cross section of the post shall be square tube formed of 12 gauge (105 USS gauge, 2.66mm) steel, carefully rolled to size and shall be welded directly in the corner by high frequency resistance welding and externally scarfed to agree with the corner radii

Finish The steel shall be either hot-dip galvanized or painted green.

Galvanized part will conform to ASTM A653, G90, Structural Quality, Grade 40, Class 1. The corner weld is zinc coated after scarfing. The steel is also coated with a clear enamel topcoat after forming to prevent white rust during pre-installation. Both the interior surface and exterior surface of the post shall be galvanized and coated.

Painted parts will be coated with a baked enamel green. Both the interior surface and exterior surface of the post shall be coated.

Cross Section Perforated signposts shall be one of more of the following sizes

Nominal Outside Dimensions	USS Gauge	Weight lbs/ft
1-3/4" x 1-3/4" (44.45mm x 44.45mm)	12 (2.66mm)	2.06 (3.07 kg/m)
2" x 2" (50.80mm x 50.80mm)	12 (2.66mm)	2.42 (3.60 kg/m)
2-1/4" x 2-1/4" (57.15mm x 57.15mm)	12 (2.66mm)	2.77 (4.13 kg/m)
2-1/2" x 2-1/2" (63.50mm x 63.50mm)	12 (2.66mm)	3.14 (4.67 kg/m)

Holes Holes shall be 7/16" ± 1/64 inches (11.11 ± 0.4mm) in diameter on one (1) inch (25.4mm) centers on all four sides down the entire length of the post. On square tubing, holes shall be on centerline of each side in true alignment and opposite each other directly and diagonally.

Telescoping Properties The finished post shall be straight and have a smooth, uniform finish. It shall be possible to telescope all consecutive sizes of square tubes freely and for not less than ten feet of their length without the necessity of matching any particular face to any other face. All holes and ends shall be free from burrs.

TOLERANCES

Outside Dimensions Measurements are made at least 2" (51mm) from the end of the tube

Nominal Outside Dimensions	Outside Tolerances on All Sides at Corners
1-3/4" x 1-3/4" (44.45mm x 44.45mm)	± .008" (0.20mm)
2" x 2" (50.80mm x 50.80mm)	± .008" (0.20mm)
2-1/4" x 2-1/4" (57.15mm x 57.15mm)	± .010" (0.25mm)
2-1/2" x 2-1/2" (63.50mm x 63.50mm)	± .010" (0.25mm)

Wall Thickness Permissible variation in wall thickness is +.011", -.005" (+0.3mm, -0.12mm)

Length The length of each post shall have a permissible length tolerance of ± 1/4" (± 6.35mm)

Convexity and Concavity As measured in the center of the flat sides, shall not exceed ± .010" (± 0.25mm), determined at the corner.

Corner Radii Standard outside corner radii shall be 5/32 of an inch ± 1/64 inch (4mm ± 0.4mm)

Squareness of Sides and Twist Squareness is considered as two sides 90° to each other.

Nominal Outside Dimensions	Squareness Tolerance	Permissible Twist Length
1-3/4" x 1-3/4" (44.45mm x 44.45mm)	± .010" (± 0.25mm)	0.62" (1.57mm)
2" x 2" (50.80mm x 50.80mm)	± .012" (± 0.31mm)	0.62" (1.57mm)
2-1/4" x 2-1/4" (57.15mm x 57.15mm)	± .014" (± 0.36mm)	0.62" (1.57mm)
2-1/2" x 2-1/2" (63.50mm x 63.50mm)	± .015" (± 0.38mm)	0.75" (1.91mm)

Straightness Permissible variation in straightness is 1/16 of an inch in 3 feet (1.74 mm in 1 meter)

INSTALLATION

The square end of the post shall not be modified or pointed, but shall be capable of being driven into the ground by the using agency with the use of an approved driving cap.

133 McDONNELL BLVD ST. LOUIS, MO 63042
1 800 SLSTEEL (757-8335)



14 GAUGE TUBULAR STEEL SIGN POST

Last Rev 3 25 99

SPECIFICATIONS

Material Steel posts furnished shall conform to the Standard Specification for Hot Rolled Carbon Sheet Steel, structural quality, ASTM designation A570, Grade 50

Shape The cross section of the post shall be square tube formed of 14 gauge (083 USS gauge, 2.11 mm) steel, carefully rolled to size and shall be welded directly in the corner by high frequency resistance welding and externally scarfed to agree with the corner radii

Finish The steel shall be either hot-dip galvanized or painted green.

Galvanized part will conform to ASTM A653, G90, Structural Quality, Grade 50, Class 1. The corner weld is zinc coated after scarfing. The steel is also coated with a clear enamel topcoat after forming to prevent white rust during pre-installation. Both the interior surface and exterior surface of the post shall be galvanized and coated.

Painted parts will be coated with a baked enamel green. Both the interior surface and exterior surface of the post shall be coated.

Cross Section Perforated signposts shall be one of more of the following sizes

Size	USS Gauge	Weight per foot
1-3/4" x 1-3/4" (44.45mm x 44.45mm)	14 (2.11mm)	1.71 (2.48 kg/m)
2" x 2" (50.80mm x 50.80mm)	14 (2.11mm)	1.99 (2.96 kg/m)
2-1/4" x 2-1/4" (57.15mm x 57.15mm)	14 (2.11mm)	2.27 (3.38 kg/m)

Holes Holes shall be 7/16" ± 1/64 inches (11.11 ± 0.4mm) in diameter on one (1) inch (25.4mm) centers on all four sides down the entire length of the post. On square tubing, holes shall be on centerline of each side in true alignment and opposite each other directly and diagonally.

Telescoping Properties The finished post shall be straight and have a smooth, uniform finish. It shall be possible to telescope all consecutive sizes of square tubes freely and for not less than ten feet of their length without the necessity of matching any particular face to any other face. All holes and ends shall be free from burrs.

TOLERANCES

Outside Dimensions Measurements are made at least 2" (51mm) from the end of the tube

Minimum Outside Dimensions	Permissible Tolerances
1-3/4" x 1-3/4" (44.45mm x 44.45mm)	± 008" (0.20mm)
2" x 2" (50.80mm x 50.80mm)	± 008" (0.20mm)
2-1/4" x 2-1/4" (57.15mm x 57.15mm)	± 010" (0.25mm)

Wall Thickness Permissible variation in wall thickness is ± 008" (+/- 0.20mm)

Length The length of each post shall have a permissible length tolerance of ± 1/4" (± 6.35mm)

Convexity and Concavity As measured in the center of the flat sides, shall not exceed ± 010" (± 2.5mm), determined at the corner.

Corner Radii Standard outside corner radii shall be 5/32 of an inch ± 1/64 inch (4mm ± 0.4mm)

Squareness of Sides and Twist Squareness is considered as two sides 90° to each other.

Minimum Outside Dimensions	Squareness Tolerance	Twist Permissible in 3 feet
1-3/4" x 1-3/4" (44.45mm x 44.45mm)	± 010" (± 2.5mm)	062" (1.57mm)
2" x 2" (50.80mm x 50.80mm)	± 012" (± 3.1mm)	062" (1.57mm)
2-1/4" x 2-1/4" (57.15mm x 57.15mm)	± 014" (± 3.6mm)	062" (1.57mm)

Straightness Permissible variation in straightness is 1/16 of an inch in 3 feet (1.74 mm in 1 meter)

INSTALLATION

The square end of the post shall not be modified or pointed, but shall be capable of being driven into the ground by the using agency with the use of an approved driving cap.

133 McDONNELL BLVD. ST LOUIS, MO 63042
1.800.SLSTEEL (757-8335)



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 (25.4-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

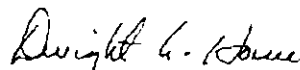
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2

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
Director, Office of Highway Safety Infrastructure

Enclosure

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	
	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⁾	2 10 mm ⁽³⁾	2 66 mm ⁽³⁾	2 10 mm ⁽³⁾	2 66 mm ⁽³⁾
63 5x63 5 (2 5x2 5)		yes				yes										
57 2x57 2 (2 25x2 25)*	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	yes	yes	
44 5x44 5 (1 75x1 75)*	yes	yes	yes	yes	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	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 + 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.

Enclosure

CUSTOM ROLL FORMING



St. Louis Steel Products now offers our services in producing high quality custom roll formed products.

MATERIALS

Virtually any bendable metal or material can be roll formed.

- Carbon Steel
- Stainless Steel
- Alloy Steel
- Aluminum
- Copper
- Brass
- Bronze
- Galvanized
- Pre-painted Materials
- Pre-anodized
- Vinyl Clad
- Other Non Ferrous Materials



GAUGES AND WIDTHS

Minimum Thickness (Inches)	0.005
Maximum Thickness (Inches)	0.250
Minimum Width (Inches)	1.0
Maximum Width (Inches)	16.0
Maximum Length (Feet)	100.0
Maximum Depth (Inches)	6.0

WHAT CAN WE DO FOR YOU?

1-800-SL-STEEL

OR VISIT US ON THE

INTERNET AT:

WWW.SLSTEEL.COM

E mail us today for Quotations at slsteel@mlink.com



1999

TRAFFIC

PRODUCTS



133 McDonnell Blvd
 St. Louis MO 63042
 Phone 1-800-SL-STEEL (757-8335)
 Fax (314) 731-7577

MLP / www.slsteel.com

TRAFFIC PRODUCTS

NEW SQUARE TUBE



Specifications

1-1/2 1-3/4 2' 2-1/4" 2-3/16" and 2-1/2"

12, 14 and 16 Gauge

Our ability to offer square tube enhances the entire traffic products line from Type III barricades to sign posts.

AVAILABLE TUBE SIZES

	1/4 Gauge	1/2 Gauge	1/0 Gauge
1 - 1/2"	NA	soon	NA
1 - 3/4"	YES	YES	NA
2	YES	YES	NA
2 - 1/4"	YES	YES	NA
2 - 3/16"	NA	NA	soon
2 - 1/2"	NA	YES	YES

Available in any length. All Post Made of A693 GR 40 hardened through cold rolling to 50,000 psi.

WE ARE PROUD MEMBERS OF



AMERICAN
TRAFFIC &
ASSOCIATION



BARRICADE LEGS



Specifications

1-1/4" x 1-1/4" x 45'

1-1/4" x 1-1/4" x 60'

12 or 14 Gauge

500 pcs bundles

St. Louis Steel Products manufactures barricade legs for the traffic control industry through out the United States.

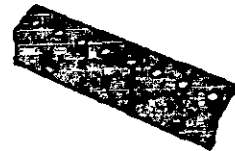
We have a universal design with standardized hole patterns to easily attach the boards to your Type I and Type II barricades.

Available in your choice of white baked enamel galvanized strip or hot-dip galvanized, our legs offer the greatest protection from the elements.

SIGN POSTS

Specifications

3/8" diameter holes on 1" centers punched full-length pointed ends



50 pcs bundles

All painted posts are plastic wrapped

Fringed channel sign posts manufactured in a variety of lengths are available in a variety of weights from 2 to 4 lbs per linear foot.

Standard finish is green baked enamel or hot-dip galvanized in accordance with ASTM specification A-123.

Posts are also available in a variety of powder coated colors such as orange, yellow and blue.

DELINEATOR POSTS

Specifications

3/8" diameter holes on 1" centers punched full length pointed ends

200 pcs bundles

All painted posts are plastic wrapped



St. Louis Steel Products offers roll formed delineator posts designed to provide excellent coating characteristics.

Standard finish is green baked enamel or hot-dip galvanized in accordance with ASTM specification A-123.

Ideal for small signs, markers and delineator buttons!

RIGHT-OF-WAY FENCE POSTS



Specifications 1.33 lbs per linear foot

Available in Green, Orange or Galvanized

200 pcs bundles

Right-of-Way fence posts are manufactured to meet ASTM specifications A-702 assuring you of product quality and performance.

Class III galvanized wire fasteners are designed to make fence attachment easy!

Our team is dedicated to providing the very best products to our customers.

Our sales staff brings over thirty years of service to the traffic safety industry. We know today's market is extremely competitive. You can rely on us to be sensitive to your needs.