

1 **SECTION 713 - STRUCTURAL STEEL AND RELATED MATERIALS**

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3 Make the following amendment to said Section:

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5 **(I) Amend 713.04 High-Strength Bolts** to read as follows:

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7 **"713.04 High-Strength Bolts and Studs.**

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9 **(A) Bolts, Studs, Nuts, and Washers.** Bolts, nuts, and washers
10 shall conform to AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS
11 Section 6.4.3 Bolts, Nuts, and Washers under the Standard Specification
12 for Structural Bolts, Steel, Heat-Treated, 120/105 ksi Minimum Tensile
13 Strength with a required minimum tensile strength of 120 ksi for diameters
14 0.5-inch through 1.0-inch and 105 ksi for diameters 1.125-inches through 1.5
15 inches AASHTO M 164 (ASTM A 325 as modified), Type 1. Anchor bolts
16 shown on the plans in the form of studs with no bolt heads and bolts in the
17 diameters 1.75-inches to 3.0-inches designated as high-strength studs or
18 bolts shall conform to ASTM A 449, Type 1. Hot-dip zinc-coat the bolts,
19 studs, nuts, and washers.

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21 **(B) Installation.** AASHTO LRFD Bridge Construction Specifications,
22 Section 11.5.6.4 and as modified herein applies when installing high-strength
23 bolts in the field or shop. Install the bolts according to AASHTO LRFD
24 Bridge Construction Specifications - Section 11.5.6.4.7 Direct Tension
25 Indicator Installation Method. Anchor bolts for railing posts base plates
26 may also be installed using the Turn-of-Nut Method and the Calibrated
27 "Wrench Method."

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29 **(II) Amend 713.11(C) Square Tube Posts** to read as follows:

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31 **"(C) Square Tube Posts.** Square tube posts shall conform to ASTM A
32 446 for Cold-Rolled Carbon Steel Sheet, commercial quality or ASTM A 570-
33 90 for Hot-Rolled Carbon Steel Sheet, structural quality. The tube shall
34 have a hot-dip zinc-coating according to ASTM A 525, Designation D-90.

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36 Make the corner welds by high frequency resistance welding,
37 externally scarfed, and zinc-coated after scarfing. Four sides of the square
38 tube post shall have 7/16-inch diameter holes spaced 1-inch on centers
39 along the entire length of the post. Permissible tolerances are shown in
40 Table 713-IV. Square tube posts shall be crash-worthy and acceptable to
41 FHWA for use in both strong soil (S-1) and weak soil (S-2) as defined in
42 NCHRP Report 230.

43
44 Single square tube post used to support signs shall have an accepted
45 device to resist turning after installation. Attach this device to the post and
46 embed this device below finish grade.

Physical Property	Nominal Outside Size, Inch		
	1.75 Square	2 Square	2.25 Square
U.S. Standard Gage	14		
Wall Thickness - Inch	0.083, +0.002, -0.008		
Minimum Yield Strength - Psi	60,000		
Minimum Weight - Pounds/Foot	1.8	2.1	2.4
Outside Dimension - Inch	±0.010	±0.010	±0.010
Side Squareness - Inch	±0.010	±0.012	±0.014
Twist Permitted - Inch/Foot	0.062/3	0.062/3	0.062/3
Straightness	1/16 Inch in 3 Feet		
Telescoping	Consecutive Size Tubes Shall Telescope Freely For 10 Feet		
Hole Size - Inch	±1/64		
Hole Spacing	±1/8 in 20 Feet		

Physical Property	Nominal Outside Size, Inch				
	1.5 Square	1.25 Square	2 Square	2.25 Square	2.5 Square
U.S. Standard	12				
Wall Thickness, Inch	0.105, +0.011, -0.008				
Minimum Yield Strength, Psi	40,000				
Minimum Weight, Pounds/Foot	1.7	2.0	2.4	2.7	3.1
Outside Dimension, Inch	±0.008	±0.008	±0.008	±0.010	±0.010
Side Squareness, Inch	±0.008	±0.010	±0.012	±0.014	±0.016
Twist Permitted, Inch/Foot	0.062/3	0.062/3	0.062/3	0.062/3	0.062/3
Straightness	1/16 Inch in 3 Feet				
Telescoping	Consecutive Size Tubes Shall Telescope Freely For 10 Feet				
Hole Size, Inch	±1/64				
Hole Spacing, Inch	±1/8 in 20 Feet				

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Physical Property	Nominal Outside Size, Inch	
	2.187 Square	2.5 Square
U.S. Standard	10	
Wall Thickness, Inch	0.135, +0.011, -0.008	
Minimum Yield Strength, Psi	40,000	
Minimum Weight, Pounds/Foot	3.4	4.0
Outside Dimension, Inch	±0.010	±0.010
Side Squareness, Inch	±0.014	±0.015
Twist Permitted, Inch/Foot	0.062/3	0.075/3
Straightness	1/16 Inch in 3 Feet	
Telescoping	Consecutive Size Tubes Shall Telescope Freely For 10 Feet	
Hole size, Inch	±1/64	
Hole Spacing, Inch	±1/8 In 20 Feet	

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(III) Amend 713.12(A) to read as follows:

“(A) Secure the regulatory signs, warning signs, and route marker assemblies, mounted on pipe posts, in position by using zinc-coated flat washer with nylon washer. Install them between the post and sign and under the bolt head on the sign surface. Bolts and other metal washers shall be wrought iron zinc-coated by the hot-dip process according to ASTM A 153.”

(IV) Amend 713.14(A)(1) Tapered Posts And Cross Arms by revising the sixth paragraph to read as follows:

“Gages shall be of the following thicknesses:

No. 7 gage	0.1793 inch
No. 3 gage	0.2500 inch
No. 0 gage	0.3125 inch”

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END OF SECTION 713