



South Carolina
Department of Transportation

BRIDGE DESIGN MEMORANDUM – DM0323

TO: RPG Structural Engineers
Alternative Delivery Structural Design Engineer
Design Consultants

Date: August 30, 2023

RE: Finished Reinforcing Bar Bend Diameters

Apply these updated requirements to all projects where design has not advanced beyond the 95% plans submittal.

This Design Memorandum addresses an increase in minimum finished bar bend diameters published in the *Concrete Reinforcing Steel Institute (CRSI) Manual of Standard Practice, 29th Edition*. CRSI increased the finished bar bend diameters of certain bar sizes for stirrups and ties in order to standardize the finished bar bends for all grades of reinforcing steel. Additionally, CRSI also added the finished bar bend diameters for galvanized reinforcing bars in this edition.

As a result of these changes, the AASHTO Committee on Bridges and Structures (CBS) has recently passed a ballot item that will be included in the 10th Edition of the AASHTO LRFD Bridge Design Specifications. This ballot item will make some adjustments to the *CRSI Manual of Standard Practice* requirements. SCDOT has opted to follow these revisions to AASHTO LRFD in lieu of the current requirements in the *CRSI Manual of Standard Practice*. Until the AASHTO LRFD 10th Edition is adopted by SCDOT, follow the requirements below.

The finished diameter of a steel bar bend for Grade 60 reinforcing steel (non-galvanized) measured on the inside of the bar, shall not be less than that specified in Table 1.

Table 1—Minimum Finished Bend Diameters (Uncoated)

Bar Size and Use	Minimum Finished Diameter
No. 3 through No. 5—General	$6.0d_b$
No. 3 through No. 5—Stirrups and Ties	$4.0d_b$ $6.0d_b$
No. 6 through No. 8	$8.0d_b$
No. 9, No. 10, and No. 11	$10.0 d_b^*$
No. 14 and No. 18	



* Due to safety concerns, CRSI does not recommend bending bars larger than #14 with grade designation of Grade 75 or higher.

For galvanized bars meeting ASTM A767 or A1094, the finished bar bend diameter, measured on the inside of the bar, shall not be less than that specified in Table 2

Table 2 — Galvanized bars - Minimum Finished Bend Diameter

Bar Size and Use	Minimum Finished Diameter
No. 3 through No. 6	$6.0d_b$
No. 7 through No. 8	$8.0d_b$
No. 9, No. 10, and No. 11	$8.0d_b$
No. 14 and No. 18	$10.0d_b^*$

* Due to safety concerns, CRSI does not recommend bending bars larger than #14 with grade designation of Grade 75 or higher.

Please note these revisions to your copy of the SCDOT Bridge Design Manual.

Terry B. Koon, P.E.
Structural Design Support Engineer

TBK:hl

ec:

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File: PC/TBK/HL

