MATERIAL SPECIFICATIONS FOR REINFORCING BARS

TABLE 1-1 ASTM SPECIFICATIONS – BAR SIZES, GRADES, TENSILE AND BENDING REQUIREMENTS

Type of Steel and ASTM Specification	Bar Sizes	Grade	Minimum Yield Strength, psi [MPa]	Minimum Tensile Strength, psi [MPa]	Minimum Percentage Elongation in 8 in. [203.2 mm]	Bend Test Pin Diameter (*d* = nominal diameter of bar)
Carbon-Steel A615/A615M	#3 - #6 [#10 - #19]	40 [280]	40,000 [280]	60,000 [420]	#3 [#10] .....11 #4, #5, #6 [#13, #16, #19] 12	#3, #4, #5 [#10, #13, #16] ....3½*d* #6 [#19] 5*d*
	#3 - #18 [#10 - #57]	60 [420]	60,000 [420]	90,000 [620]	#3, #4, #5, #6 [#10, #13, #16, #19] .....9 #7, #8 [#22, #25] .....8 #9, #10, #11, #14, #18 [#29, #32, #36, #43, #57] 7	#3, #4, #5 [#10, #13, #16] ....3½*d* #6, #7, #8 [#19, #22, #25] .....5*d* #9, #10, #11 [#29, #32, #36] .....7*d* #14, #18 (90°) [#43, #57 (90°)] 9*d*
	#3 - #18 [#10 - #57]	75 [520]	75,000 [520]	100,000 [690]	#3, #4, #5, #6, #7, #8 [#10, #13, #16, #19, #22, #25] .....7 #9, #10, #11, #14, #18 [#29, #32, #36, #43, #57] 6	#3, #4, #5, #6, #7, #8 [#10, #13, #16, #19, #22, #25] .....5*d* #9, #10, #11 [#29, #32, #36] .....7*d* #14, #18 (90°) [#43, #57 (90°)] 9*d*
Low-Alloy Steel A706/A706M	#3 - #18 [#10 - #57]	60 [420]	60,000 [420]	80,000 [550]	#3, #4, #5, #6 [#10, #13, #16, #19] .....14 #7, #8, #9, #10, #11 [#22, #25, #29, #32, #36] ....12 #14, #18 [#43, #57 10	#3, #4, #5 [#10, #13, #16] .....3*d* #6, #7, #8 [#19, #22, #25] .....4*d* #9, #10, #11 [#29, #32, #36] .....6*d* #14, #18 [#43, #57] 8*d*
Stainless-Steel A955/A955M	#3 - #6 [#10 - #19]	40 [280]	40,000 [280]	70,000 [500]	#3, #4, #5, #6 [#10, #13, #16, #19] 20	#3, #4, #5 [#10, #13, #16] ....3½*d* #6 [#19] 5*d*
	#3 - #18 [#10 - #57]	60 [420]	60,000 [420]	90,000 [620]	#3 - #18 [#10 - #57] 20	#3, #4, #5 [#10, #13, #16] ....3½*d* #6, #7, #8 [#19, #22, #25] .....5*d* #9, #10, #11 [#29, #32, #36] .....7*d* #14, #18 (90°) [#43, #57 (90°)] 9*d*
	#6 - #18 [#19 - #57]	75 [520]	75,000 [520]	100,000 [690]	#6 - #18 [#19 - #57] 20	#6, #7, #8 [#19, #22, #25] .....5*d* #9, #10, #11 [#29, #32, #36] .....7*d* #14, #18 (90°) [#43, #57 (90°)] 9*d*

For low-alloy steel reinforcing bars, ASTM A706/A706M prescribes a maximum yield strength of 78,000 psi [540 MPa] and tensile strength must be 1.25 times the actual yield strength.

Bend tests are 180° except ASTM A615/A615M permits 90° for bar sizes #14 and #18 [#43 and #57].