

Table 7-1
Available Shear
Strength of Bolts, kips

Nominal Bolt Diameter d_b , in.					$\frac{5}{8}$		$\frac{3}{4}$		$\frac{7}{8}$		1	
Nominal Bolt Area, in. ²					0.307		0.442		0.601		0.785	
ASTM Desig.	Thread Cond.	F_{nv}/Ω (ksi)	ϕF_{nv} (ksi)	Load- ing	r_n/Ω_v	$\phi_v r_n$	r_n/Ω_v	$\phi_v r_n$	r_n/Ω_v	$\phi_v r_n$	r_n/Ω_v	$\phi_v r_n$
			LRFD			LRFD		LRFD		LRFD		LRFD
A325 F1852	N		36.0	S D		11.0 22.1		15.9 31.8		21.6 43.3		28.5 56.9
	X		45.0	S D		13.8 27.6		19.9 39.8		27.1 54.1		35.5 70.9
A490	N		45.0	S D		13.8 27.6		19.9 39.8		27.1 54.1		35.5 70.9
	X		56.3	S D		17.3 34.5		24.9 49.7		33.8 67.6		44.1 88.1
A307	—		18.0	S D		5.52 11.0		7.95 15.9		10.8 21.6		14.4 28.7

Nominal Bolt Diameter d_b , in.					$1\frac{1}{8}$		$1\frac{1}{4}$		$1\frac{3}{8}$		$1\frac{1}{2}$	
Nominal Bolt Area, in. ²					0.994		1.23		1.48		1.77	
ASTM Desig.	Thread Cond.	F_{nv}/Ω (ksi)	ϕF_{nv} (ksi)	Load- ing	r_n/Ω_v	$\phi_v r_n$	r_n/Ω_v	$\phi_v r_n$	r_n/Ω_v	$\phi_v r_n$	r_n/Ω_v	$\phi_v r_n$
			LRFD			LRFD		LRFD		LRFD		LRFD
A325 F1852	N		36.0	S D		35.8 71.6		44.2 88.4		53.5 107		63.5 127
	X		45.0	S D		44.7 89.5		55.2 110		66.8 134		79.5 159
A490	N		45.0	S D		44.7 89.5		55.2 110		66.8 134		79.5 159
	X		56.3	S D		55.9 112		69.0 138		83.5 167		99.5 199
A307	—		18.0	S D		17.9 35.8		22.1 44.2		26.7 53.5		31.5 63
	LRFD											
$\Omega_v = 2.00$	$\phi_v = 0.75$											

Table 7-2
Available Tensile
Strength of Bolts, kips

Nominal Bolt Diameter d_b , in.			$5/8$		$3/4$		$7/8$		1	
Nominal Bolt Area, in. ²			0.307		0.442		0.601		0.785	
ASTM Desig.	F_{nt}/Ω (ksi)	ϕF_{nt} (ksi)	r_n/Ω	ϕr_n	r_n/Ω	ϕr_n	r_n/Ω	ϕr_n	r_n/Ω	ϕr_n
		LRFD		LRFD		LRFD		LRFD		LRFD
A325 & F1852		67.5		20.7		29.8		40.6		53.0
A490		84.8		26.0		37.4		51.0		66.6
A307		33.8		10.4		14.9		20.3		26.5
Nominal Bolt Diameter d_b , in.			$1\frac{1}{8}$		$1\frac{1}{4}$		$1\frac{3}{8}$		$1\frac{1}{2}$	
Nominal Bolt Area, in. ²			0.994		1.23		1.48		1.77	
ASTM Desig.	F_{nt}/Ω (ksi)	ϕF_{nt} (ksi)	r_n/Ω	ϕr_n	r_n/Ω	ϕr_n	r_n/Ω	ϕr_n	r_n/Ω	ϕr_n
		LRFD		LRFD		LRFD		LRFD		LRFD
A325 & F1852		67.5		67.1		82.8		100		119
A490		84.8		84.2		104		126		150
A307		33.8		33.5		41.4		50.1		59.6
	LRFD									
$\Omega_v = 2.00$	$\phi_v = 0.75$									