

Shaft Designation	Shaft Dimensions and Material Grade	Ultimate Capacity Based Upon Torque (kips - kN) (1) (2)	Helix Bearing Plate Grade & Thickness	Section Coupling Method	Building Code Certifications
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**Round Corner Square Bar (RCS)**

D6	1.50 in - 38.1 mm ASTM A576, Grade 10V45 Yield Strength = 70 ksi (min)	68 kips - 267 kN	AISI Grade 1011/1018 HSLA 55 0.375 in - 9.5 mm	Upset Forged (1) 0.75 - 19.1 mm Grd 5 Bolt	ICC-ES ESR-3032 City of LA Research Report 25630
D7	1.50 in - 38.1 mm ASTM A576, Grade 1530M Yield Strength = 90 ksi (min)	70 kips - 311 kN	AISI Grade 1011/1018 HSLA 55 0.375 in - 9.5 mm	Upset Forged (1) 0.75 - 19.1 mm Grd 5 Bolt	
D10	1.75 in - 44.5 mm ASTM A576, Grade 1530M Yield Strength = 90 ksi (min)	100 kips - 445 kN	AISI Grade 1011/1018 HSLA 55 0.375 in - 9.5 mm	Upset Forged (1) 0.875 - 22.2 mm Grd 5 Bolt	ICC-ES ESR-3032 City of LA Research Report 25630
D15	2.00 in - 50.8 mm ASTM A576, Grade 1530M Yield Strength = 90 ksi (min)	150 kips - 667 kN	AISI Grade 1011/1018 HSLA 55 0.5 in - 12.75 mm	Upset Forged (1) 1.125 - 28.6 mm Grd 8 Bolt	

**Round Shaft**

P28	O.D. = 2.875 in - 73.0 mm Wall = 0.203 in - 5.2 mm ASTM A500 Grade B Yield Strength = 50 ksi (min)	70 kips - 311 kN	AISI Grade 1011/1018 HSLA 55 0.375 in - 9.5 mm	Cast Square Engagement (2) 0.75 - 19.1 mm Grd 5 Bolts	ICC-ES ESR-3032 City of LA Research Report 25630
P28H	O.D. = 2.875 in - 73.0 mm Wall = 0.276 in - 7.1 mm ASTM A500 Grade B or C Yield Strength = 50 ksi (min)	90 kips - 400 kN	AISI Grade 1011/1018 HSLA 55 0.375 in - 9.5 mm	Cast Square Engagement (2) 0.75 - 19.1 mm Grd 5 Bolts	
P35	O.D. = 3.50 in - 88.9 mm Wall = 0.216 in - 5.5 mm ASTM A500 Grade B or C Yield Strength = 50 ksi (min)	100 kips - 445 kN	AISI Grade 1011/1018 HSLA 55 0.375 in - 9.5 mm	Cast Square Engagement (2) 0.75 - 19.1 mm Grd 5 Bolts	ICC-ES ESR-3032 City of LA Research Report 25630
P35H	O.D. = 3.50 in - 88.9 mm Wall = 0.30 in - 7.6 mm ASTM A500 Grade B Yield Strength = 50 ksi (min)	120 kips - 534 kN	AISI Grade 1011/1018 HSLA 55 0.5 in - 12.75 mm	Cast Square Engagement (2) 0.875 - 22.2 mm Grd 5 Bolts	ICC-ES ESR-3032 City of LA Research Report 25630
P45H	O.D. = 4.50 in - 114.3 mm Wall = 0.337 in - 8.6 mm ASTM A500 Grade B Yield Strength = 50 ksi (min)	180 kips - 801 kN	AISI Grade 1011/1018 HSLA 55 0.5 in - 12.75 mm	Cast Square Engagement (2) 1.00 - 25.4 mm Grd 5 Bolts	
H45	O.D. = 4.50 in - 88.9 mm Wall = 0.290 in - 7.4 mm OCTG L80 Yield Strength = 80 ksi (min)	184 kips - 819 kN	AISI Grade 1011/1018 HSLA 55 0.5 in - 12.75 mm	Threaded Box and Pin (no hardware) or Pipe Sleeve (2) 1.375 - 34.9 mm Grd 5 Bolts	
H55	O.D. = 5.50 in - 139.7 mm Wall = 0.361 in - 9.2 mm OCTG L80 Yield Strength = 80 ksi (min)	280 kips - 1246 kN	AISI Grade 1011/1018 HSLA 55 0.5 in - 12.75 mm	Threaded Box and Pin (no hardware) or Pipe Sleeve (3) 1.375 - 34.9 mm Grd 5 Bolts	
H70	O.D. = 7.00 in - 177.8 mm Wall = 0.408 in - 10.4 mm OCTG L80 Yield Strength = 80 ksi (min)	406 kips - 1806 kN	AISI Grade 1011/1018 HSLA 55 0.5 in - 12.75 mm	Threaded Box and Pin (no hardware) or Pipe Sleeve (3) 1.375 - 34.9 mm Grd 5 Bolts	
H96	O.D. = 9.625 in - 244.5 mm Wall = 0.545 in - 13.8 mm OCTG L80 Yield Strength = 80 ksi (min)	746 kips - 3318 kN	AISI Grade 1011/1018 HSLA 55 0.5 in - 12.75 mm	Threaded Box and Pin (no hardware) or Pipe Sleeve (3) 1.50 - 38.1 mm Grd 5 Bolts	
H13	O.D. = 13.375 in - 339.7 mm Wall = 0.480 in - 12.2 mm OCTG L80 Yield Strength = 80 ksi (min)	933 kips - 4150 kN	AISI Grade 1011/1018 HSLA 55 0.5 in - 12.75 mm	Pipe Sleeve (3) 1.50 - 38.1 mm Grd 5 Bolts	