

HELICAL PILE CAPACITIES SUMMARY

		Installation Torque		Maximum Soil Capacity ⁽⁷⁾		Shaft Max Allowable Capacity ⁽⁴⁾					
						P _n /Ω			Tension		
		Correlation Factor	Max Rated Torque	Ultimate	Allowable	Plain	Plain Corroded ⁽¹⁾	Galvanized Corroded ^(1,2)	Plain	Plain Corroded ⁽¹⁾	Galvanized Corroded ^(1,2)
		K _t (ft ⁻¹)	T (ft-lb)	Q _u (kips)	Q _a (kips)	(kips)	(kips)	(kips)	(kips)	(kips)	(kips)
Shaft	HA150	10 ⁽⁵⁾	6,500	65.0	32.5	29.8 ⁽⁸⁾	27.0 ⁽⁸⁾	27.1 ⁽⁸⁾	29.8	27.0	27.1
	HA175	10 ⁽⁵⁾	10,000	100.0	50.0	59.6 ⁽⁸⁾	54.1 ⁽⁸⁾	54.2 ⁽⁸⁾	59.6	54.1	54.2
	HP237	10 ⁽⁶⁾	2,500	25.0	12.5	35.1	26.3	32.6	19.3	13.6	16.9
	HP287	9 ⁽⁵⁾	5,600	50.4	25.2	55.8	45.2	52.9	30.6	23.6	27.6
	HP288	9 ⁽⁵⁾	7,900	71.1	35.5	74.0	63.6	71.1	41.6	34.1	38.1
	HP350	7 ⁽⁵⁾	17,500	122.5	61.3	118.5	105.0	114.8	73.0	62.8	69.1
	HP450	5.5 ⁽⁶⁾	22,000	121.0	60.5	123.3	109.1	119.3	61.1	52.6	58.7

- (1) Corroded capacities include a 50-year scheduled sacrificial loss in thickness per ICC-ES AC358.
- (2) Hot-dip galvanized coating in accordance with ASTM A123. Coatings on fasteners vary by product line. See individual shaft specification sheets for more details.
- (3) Allowable capacities consider continuous lateral soil confinement of fully embedded piles. Piles with exposed unbraced lengths or piles placed in fluid soils should be evaluated on a case-by-case basis by the project engineer.
- (4) Listed mechanical capacities are for the shaft and coupled connections only. System capacity should also not exceed the installed allowable torque-correlated soil capacity or the allowable capacity of the respective bracket (see additional bracket tables).
- (5) Default K_t factors are consistent with those listed in ICC-ES AC358. These values are generally conservative. Site-specific K_t factors can be determined for a given project with full-scale load testing.
- (6) Calculated K_t factors are in accordance with ICC-ES AC358. These values are generally conservative. Site-specific K_t factors can be determined for a given project with full-scale load testing.
- (7) Maximum ultimate soil capacity is the product of the torque correlation factor and the shaft maximum torque rating per the equation Q_u = K_t × T. The maximum allowable soil capacity is obtained by dividing the maximum ultimate soil capacity by a specified factor of safety. Although a factor of safety of 2.0 is commonly used, a higher or lower factor of safety may be considered at the discretion of the helical pile designer or as dictated by local code requirements. System capacity should also not exceed the mechanical capacity of the shaft or those listed in the respective bracket capacity tables.
- (8) Square shaft piles may be considered for compression applications in soil profiles that offer sufficient continuous lateral support; e.g., in soils with SPT N-values ≥ 10. In profiles or conditions that limit pile stability, buckling analyses should be considered by the project engineer, taking into account discontinuities and potential eccentricities created by the couplers.