



Table 1: Allowable Load Capacity of Side Load Brackets per ESR Reports Compliant with AC358 ¹

Helical Manufacturer	Pile Type	Torque Rating	K _t	Shaft Capacity ²	Bracket Number	External Sleeve (diameter = Ø)	Bracket Capacity (Compression)	Soil Capacity ³	System Capacity ⁴
Ram Jack (ESR-1854)	2 7/8" dia.	8,200 ft-lbs	9	60.0 k	4021.1	3 1/2"Ø x 4'-0	33.7 k	36.9 k	33.7 k
					4038.1	NA	19.7 k		19.7 k
					4039.1	3 1/2"Ø x 4'-0	32.1 k		32.1 k
	3 1/2" dia.	14,000 ft-lbs	7		4021.55	4 1/2"Ø x 4'-0	55.1 k	49.0 k	49.0 k
MacLean Dixie (ESR-3032)	1 1/2" sq. Bar	5,500 ft-lbs	10	27.5 k	Dixie 350-B4	2 7/8"Ø x 3'-4	24.0 k	27.5 k	24.0 k
	1 3/4" sq. Bar	9,000 ft-lbs		45.0 k	Dixie 350-B5	3 1/2"Ø x 3'-4	38.5 k	45.0 k	38.5 k
	2 7/8" dia.	7,500 ft-lbs	9	27.3 k	Dixie 350-B6	3 1/2"Ø x 3'-4	30.0 k	27.3 k	27.3 k
	3 1/2" dia.	10,400 ft-lbs	7	30.3 k	Dixie 350-B7	4"Ø x 3'-4	37.0 k	30.3 k	30.3 k
Chance ⁵ (ESR-2794)	1 1/2" sq. Bar	5,700 ft-lbs	10	varies: 22.1 k to 35.0 k	C1500121	2 5/8"Ø x 1'-6	21.7 k	28.5 k	21.7 k
					C1500121	2 5/8"Ø x 1'-6	32.8 k		28.5 k
					C1500738	Incl w/ bracket	30.5 k		28.5 k
	1 3/4" sq. Bar	10,500 ft-lbs		varies: 33.1 k to 60.0 k	C1500299	2 7/8"Ø x 1'-6	36.8 k	31.4 k	31.4 k
					C1500147	3 1/4"Ø x 2'-10	54.4 k		31.4 k
Foundation Supportworks ⁶ (ESR-3074)	2 7/8" dia.	7,898 ft-lbs	9	60.0 k	FS288B	3 1/2"Ø x 2'-6	24.9 k	35.5 k	24.9 k
					FS288B-G		27.9 k		27.9 k
					FS288B	3 1/2"Ø x 4'-0	31.4 k		31.4 k
					FS288B-G		35.1 k		35.1 k
					FS288BL	3 1/2"Ø x 2'-6	25.3 k		25.3 k
					FS288BL-G		28.2 k		28.2 k

¹ The purpose of Table 1 is to compare the ICC recognized capacities of remedial repair side load bracket with current ESR reports compliant with AC358. In order to provide a level playing field for comparison, the capacities shown are based on piles installed in firm soil (N-values ≥ 5) and a minimum concrete compressive strength of 2,500 psi.

² Section 3.8 of AC358 limits the maximum allowable axial capacity of a helical pile evaluated per AC358 criterion to a maximum of 60 kips.

³ Soil capacity is based on torque correlation method with piles installed at maximum torque rating. If the piles tested less than this, the lower values are listed in each ESR report.

⁴ AC358 and the ESR reports require the allowable capacity of a system to be taken as the lowest capacity of the bracket capacity, pile shaft capacity, helix plate capacity, and soil capacity. The helix plate capacity did not govern the system capacity for any of the manufacturers. Therefore, helix plate capacities were excluded from Table 1.

⁵ Chance is the only helical manufacturer that elected to have their system evaluated as a fully braced system. Therefore, they have additional restrictions. No portion of their piles may stand in air, water or fluid soil (Section 4.1.3 of ESR-2794). Per Section 4.1.8 the engineer must show pile bracing details on their drawings compliant with Section 1810.2.2 of the IBC.

⁶ Foundation Supportworks bracket numbers with a "G" suffix indicate hot-dipped galvanized coating. Part numbers without a "G" suffix indicate plain steel.



Table 2: Allowable Compression Capacity of New Construction Brackets per ESR Reports Compliant with AC358 ¹

Helical Manufacturer	Pile Type	Torque Rating (ft-lbs)	K _t	Bracket Number	Bearing Plate Dimn. (in)	Min. Embedment ² (in)	Allowable Compression Capacity			System Capacity ⁵
							Pile Shaft ³	Bracket	Soil ⁴	
Ram Jack (ESR-1854)	2 7/8" dia.	8,200	9	4075.1	8 x 4 x 5/8"	8.0	60.0 k	18.2 k	36.9 k	18.2 k
				4079.1	8 x 8 x 5/8"	8.0		36.5 k	36.9 k	36.5 k
	3 1/2" dia.	14,000	7	4076.1	9 x 9 x 1"	10.0		49.5 k	49.0 k	49.0 k
MacLean Dixie (ESR-3032)	1 1/2" sq. Bar	5,500	10	NCB060604CP1	6 x 6 x 1/2"	8.6	27.5 k	25.6 k	27.5 k	25.6 k
	1 3/4" sq. Bar	9,000		NCB080806CP2	8 x 8 x 3/4"	9.7	45.0 k	35.0 k	45.0 k	35.0 k
	2 7/8" dia.	7,500	9	NCB060604CP1B	6 x 6 x 1/2"	11.0	27.3 k	30.0 k	27.3 k	27.3 k
	3 1/2" dia.	10,400	7	NCB080806CP2B	8 x 8 x 3/4"	15.0	30.3 k	40.0 k	30.3 k	30.3 k
Chance ⁶ (ESR-2794)	1 1/2" sq. Bar	5,700	10	C1500458G	6 x 6 x 1/2"	See Note 8	varies: 21.1 k to 35.0 k	33.7 k	28.5 k	28.5 k
				C1500465G						28.5 k
	1 3/4" sq. Bar	10,500		C1500459G	6 x 6 x 3/4"		varies: 33.1 k to 60.0 k	52.7 k	33.4 k	33.4 k
				C1500467G						33.4 k
Foundation Supportworks ⁷ (ESR-3074)	2 7/8" dia.	7,898	9	HP288NCB	6 x 6 x 1/2"	See Note 8	60.0 k	35.5 k	35.5 k	40.8 k
				HP288NCB-G						40.8 k
				HP288NCB8	8 x 8 x 3/4"					43.1 k
				HP288NCB8-G						46.5 k

¹ The purpose of Table 2 is to compare the ICC recognized capacities of new construction brackets with current ESR reports compliant with AC358. In order to provide a level playing field for comparison, the capacities shown are based on piles installed in firm soil (N-values ≥ 5), min. foundation width of 14-inches and a min. concrete compressive strength of 2,500 psi.

² The minimum embedment shown for compression applications is measured from the top of the concrete foundation to the top of the bracket bearing plate. The bearing plate of all the brackets must be embedded a minimum of 3-inches from the bottom of the foundation. The embedment depth is based on minimum concrete cover for punching shear.

³ Section 3.8 of AC358 limits the maximum allowable axial capacity of a helical pile evaluated per AC358 criterion to a maximum of 60 kips.

⁴ Soil capacity is based on torque correlation method with piles installed at maximum torque rating. If the piles tested less than this, the lower values are listed in each ESR report.

⁵ AC358 and the ESR reports require the allowable capacity of a system to be taken as the lowest capacity of the bracket capacity, pile shaft capacity, helix plate capacity, and soil capacity. The helix plate capacity did not govern the system capacity for any of the manufacturers. Therefore, helix plate capacities were excluded from Table 1.

⁶ Chance is the only helical manufacturer that elected to have their system evaluated as a fully braced system. Therefore, they have additional restrictions. No portion of their piles may stand in air, water or fluid soil (Section 4.1.3 of ESR-2794). Per Section 4.1.8 the engineer must show pile bracing details on their drawings compliant with Section 1810.2.2 of the IBC.

⁷ Foundation Supportworks bracket numbers with a "G" suffix indicate hot-dipped galvanized coating. Part numbers without a "G" suffix indicate plain steel.

⁸ Chance and Foundation Supportworks bracket capacities are based on localized limit state of concrete in bearing only. All other limit states related to the concrete foundation, such as punching shear, were not evaluated in their ESR reports. Their ESR reports require an engineer to calculate the appropriate limit states of their brackets for each project.



Table 3: Allowable Tension Capacity of New Construction Brackets per ESR Reports Compliant with AC358 ¹

Helical Manufacturer	Pile Type	Torque Rating (ft-lbs)	K _t	Bracket Number	Bearing Plate Dimn. (in)	Min. Embedment ² (in)	Allowable Tension Capacity			System Capacity ⁵
							Pile Shaft ³	Bracket	Soil ⁴	
Ram Jack (ESR-1854)	2 7/8" dia.	8,200	9	4075.1	8 x 4 x 5/8"	9.0	60.0 k	18.2 k	36.9 k	18.2 k
				4079.1	8 x 8 x 5/8"	10.0		36.5 k	36.9 k	36.5 k
	3 1/2" dia.	14,000	7	4076.1	9 x 9 x 1"	11.0		47.2 k	44.8 k	44.8 k
MacLean Dixie (ESR-3032)	1 1/2" sq. Bar	5,500	10	NCB060604CP1	6 x 6 x 1/2"	10.6	27.5 k	25.6 k	27.5 k	25.6 k
	1 3/4" sq. Bar	9,000		NCB080806CP2	8 x 8 x 3/4"	11.7	45.0 k	35.0 k	45.0 k	35.0 k
	2 7/8" dia.	7,500	9	NCB060604CP1B	6 x 6 x 1/2"	13.0	27.3 k	30.0 k	27.3 k	27.3 k
	3 1/2" dia.	10,400	7	NCB080806CP2B	8 x 8 x 3/4"	15.0	30.3 k	40.0 k	30.3 k	30.3 k
Chance ⁶ (ESR-2794)	1 1/2" sq. Bar	5,700	10	C1500465G	6 x 6 x 1/2"	See Note 8	varies: 21.1 k to 35.0 k	28.1 k	27.9 k	27.9 k
	1 3/4" sq. Bar	10,500		C1500467G	6 x 6 x 3/4"			varies: 33.1 k to 60.0 k	39.5 k	28.7 k
Foundation Supportworks ⁷ (ESR-3074)	2 7/8" dia.	7,898	9	HP288NCB	6 x 6 x 1/2"	See Note 8	60.0 k	29.9 k	27.6 k	27.6 k
				HP288NCB-G				29.9 k		
				HP288NCB8	8 x 8 x 3/4"			34.1 k		
				HP288NCB8-G				38.2 k		

¹ The purpose of Table 2 is to compare the ICC recognized capacities of new construction brackets with current ESR reports compliant with AC358. In order to provide a level playing field for comparison, the capacities shown are based on piles installed in firm soil (N-values ≥ 5), min. foundation width of 14-inches and a min. concrete compressive strength of 2,500 psi.

² The minimum embedment shown for tension applications is measured from the bottom of the concrete foundation to the top of the bracket bearing plate. The bearing plate of all the brackets must be embedded a minimum of 3-inches from the bottom of the foundation. The embedment depth is based on minimum concrete cover for punching shear.

³ Section 3.8 of AC358 limits the maximum allowable axial capacity of a helical pile evaluated per AC358 criterion to a maximum of 60 kips.

⁴ Soil capacity is based on torque correlation method with piles installed at maximum torque rating. If the piles tested less than this, the lower values are listed in each ESR report.

⁵ AC358 and the ESR reports require the allowable capacity of a system to be taken as the lowest capacity of the bracket capacity, pile shaft capacity, helix plate capacity, and soil capacity. The helix plate capacity did not govern the system capacity for any of the manufacturers. Therefore, helix plate capacities were excluded from Table 1.

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⁷ Foundation Supportworks bracket numbers with a "G" suffix indicate hot-dipped galvanized coating. Part numbers without a "G" suffix indicate plain steel.

⁸ Chance and Foundation Supportworks bracket capacities are based on localized limit state of concrete in bearing only. All other limit states related to the concrete foundation, such as punching shear, were not evaluated in their ESR reports. Their ESR reports require an engineer to calculate the appropriate limit states of their brackets for each project.