

EBS GEOSTRUCTURAL INC.

HELICAL PILE & MICROPILE

CAPACITY REFERENCE GUIDE

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SQUARE SHAFT

HELICAL PILE

GEOTECHNICAL CAPACITIES

SOIL PROPERTIES		PRODUCT TYPE	COMPRESSION CAPACITY		TENSION CAPACITY	
"N" VALUE COHESIVE	"N" VALUE NON- COHESIVE	SQUARE SHAFT SIZE mm (INCHES)	SLS kN (KIPS)	ULS kN (KIPS)	SLS kN (KIPS)	ULS kN (KIPS)
25–35	25–30	* SS5 38 (1.5)	200 (45)	270 (60)	60 (13)	80 (18)
35–45	30–35	SS175 44 (1.75)	370 (83)	500 (113)	115 (26)	150 (34)
50–60	40–50	SS200 51 (2)	500 (113)	670 (150)	205 (46)	270 (61)
65–100	55–100	SS225 57 (2.25)	680 (153)	915 (206)	275 (62)	355 (80)

* Ability to install in tight access (3ft wide) and low headroom (6ft high)

ROUND SHAFT

HELICAL PILE

GEOTECHNICAL CAPACITIES

SOIL PROPERTIES		PRODUCT TYPE	COMPRESSION CAPACITY		TENSION CAPACITY	
"N" VALUE COHESIVE	"N" VALUE NON- COHESIVE	DIAMETER mm (INCHES)	SLS kN (KIPS)	ULS kN (KIPS)	SLS kN (KIPS)	ULS kN (KIPS)
25–35	25–30	RS2875 73 (2.875)	115 (26)	155 (35)	50 (11)	65 (15)
35–45	30–35	RS3500 89 (3.5)	210 (47)	280 (63)	90 (20)	120 (27)
50–60	40–50	RS4500 114 (4.5)	320 (72)	430 (97)	135 (30)	185 (42)

NOTE: Larger diameter helical pile shafts available if required.

ROCK BONDED

MICROPILE

GEOTECHNICAL CAPACITIES

ROCK DESCRIPTION	GROUT-TO-ROCK TYPICAL BOND (kPA)	ULS CAPACITIES kN (KIPS)					
		DIAMETER OF MICROPILE INTO ROCK					
		108mm Ø		149mm Ø		209mm Ø	
		COMPRESSION	TENSION	COMPRESSION	TENSION	COMPRESSION	TENSION
Soft Shales (Fresh - moderate fracturing, little to no weathering)	375 (Range 205 to 550)	560 (126)	370 (83)	1050 (236)	700 (158)	1470 (330)	980 (220)
Slates and Hard Shales (Fresh - moderate fracturing, little to no weathering)	950 (Range 515 to 1380)	630 (142)	420 (95)	1240 (279)	820 (185)	2900 (653)	1900 (428)
Limestone (Fresh - moderate fracturing, little to no weathering)	1550 (Range 1035 to 2070)	690 (155)	460 (104)	1440 (324)	960 (216)	3660 (824)	2440 (549)
Granite and Basalt (Fresh - moderate fracturing, little to no weathering)	2800 (Range 1380 to 4200)	720 (162)	480 (108)	1570 (353)	1050 (236)	3800 (855)	2530 (569)

- NOTE:**
1. Grout-to-Ground bond values taken from FWHA NHI-05-039 Micropile Design & Construction Reference Manual.
 2. Micropile Capacities are maximum values based on the following: a) Micropile Diameter b) Bond Length c) Bar Diameter d) Bar Capacity

SOIL BONDED

MICROPILE

GEOTECHNICAL CAPACITIES

SOIL DESCRIPTION	GROUT-TO-SOIL TYPICAL BOND (kPA)	ULS CAPACITIES kN (KIPS)					
		DIAMETER OF MICROPILE INTO SOIL					
		140mm Ø		178mm Ø		244mm Ø	
		COMPRESSION	TENSION	COMPRESSION	TENSION	COMPRESSION	TENSION
Silt and Clay (Stiff, dense to very dense)	80 (Range 45 to 120)	250 (56)	165 (37)	320 (72)	215 (48)	440 (99)	290 (65)
Glacial Till (Medium – very dense)	145 (Range 95 to 190)	460 (104)	305 (69)	585 (132)	390 (88)	800 (180)	535 (120)
Sand (Fine coarse, dense to very dense)	165 (Range 70 to 265)	525 (118)	350 (79)	665 (150)	440 (99)	910 (205)	605 (136)

NOTE:

1. Grout-to-Ground bond values taken from FWHA NHI-05-039 Micropile Design & Construction Reference Manual.
2. Micropile Capacities are maximum values based on the following: a) Micropile Diameter b) Bond Length c) Bar Diameter d) Bar Capacity

REQUIRED FOR PRICING:

1. Geotechnical report including boreholes
2. Structural drawing(s) and loading

HELICAL PILE APPLICATIONS:

- High water table
- Tight access/low headroom
- Installation close to existing structures
- Need to control spoils (soil/ground water) or vibrations
- I.C.I. New Construction or retrofit

MICROPILE APPLICATIONS:

- High loads in tension or compression that require bedrock embedment
- Obstructions in soil (rock, concrete, etc.)
- Tight access/low headroom
- Installation close to existing structures
- Need to control spoils (soil/ground water) or vibrations
- I.C.I. New construction or retrofit



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VERSION 2019.11.11