Installation Methods

Skid Steer

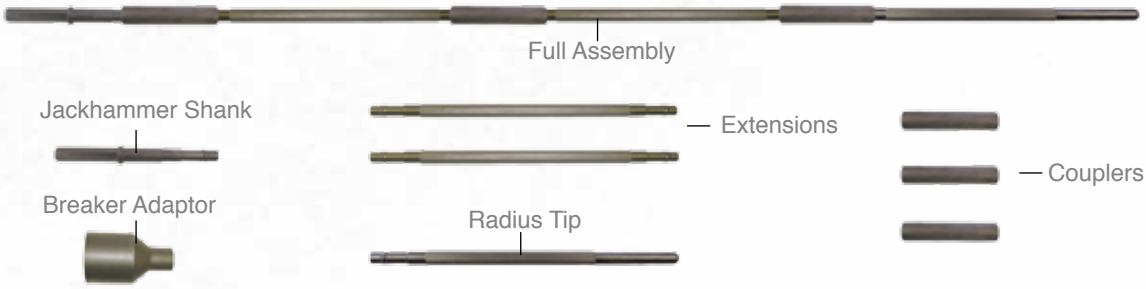
Excavator

Mounted Vibro Plate

Rock Drill

Handheld Jackhammer

Drive Steel



Foresight offers quality hardened drive steel in lengths of 3ft (.9m), 6ft (1.8m), and 8ft (2.4m) for anchor installation. Sections of drive steel are couples together to drive anchors to required depths.

Multi Purpose Specifications

Geologic soil Description	Blow Count (N) Per ASTM-D 1586	MR-68		MR-88		MR-4		MR-3		MR-2		MR-1		MR-SR	
Recomended to use appropriate safety factors, soil dependant, maximum loading not to exceed 67% of ultimate material strength.		KPS (1,000 lbs)	KN	KPS (1,000 lbs)	KN	KPS (1,000 lbs)	KN	KPS (1,000 lbs)	KN	KPS (1,000 lbs)	KN	KPS (1,000 lbs)	KN	KPS (1,000 lbs)	KN
		5	22	10	45	16	71	20	89	40	178	40	178	40	178
Very dense/cemented sands; Coarse gravel and cobbles	60-100+	5	22	10	45	16	71	20	89	28-40	125-178	-	-	-	-
		(1,3)		(1,3)		(1,3)		(1,3)		(1,3)		(5)		(5)	
Dense fine compacted sands; Very hard silts or clays	45-60	3-4	14-18	6-10	27-45	9-16	40-71	17-20	76-89	21-28	93-125	36-40	160-178	40	178
		(2,3,4)		(2,3,4)		(2,3,4)		(2,3,4)		(2,4)		(1,3,4)		(1,3)	
Dense clays, sands and gravels; Hard silts and clays	35-50	2.2-3	10-13	4-6	18-27	6-9 (4)	27-40	12-18	53-80	15-22	67-98	24-36	107-160	32-40	142-178
		(4)		(4)		(4)		(2,4)		(2,4)		(2,4)		(2,3,4)	
Medium dense sandy gravel; Stiff to hard silts and clays	24-40	1.5-2	6-9	3-4	13-18	4.5-6	20-25	9-14	40-62	12-18	53-80	18-20	80-89	24-34	107-151
		(4)		(4)		(4)		(4)		(4)		(2,4)		(2,4)	
Medium dense coarse sand and sandy gravel; Stiff to very stiff silts and clays	14-25	1.1-1.5	5-7	2-3	19-13	3.5-4.5	16-20	7-9	31-40	9-12	40-53	15-20	67-89	18-24	80-107
		(4)		(4)		(4)		(4)		(4)		(4)		(4)	
Loose to medium dense fine to coarse sand; Firm to stiff clays and silts	7-14	0.9-1.2	4-5	1.5-2.5	7-11	2.5-4	11-18	5-8	22-36	7-10	31-44	10-15	44-67	14-18	62-80
		(4)		(4)		(4)		(4)		(4)		(4)		(4)	
Loose fine sand, alluvium, Soft- clays; Fine saturated silty sand	4-8	0.6-1.0	3-4	0.9-1.5	4-7	1.5-2.5	7-11	3-5	13-22	5-8	22-36	8-12	36-53	9-14	40-62
		(4)		(4,6)		(4,6)		(4,6)		(4,6)		(4,6)		(4,6)	
Peat, organic silts; Inundates silts, fly ash	0-5	-	-	0.2-0.9	0.9-4	0.3-1.5	1.3-7	0.8-3	3.5-13	2-5	9-22	3-8	13-37	4-12	18-53
		(5)		(4,6)		(4,6)		(4,6)		(4,6)		(4,6)		(4,6)	

NOTE:

1. Drilled hole required to install
2. Installation may be difficult. Pilot hole may be required.
3. Holding capacity limited by structural limits of anchors.
4. Holding capacity limited by soil failure.
5. Not recommended in these soils.
6. Wide variation in soil properties reduces prediction accuracy. Pre-construction field test recommended.

*Measure capacity in KIPS and KN after anchor locking with no significant movement.

CAUTION:
When installing Manta Ray anchors, follow all standard safety practices including but not limited to hard hats, safety shoes, eye and ear protection, and gloves. All underground work requires location procedures. Do not install an anchor until you know what is below surface. All anchors must be fully anchor locked before being put into service. Use this chart for estimating purposes only. Actual capacity must be tested with anchor locker. Predicted ultimate holding capacities are based on results of extensive Foresight Products testing and interpretation and are offered as an application guide only. They do not represent a guarantee of holding capacity in any particular soil class.

Foresight Products offers an unconditional guarantee for free replacement if any Manta Ray anchor breaks during installation using the manufacturer's recommended equipment and procedures. Foresight Products warrants all its installation equipment; drive steel, and anchor lockers. No other anchor system offers this complete guarantee and warranty protection.

PATENTED WORLDWIDE
Nos. D572,546 - 6,237,289 - 7,534,073 - Other international patents.

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Manta Ray Performance – Breakthrough Earth Anchoring Technology >>>

Manta Ray's are driven into the ground, not augured or torqued. No holes are dug thus no disturbance or displacement of soil occurs during installation.

The anchors are driven with conventional hydraulic/ pneumatic equipment that is readily available world-wide. Once driven to the proper depth, remove the drive steel and then pull up on the anchor road to rotate the anchor into undisturbed soil, like a toggle bolt in soil. This is called "anchor locking" the anchor. The anchor is pulled to reach the holding capacity required which is measured by a gauge on the anchor locker. Each anchor is immediately load tested to the exact capacity required. Installed capacities are soil dependent. No other system offers this feature.

How It Works >>>

Drive Anchor

Remove Drive Steel

Pull On Rod

Load Tested

A Manta Ray for every application >>>

Manta Ray anchors offer light to heavy duty holding capacities. All Manta Ray anchors are made of galvanized ductile iron. Models MR-SR to MR-4 can be driven with the same drive steel set. All anchors can be load tested to the desired holding capacity with the anchor locker.

MR-SR: 40,000 lbs (178 Kn)
Utilimate Strength Anchor – Working loads (2-1 safety factor) 20,000 lbs (89Kn). This is the largest of the most commonly used MANTA RAY anchors. It is hot dipped galvanized and designed to be used in "softer" soils. It accepts anchor rods .625" (16 mm) to 1.0" (25 mm).

MR-1: 40,000 lbs (178 Kn)
Utilimate Strength Anchor – Working loads (2-1 safety factor) 20,000 lbs (89Kn). This is anchor is hot dipped galvanized and designed to be used in normal/medium soils. It accepts anchor rods .625" (16 mm) to 1.0" (25 mm).

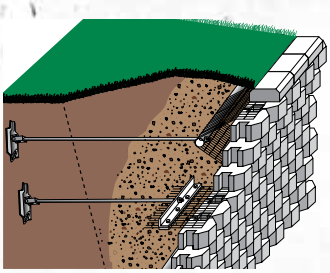
MR-2: 40,000 lbs (178 Kn)
Utilimate Strength Anchor – Working loads (2-1 safety factor) 20,000 lbs (89Kn). This anchor is hot dipped galvanized and designed to be used exclusively in hard/ dense/cobble soils. It accepts anchor rods .625" (16 mm) to 1.0" (25 mm).

MR-3: 20,000 lbs (89 Kn)
Utilimate Strength Anchor – Working loads (2-1 safety factor) 10,000 lbs (45 Kn). It is hot dipped galvanized and designed to be used for medium loads in normal/hard soils. It accepts anchor rods .50" (13 mm) to .75" (19 mm).

MR-4: 16,000 lbs (71 Kn)
Utilimate Strength Anchor – Working loads (2-1 safety factor) 8,000 lbs (36 Kn). It is hot dipped galvanized and designed for lighter loads in normal/hard soils. It accepts anchor rods .50" (13 mm) to .75" (19 mm).

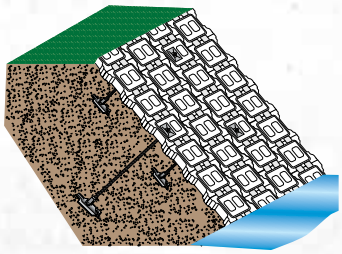
MR-88:
Tough light duty anchor for maximum loads in normal/hard soils to 5,000 lbs. (22 Kn). Accepts anchor rods .50" (13mm).

MR-68:
Light duty anchor for maximum loads in "normal/hard" soils to 3,000 lbs (13 Kn). Accepts anchor rods .375" (10mm).

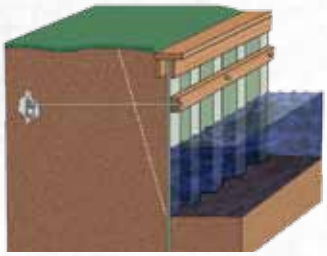
Block Wall

Manta Ray tie backs allow minimum excavation for mechanically stabilized earth walls. This allows block/ geogrid walls to be installed where excavation is not practical

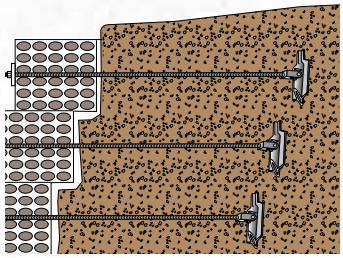
Revetment Mat

Manta Ray anchors provide critical points of anchoring stability on stream and shorelines to prevent water erosion using cellular concrete revetment matting. The anchors install easily through openings in individual blocks. This system prevents lifting of mats and dangerous erosion under extreme flood conditions.

Sea Wall

The anchoring of seawalls with Manta Ray eliminates messy complicated tie back methods. Using Manta Ray results in aesthetically pleasing and cost-effective seawall installations.

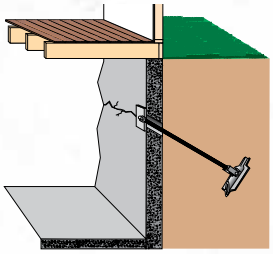



Gabion

The flexibility of the Manta Ray system allows gabions to be installed on steep slopes. Increases overturning stability and secures gabion mattresses to slopes.

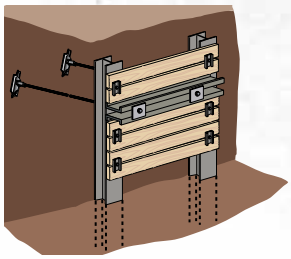

Sheet Pile

A superb and easy anchoring method to secure sheet piles. Instant anchoring to provide overturning stability and protection.

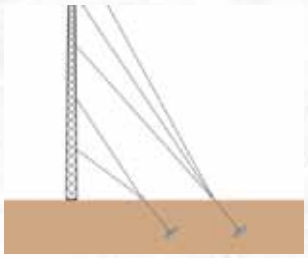
Foundation Stabilization

Exterior soils can cause basement, foundation and other wall types to bow and buckle. Simply core a hole in the wall, drive and load test Manta Ray anchor to stabilize and stop wall movement.

Excavation Shoring

For both temporary and permanent works, Manta Ray provides instant and effective stabilization with no grouting and no soil disturbance.

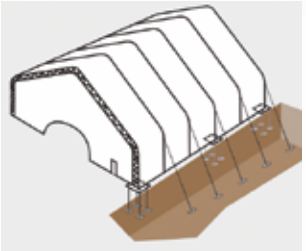



Guyed Towers

Across the world Manta Ray has simplified tower installation for electrical transmission and distribution and other uses. The Manta Ray each anchor system eliminates the need for concrete guy attachment.


Pipelines

Install Manta Ray at the surface or below grade and even under water. Manta Ray earth anchors prevent movement as well as pipeline flotation. Simple anchor installation procedures equates to significant time and cost savings.

Structures

From inflatable air domes to large rapid-deployment re-locatable structures, simply drive the anchors, load test and attach to the structure for a superior hold.

Anchor Lockers

Foresight offers hydraulic powered light to heavy duty capacity anchor lockers to load test Manta Ray's. Convenient and portable anchor lockers pull up on the anchor rod to set the anchor in the ground at the desire holding capacity which is registered on the anchor locker gauge. Installation and testing are simultaneous.