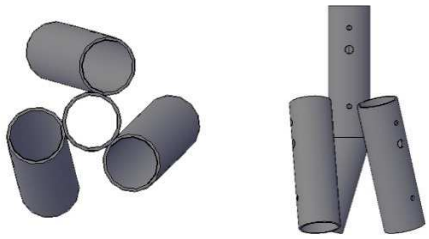
Mega Anchor Installation & Selection Guide

Mega Anchors

Standard Mega Anchors

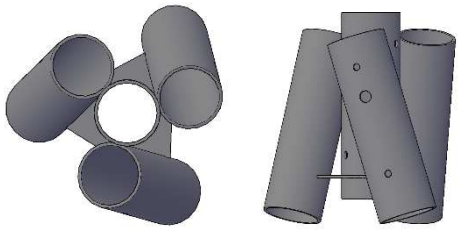
MA2#
Standard Mega Anchor

The MA2# Standard Mega Anchor is designed to support lighter structures and structures that are closer to the ground such as decks and transportable buildings. Utilising 32NB CHS as the riser this can be a more cost effective solution in situations where the heavy duty mega anchor is not required.



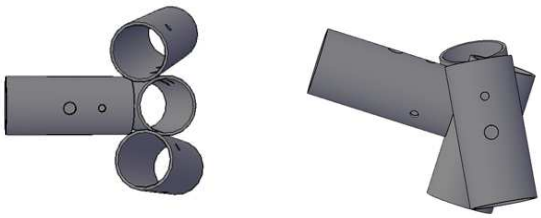
MA2#A Squat Braced
Standard Mega Anchor

The MA2#A Braced Standard Mega Anchor is designed to support lighter structures and structures that are closer to the ground such as decks and transportable buildings. Utilising 32NB CHS as the riser this can be a more cost effective solution in situations where the heavy duty mega anchor is not required and has an additional brace at the anchor base providing more lateral strength.



MA3# Brace
Mega Anchor

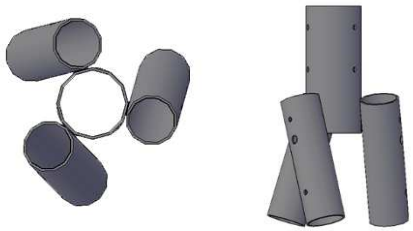
The MA3# Brace Mega Anchor is designed for bracing structures in situations where it is not possible to run a brace between 2 Mega Anchors creating a knee brace between the ground and the Mega Anchor riser.



Heavy Duty Mega Anchors

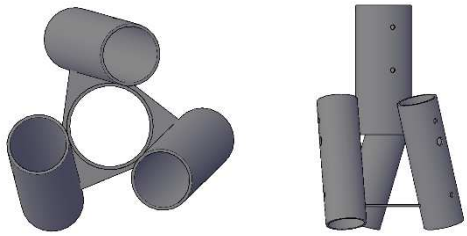
MA1#
Heavy Duty Mega Anchor

The MA1# Heavy Duty Mega Anchor is designed to support larger heavier structures and structures that are elevated. Utilising 50NB CHS as the riser material this material is a heavier material than what is used in the standard anchor. The MA1# Mega Anchor is available in a galvanized or stainless steel finish.



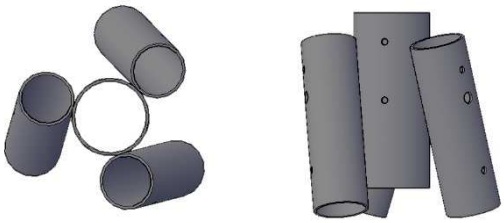
MA1#A Braced
Heavy Duty Mega Anchor

The MA1#A Heavy Duty Mega Anchor is designed to support larger heavier structures and structures that are elevated. Utilising 50NB CHS as the riser material this material is a heavier material than what is used in the standard anchor and has an additional brace at the anchor base providing more lateral strength. The MA1#A Mega Anchor is available in a galvanized or stainless steel finish



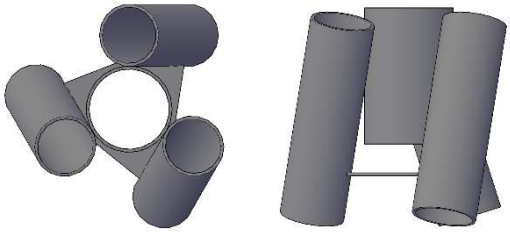
MA24# Squat
Heavy Duty Mega Anchor

The MA24# Squat Mega Anchor is a heavy duty Mega Anchor designed for structures that are low to the ground. Utilising 50NB CHS as the riser material this material is a heavier material than what is used in the standard anchor. The MA24# Mega Anchor is available in a galvanized or stainless steel finish.



MA24#A Squat Braced
Heavy Duty Mega Anchor

The MA24# Squat Mega Anchor is a heavy duty Mega Anchor designed for structures that are low to the ground. Utilising 50NB CHS as the riser material this material is a heavier material than what is used in the standard anchor and has an additional brace at the anchor base providing more lateral strength. The MA24# Mega Anchor is available in a galvanized or stainless steel finish.

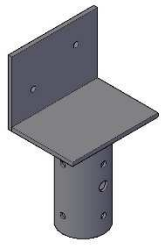


Mega Anchor Brackets

Standard Mega Anchor Brackets

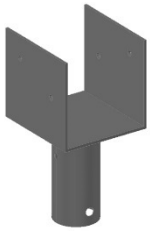
MA4#
Standard Angle Top

The MA4# slides over the 32NB riser providing a solid fixing point for a range of bearers.



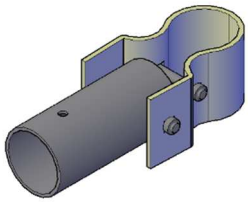
MA5# Squat Braced
Standard U Top

The MA5# slides over the 32NB riser a solid fixing for vertical 90x90 timber posts and can also be used for supporting a range of bearers.



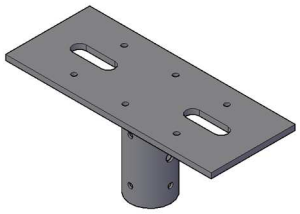
MA6#
Standard Brace Bracket

The MA6# slides over the 32NB riser providing a fixing point for 32NB galvanised pipe Brace



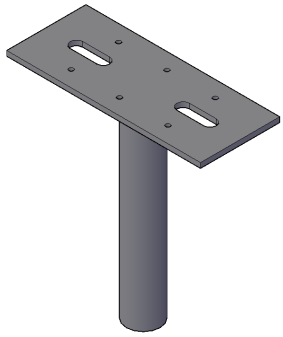
MA32#
Standard Flat Top

The MA32# slides over the 32NB riser providing a flat fixing point for a range bearers and structural support beams.



MA32#A
Standard Flat Top

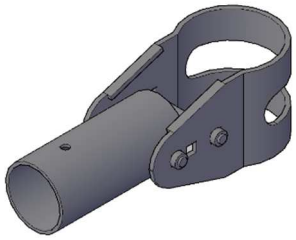
The MA32#A is similar to the MA32# however this version slides directly into any of the standard Mega Anchors.
The MA32#A has limited adjustment and is designed for structures that are low to the ground. The MA32#A slides directly into the Mega Anchor riser guide providing a flat fixing point for a range of bearers and structural support beams.



Heavy Duty Mega Anchor Brackets

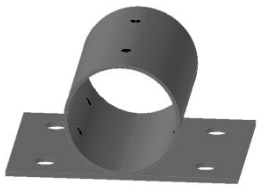
MA7#
Heavy Duty Brace Bracket

The MA7# slides over the 50NB riser providing a fixing point for 32NB galvanised pipe Brace.



MA14#
Heavy Duty Construction Bracket

The MA14# slides over the 50NB riser providing a solid fixing pint for retaining
wall sleepers and bearers.

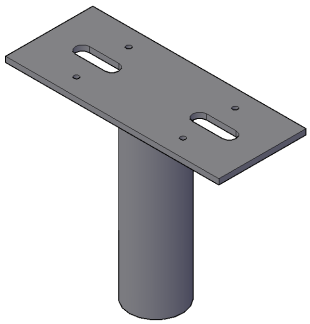


MA15#
Heavy Duty Flat Top

The MA15# slides over the 50NB riser providing a flat fixing point for a range bearers and structural support beams.

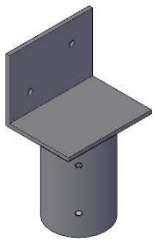
MA15#A
Heavy Duty Flat Top

The MA15#A is similar to the MA15# however this version slides directly into any of the Heavy Duty Mega Anchors.
The MA15#A has less adjustment and is designed for structures that are low to the ground. The MA15#A slides directly into the Mega Anchor riser guide providing a flat fixing point for a range of bearers and structural support beams.



MA16#
Heavy Duty Angle Top

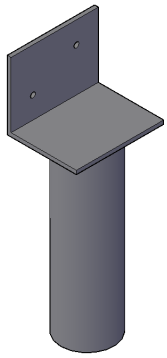
The MA16# slides over the 50NB riser providing a solid fixing point for a range of bearers and structural members.



MA16#A

Heavy Duty Angle Top

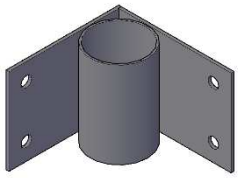
The MA16#A is similar to the MA16# however this version slides directly into any of the Heavy Duty Mega Anchors.
The MA16#A has less adjustment and is designed for structures that are low to the ground. The MA16#A slides directly into the Mega Anchor riser guide providing a solid fixing point for a range of bearers and structural support beams.



MA23#

Heavy Duty Corner Construction Bracket

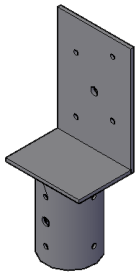
The MA23# slides over the 50NB riser providing a solid fixing point for retaining wall sleepers and bearers.



MA27#

Heavy Duty Angle Top 148

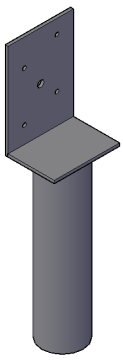
The MA27# slides over the 50NB riser providing a solid fixing point for larger bearers over 150mm



MA27#A

Heavy Duty Angle Top 148

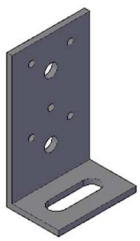
The MA27# slides over the 50NB riser providing a solid fixing point for larger bearers over 150mm.
The MA27#A has less adjustment and is designed structures that are low to the ground. The MA27#A slides directly into the Mega Anchor riser guide providing a solid fixing point for a range of bearers and structural support beams.



MA31#

Universal Angle Bracket

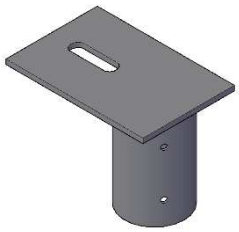
TheMA31# is a universal angle bracket that can bolt directly to the MA15#, MA32# or MA41# brackets converting the flat top into an adjustable angle top or U bracket for connecting bearers or vertical posts.



MA41#
Heavy Duty Off Set Flat Top

The MA41# off set flat top is similar to the MA15# however this is a heavy duty flat top that is shorter on one side. This makes it easier when you have an edge to work to.

The MA41# can be combined with the MA31# turning this flat top into a fully adjustable angle top.

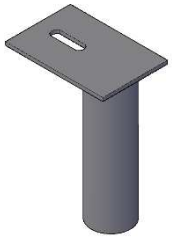


MA41#A
Heavy Duty Off Set Flat Top

The MA41# off set flat top is similar to the MA15# however this is a heavy duty flat top and is shorter on one side. This makes it easier when you have an edge to work to.

The MA41#A can be combined with the MA31# turning this flat top into and adjustable angle top.

The MA41#A has less adjustment and is designed for structures that are low to the ground. The MA41#A slides directly into the Mega Anchor riser guide providing a solid fixing point for a range of bearers and structural support beams.



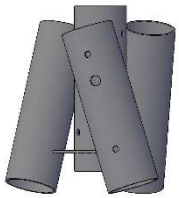
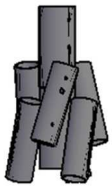
Mega Anchor Tools

IT32# & IT3250# Mega Anchor Alignment Tool The IT32# and the It 3250# alignment tools sleeve into either the standard or heavy duty Mega Anchor	
IT50# Alignment Tool Adapter	
MAJHD# Mega Anchor Jack Hammer Dolly	
MAHD# Mega Anchor Hand Dolly	
MADB# Mega Anchor Drill Bit	

Product Selection Guide

Product Selection Introduction

Your Mega Anchor pile cap will be selected based on the characteristics and specification of your project
The table below is a guide to selecting the correct Mega Anchor pile cap.

Mega Anchor	Selection Criteria
Standard Mega Anchor 	A standard Mega Anchor can be selected when • Elevations are 600mm between the ground and the underside of the structural support • Wind A, B and C according to AS/NZS 1170.2:2011 • Any single point load that does not exceed 30KN • Domestic and some Commercial appilcations
Heavy Duty Mega Anchor 	A Hevy Duty Mega Anchor can be selected when • Elevations are up to 6m to the underside of the structural support • Wind regions A, B, C and D according to AS/NZS 1170.2:2011 • Any single point load that does no exceed 30KN • Domestic and Commercial Applications
Double Stacked Heavy Duty Mega Anchor 	A Hevy Duty Mega Anchor can be selected when • Structures are up to 6m to the underside of the structural support • Wind regions A, B, C and D according to AS/NZS 1170.2:2011 • Any single point load that does no exceed 60KN • Domestic and Commecrcial Applications
Note: *For more information on selecting the correct Mega Anchor for your project please contact Mega Buiding Industries at info@megabuildingindustries.com.au*	

Material Selection Guide

Material selection introduction:

Selecting the type of material to be used in your project is essential.
This material selection guide has been constructed in accordance with the relevant Australian Standards, AS 2159–2009 and AS 4312-2008.

This section guide will guide you through selecting the correct material and inform you of allowances that should be made when selecting materials for your project.

Note: The Steel corrosion calculations in this section are based on corrosion rates of uncoated steel (un-galvanised / un-painted)

When selecting your Mega Anchor, piles and riser's you need to be aware of the atmospheric corrosion conditions and ground corrosion conditions. The material for the Mega Anchor footing system is 32NB and 50NB Galvanised Pipe. The galvanised pipe is available in different thicknesses from 2mm to 4mm, stainless steel piles are also available for extreme conditions. The correct pile material should be selected for your project.

General Information:
The conditions both "Atmospheric Corrosivity" and "Soil Aggressiveness" adopt an exposure classification depending on the aggressiveness of the environment.

This table represents the classifications of soil and atmospheric corrosivity levels as per AS. 2159-2009.

Soil corrosivity	Atmospheric corrosivity
Non Aggressive	Very Low
Mild	Low
Moderate	Medium
Severe	High
Very Severe	Very High

In ground corrosion allowances of uncoated steel (un-galvanised).
The in ground corrosion allowances apply to the piles and Mega Anchors that are buried below the ground.

The table below outlines the rate that uncoated steel deteriorates in each corrosivity classification as per AS. 2159-2009.

Classification	Corrosion Allowance mm/Year
Non Aggressive	<0.01
Mild	0.01-0.02
Moderate	0.02-0.04
Severe	0.04-0.1
Very Severe	>0.1

Note: Corrosion allowances do not apply for stainless steel materials
Note: The Mega Anchor has an average galvanising coating thickness of 300g/m or 42 microns and is galvanised in accordance with, AS. 4680 2006

Soil Aggressiveness:

When calculating the soil aggressiveness there are two base soil conditions:

1. Soil Conditions A
2. Soil Conditions B

Soil condition A is high permeability soils like sand and gravel that are in ground water.
Soil condition B is Low permeability soils like silts and clays or all soils above ground water.

This table identifies the soil aggressiveness classifications in comparison A & B soil conditions and the HP levels per AS. 2159-2009

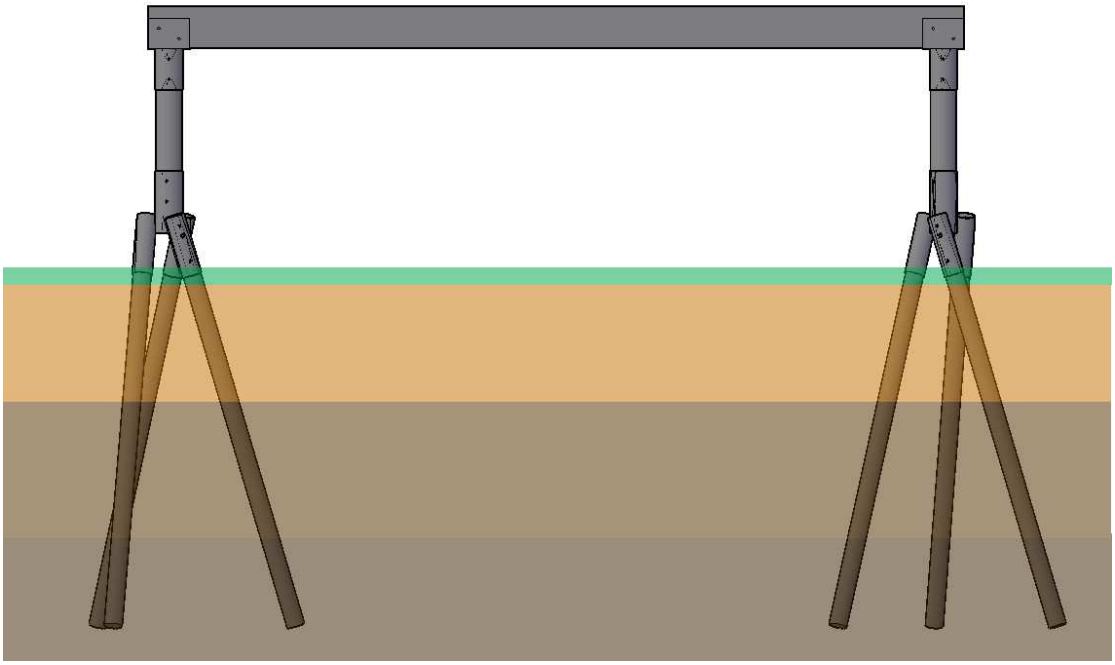
Soil HP	Soil Conditions A Soil Aggressiveness	Soil Conditions B Soil Aggressiveness
>5	Non Aggressive	Non Aggressive
4-5	Mild	Non Aggressive
3-4	Moderate	Mild
3-2	Severe	Moderate
<2	Very Severe	Severe

Open Air Aggressiveness:

Atmospheric corrosivity is easily identified as each area in Australia has its own classification

This table identifies the region and the atmospheric corrosivity classification per AS. 4312-2008

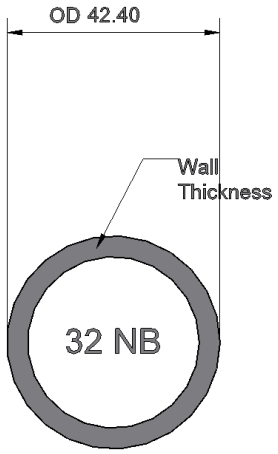
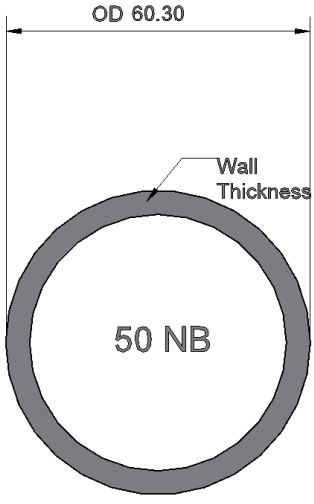
Atmospheric corrosivity Area	Atmospheric corrosivity
C 1	Very Low
C 2	Low
C 3	Medium
C 4	High
C 5	Very High



Material Selection Sizing Table:

Galvanized Steel Selection								
	Pipe Size (Plain End)			Extra Light Galv. (Green) C350LO	Light Galv. (Yellow) 350LO	Medium Galv. (Blue) C250LO	Bundling Data For Sling Lots	
Mega Anchor (MA)	NB(mm)	OD (mm)	Length (m)	Wall Thickness (mm)	Wall Thickness (mm)	Wall Thickness (mm)	Lengths Per Sling	Metres Per Sling (m)
Standard MA (Piles)	32NB	42.4mm	6.5	2.0	2.6	3.2	61	396.5
Standard MA (Risers)	32NB	42.4mm	6.5	2.0	2.6	3.2	61	396.5
Heavy Duty MA (Piles)	32NB	42.4mm	6.5	2.0	2.6	3.2	61	396.5
Heavy Duty MA (Risers)	50NB	60.3mm	6.5	2.3	2.9	3.6	37	240.5
Stainless Steel Material Selection								
	Pipe Size			Sched 10 Stainless Steel 304 & 316			Bundling Data For Sling Lots	
	NB(mm)	OD (mm)	Length (m)	Wall Thickness (mm)			Lengths Per Sling	Metres Per Sling (m)
Heavy Duty MA (Piles)	32NB	42mm	6	2.8			61	366
Heavy Duty MA (Risers)	50NB	60.3mm	6	2.8			37	222

Pipe Sizing Diagram

Pile Material	Riser Material
	

Mega Anchor Material Selection:

There are 2 different materials for Mega Anchor products. Galvanised Mega Anchors and Stainless Steel Mega Anchors. Depending on the conditions the correct Mega Anchor should be selected for your project.

This section will help you select the type of Mega Anchor you require based on the corrosion conditions.

Mega Anchor Selection Atmospheric corrosivity.

Atmospheric corrosivity	Galvanised Mega Anchor	Stainless Steel Mega Anchor
Very Low	☑	☑
Low	☑	☑
Medium	☑	☑
High	Not Suitable	☑
Very High	Not Suitable	☑

Mega Anchor Selection Soil Corrosivity.

Soil corrosivity	Galvanised Mega Anchor	Stainless Steel Mega Anchor
Non Aggressive	☑	☑
Mild	☑	☑
Moderate	☑	☑
Severe	Not Suitable	☑
Very Severe	Not Suitable	☑

Note: *This section does not allow for galvanising protection and is based on a worst case scenario. The micro environment should be considered when selecting the type of Mega Anchor.*

Pile and Riser Material Selection:

The correct pile material should be selected for your project.

Galvanised Pile & Riser Selection for atmospheric and soil corrosivity:

Soil Aggressiveness	Pile 2mm Wall Thickness	Pile 2.6mm Wall Thickness	Pile 3.2mm Wall Thickness	Pile 4mm Wall Thickness
Non Aggressive	☑	☑	☑	☑
Mild	☑	☑	☑	☑
Moderate	☑	☑	☑	☑
Severe	Not Suitable	Not Suitable	Not Suitable	Not Suitable
Very Severe	Not Suitable	Not Suitable	Not Suitable	Not Suitable
Atmospheric Corrosively	Riser 2.3mm	Riser 2.9mm	Riser 3.6mm	Riser 4.5mm
Very Low	☑	☑	☑	☑
Low	☑	☑	☑	☑
Medium	☑	☑	☑	☑
High	Not Suitable	Not Suitable	Not Suitable	☑
Very High	Not Suitable	Not Suitable	Not Suitable	Not Suitable

Note: *This section does not allow for galvanising protection and is based on a worst case scenario. The micro environment should be considered when selecting piles and risers.*

Stainless steel pile & Riser Selection for atmospheric and soil corrosivity:

Exposure Classification	Soil Aggressiveness	Exposure Classification	Atmospheric Corrosivity
	2.8 mm Pile		2.8 mm Pile
Non Aggressive	☑	Very Low	☑
Mild	☑	Low	☑
Moderate	☑	Medium	☑
Severe	☑	High	☑
Very Severe	☑	Very High	☑

Note: *For more information on selecting the correct materials for your project please contact Mega Buiding Industries at info@megabuildingindustries.com.au*

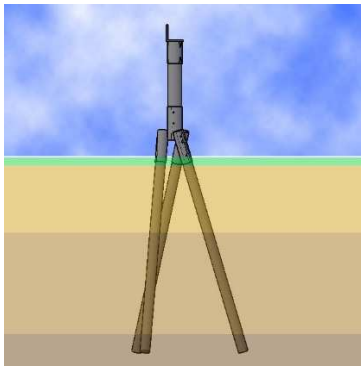
Mega Anchor General Design Principles

General Design Principles:

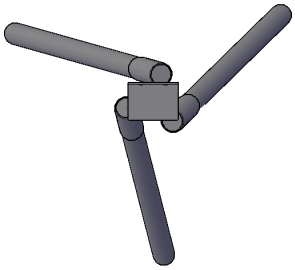
The Mega Anchor is a pile cap that shares 3 main aspects to create the foundation.

It is a combination of friction, end bearing and axial support by the 3 incline piles geometric configuration (Axial load distribution).

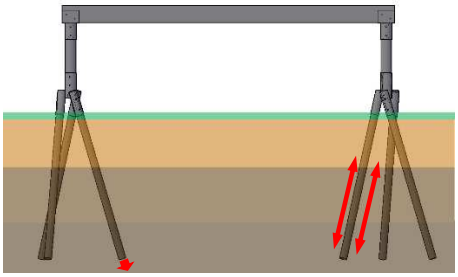
The Mega Anchor has 2 main design factors structural capacity of the Mega Anchor components and structural capacity of the founding material.

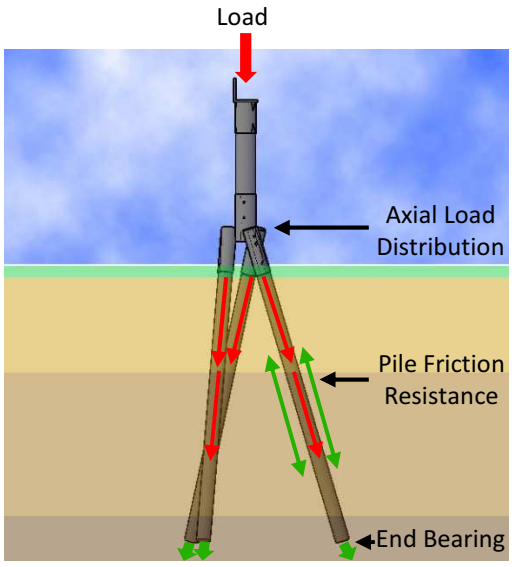


Axial Load Distribution

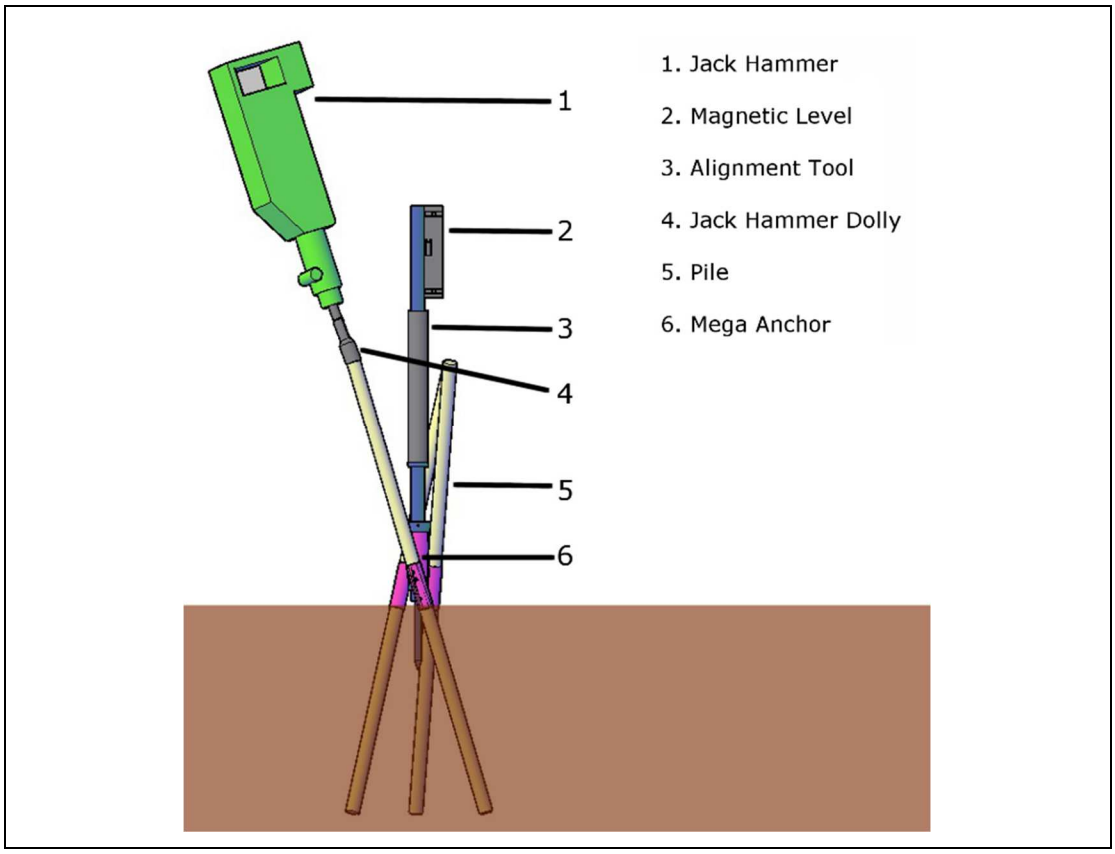


Friction Pile and End Bearing Support





Mega Anchor Installation



Safety Notes:

Warning: Before installing any Mega Anchor product, make sure you have checked to see if there is any unground services or hazards, The Mega Anchor pile driving method can cause significant damage to underground services which can result in; damage to underground assets, damage to tools and equipment, this can result in costly repairs, serious injury or death.

Warning: Appropriate safety equipment must be worn when installing Mega Anchor products.

Basic installation:

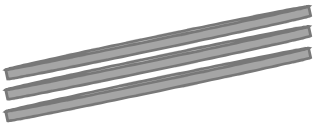
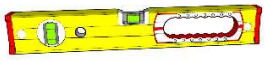
The Mega Anchor is placed on the ground in the location where it is required. The alignment tool holds the Mega Anchor in place while it is being installed and is used to adjust the anchor during installation to keep the Mega Anchor plumb. The 3 piles are then driven into the ground through the Mega Anchor pile guides. The piles are screwed to the Mega Anchor frame locking the Mega Anchor in place.

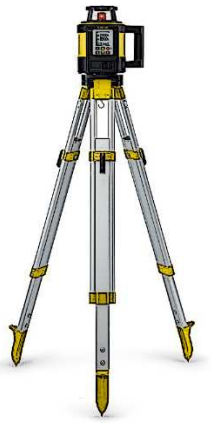
After the Mega Anchor has been installed the risers are pre-cut and adjusted to the correct height, fixed into place, then the top bracket ether slides over the riser pipe or sleeves into the Mega Anchor frame and is attached, this provides a connection point for the bearers or structural supports.

Detailed Installation:

Before you Start Checklist:

Before you start any Mega Anchor installation it is important to make sure you have all tools, equipment, materials and relevant permits and approvals before starting.
This checklist outlines the essential tools equipment and materials required to install a Mega Anchor.

Item	Visual	Check
Materials:		
Mega Anchor Frame		
Mega Anchor Top		
Piles		
Risers		
Screws		
Tools:		
Mega Anchor Alignment Tool		
Mega Anchor Jack Hammer Dolly		
Magnetic Spirit Level		
Jack Hammer		
Drill		
Metal Cutting Saw		

Item	Visual	Check
Levelling Device		
Tape Measure		
Sledge Hammer		
Hammer		
Hex Drill Bit		

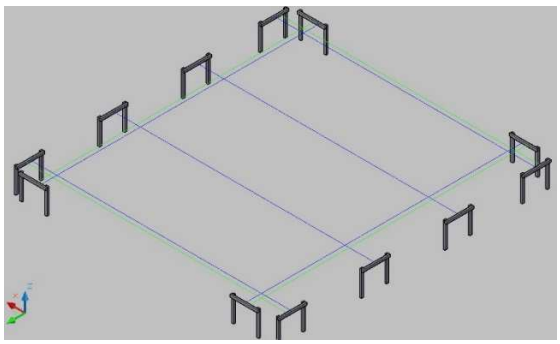
Step 1, Site Setout

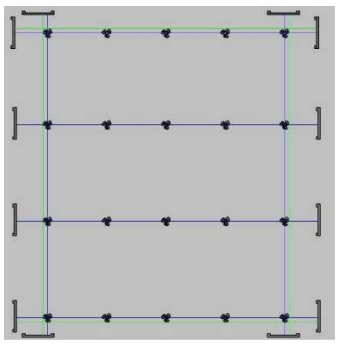
The site set out is the most important part of the Mega Anchor installation, After the initial building set out has been completed mark the centre lines where the Mega Anchors are to be installed then mark the location of each Mega Anchor.

Tip: *Setting up profiles and running string lines down the Mega Anchor centre line will help to accurately mark the Mega Anchor locations.*

Tip: *Projecting the string line down as close to the ground as possible, can increase accuracy and make it easier to mark the Mega Anchor locations.*

Tip: *Use tent pegs or long screws to mark the Mega Anchor location, the markers will leave a small hole for the alignment tool spike.*

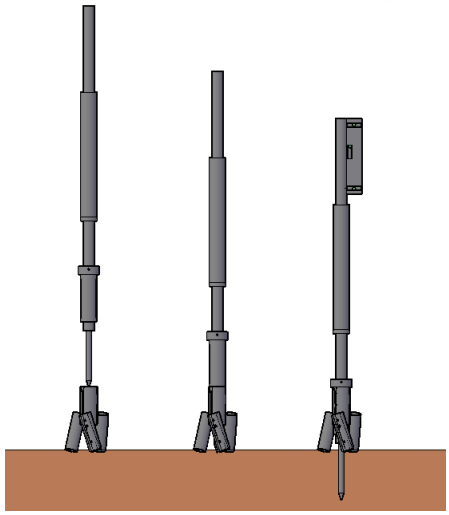




Step 2, Aligning the Mega Anchor

Use the Mega Anchor alignment tool to align the Mega Anchor.

1. Slide the Mega Anchor over the end of the alignment tool.
2. Place the alignment tool spike in the location where the Mega Anchor will be installed
3. Use the slide hammer to drive the alignment tool spike into the ground while keeping the alignment tool plumb using a magnetic spirit level.



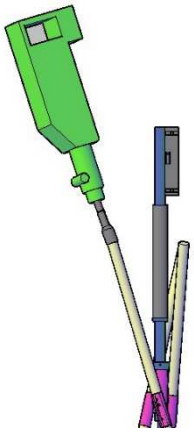
Step 3, Driving the Piles

Using a demolition hammer drive the piles to the specified depth or to the point of practical refusal whichever is specified in the design.

Note: *A sledge hammer can also be used to drive the piles into the ground.*

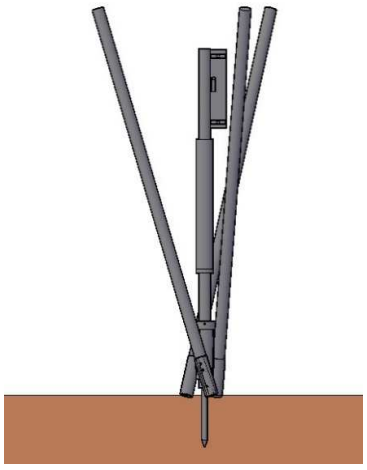
Note: *When using the demolition hammer to drive the piles into the ground it is important to keep the Mega Anchor jack hammer dolly square with the top of the pile.*

Tip: *When driving the piles, it is recommended that a second person holds the alignment tool plumb while the other drives the piles.*

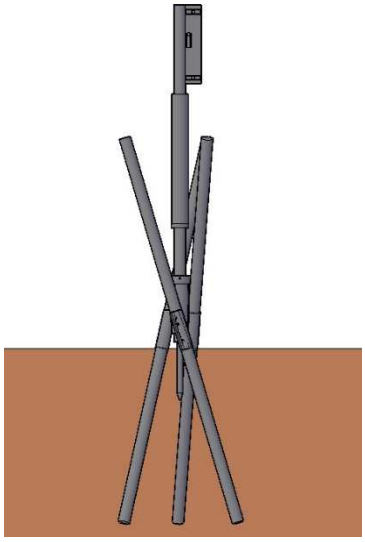
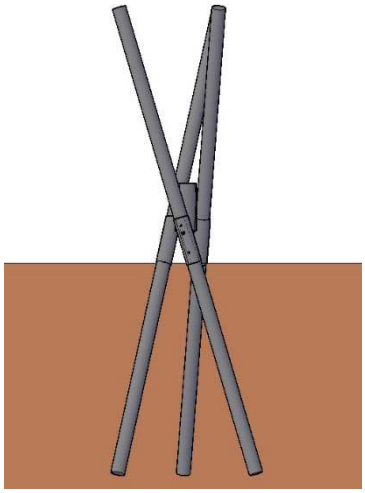
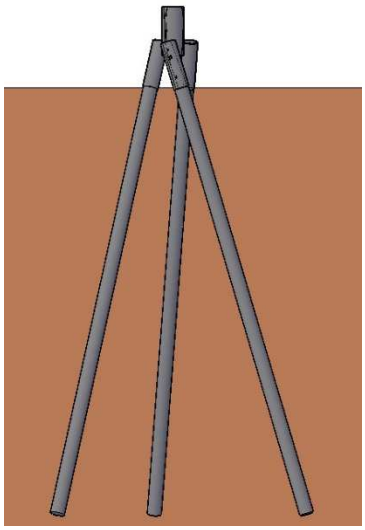


1. Place the 3 piles in the Mega Anchor pile guides

2. Check that the Mega Anchor is plumb



Step 3, Driving the Piles, Continued

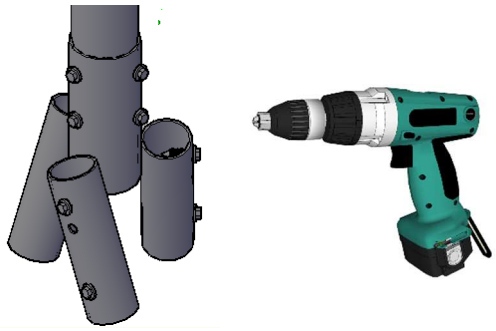
3. Drive the piles through the Mega Anchor pile guides approximately 200 to 300mm while holding the Mega Anchor plumb. 4. Check the Mega Anchor is plumb and adjust accordingly.	
5. When the piles have been driven half way into the ground remove the alignment tool from the Mega Anchor. ***Note:*** *After the Mega Anchor piles have been installed half way there will be minimal adjustment, it is important to keep the Mega Anchor plumb while driving the piles.* ***Tip:*** *After you have removed the alignment tool start setting up the next Mega Anchor while the second person finishes driving the piles for the Mega Anchor currently being installed.*	
6. Finish driving the piles into the ground *Note: If the piles reach the pint of practical refusal and the pile cannot be driven all the way into the ground, the excess can be cut off.* ***Tip:*** *in some cases, it is best to leave the Mega Anchor half installed and move onto the next Mega Anchor.*	

Step 4, Fixing the Piles and Setting the Riser

Using a drill fix the piles to the Mega Anchor frame, there are 4 pre-drilled holes in each pile guide that mark the location for the tek screws.

Note: *In some cases it may not be possible to drill through the pre drilled holes, in this case you can drill through the pile guide.*

Note*: In some cases bolts may be used to connect the piles to the Mega Anchor frame.*



Setting and Fixing the Riser

After the piles have been fixed to the Mega Anchor frame;

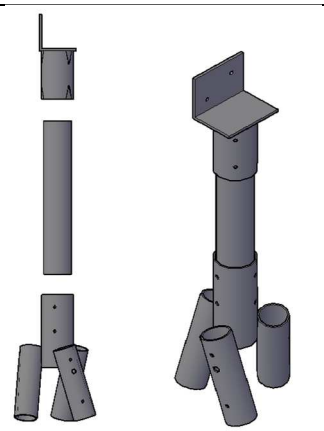
1. Measure the distance from the ground to the required height.
2. Cut the riser pipe to the correct length.

Note: *sliding the Mega Anchor top over the riser while levelling will make the levelling process easier.*

Tip: *Running a string line or lase line can make it easy to measure required height for the Mega Anchor riser.*

Tip: *Cutting the riser 10mm – 20mm longer than required can make it easier to set the level.*

Note*: In some cases bolts may be used to connect the riser to the Mega Anchor frame.*



Step 6, Fixing the Top Bracket

After fixing the riser pipe fix the top bracket to the riser,

When the Mega Anchor has been installed coat all exposed and cut pile ends with cold galvanising paint.

Tip: *when fixing the top bracket, to fix the bracket in the correct position, connect the bearer to the top before fixing the top to the riser. This will help when connecting to angle and U brackets.*

Tip: *Use a string line to check that the tops are aligned before connecting the bearers.*

*Note: If the Mega Anchors are out of line or out of plumb they can be adjusted slightly. Use a sledge hammer and gently knock the riser until the Mega Anchor is in the correct position. There is only limited adjustment****. Excessive adjustment may result in damage to the Mega Anchor.***

It is recommended that Mega Anchors be installed accurately, plumb and in line so that adjustment is not required.

Note: Some tops have the top bracket attached to the riser, if this top is being used the top bracket will be adjusted to the correct height fixed to the Mega Anchor frame.