Busck Prestressed Concrete Ltd
Guideline for
Safe Handling of Concrete Poles and Foundation Blocks

Document number: BCG-001 Revision 5

Written by:	Name:	William Harris
	Position:	Technical Support Engineer - Electrical
	Date:	20 July 2017
	Signature:	*William Harris*

Reviewed by:	Name:	Ross McLennan
	Position:	General Manager - Utilities
	Date:	20 July 2017
	Signature:	*Ross McLennan*

Approved by:	Name:	John Marshall
	Position:	National Technical & Design Manager
	Date:	20 July 2017
	Signature:	*John Marshall*

Revision		
Revision	**Reason for revision**	**Issued**
3	Changed photos	1 /10/2010
4	General re-write. Added drawings, double pole information, donut/block lifting	20/07/2017
5	Moved table on lifting on the flat and edited section on lifting	1/5/2019
End		

Contents

1 Purpose

The purpose of this document is to provide Busck Prestressed Concrete Ltd.'s staff and its customers, a safe handling guideline for concrete power poles and foundation blocks.

The following shall be used as a manufacturers guide only. It is not intended to remove the need for staff to comply with relevant Acts, Regulations, Standards, Code of Practice or your own Company's Safety Rules or Guidelines.

2 Policy

All Busck concrete products shall be handled in such a manner to ensure that product is not damaged, to the point where the product may fail to meet its designed strength or life. If a product is handled or mistreated with the use of equipment not recommended by Busck, such as choked chains, capacity and life of the pole will be compromised.

3 General

This guideline only applies to Busck concrete poles and foundation products. It may not be suitable for the handling of other Busck products or other manufacturer's products.

4 References

The following documents are referenced for guidance only and may not be a complete list of Acts, Regulations, Standards or Codes of practice

Reference	Title
	Electricity (Safety) Regulations 2010
AS/NZS 7000:2016	*Overhead* line design
HB-331:2012	*Overhead line design*
AS/NZS4065:2010	*Concrete utility services poles*
AS/NZS1170.2:2002	*Structural design actions Part 2: Wind actions*
Precast NZ Inc.	Industry Guide Transportation and Erection of Precast Concrete – August 2015 available from www.precastnz.org.nz

5 Definitions

Busck	Shall mean Busck Prestressed Concrete Ltd or any person directly employed or contracted to Busck Prestressed Concrete Ltd
Customer	Shall mean any Company or their staff members who purchases or are contracted to work on or with Busck's products
Dunnage	Timber which is placed in between layers of concrete products
Staff	Any worker handling or working on a Busck product, whether employed by Busck or one of its Contractors or anyone employed or contracted to the Customer
Narrow Face	Shall mean the transverse face of the pole, commonly called the across line face
Wide Face	Commonly referred to as downline or the along line face
Swift Lift Chains	Is a set of chains attached to the Reid "Swift Lift" clutch
Swift Lift Clutch	A lifting device for safely connecting concrete products to lifting chains. Only Reids™ branded clutches may be used on Busck products

6 Handling of poles

At all times safety must come first, and if for any reason anyone feels that there is a safety issue, the work site/yard should be made safe and work stopped while the issue is reassessed and corrected if needed. At all times only correctly rated and tested devices shall be used to lift a Busck pole. While lifting poles, all personnel shall wear suitable Personal Protective Equipment as required by their employer, or as required by the work site owner, whichever is the greater will apply.

Before any lifting takes place, the crane operator shall ensure that the crane being used is fit for the purpose, is in good operating condition and all test certificates are current. Where the crane is not in good operating condition or the test certificates are not current or the crane is not suitable for the purpose, the crane shall not be used.

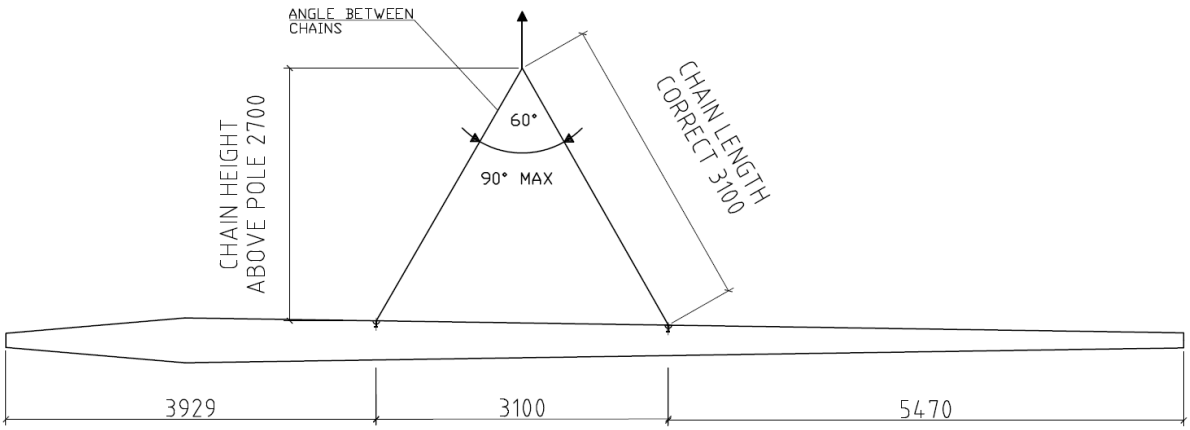
All lifting equipment must be kept in good condition and all test certificates shall be current. Where any lifting equipment is showing signs of damage, it should not be used.

Each pole is fitted with a product code label. The label also shows the weight of each pole. This is the bare weight of the pole and includes no additional loads, such as overhead lines hardware.

6.1 Horizontal lifting

When lifting poles in the horizontal position, only "Swift Lift" chains shall be used. Two correctly rated "Swift Lift" chains shall be connected to the lifting point in the poles. Poles shall not be lifted off the wide face of the pole unless correctly specified. Poles should not be lifted directly by a forklift without the use of "Swift Lift" chains. Each set of chains attached to the Swift Lift clutch should be the same length as the distance between the lifting pins in the poles. This is particularly important when lifting poles more than 12.4m long and the weak rated 10.5m pole. Please refer to 6.2 for lifting references.

BUSCK 12.5m HORIZONTAL POLE LIFT



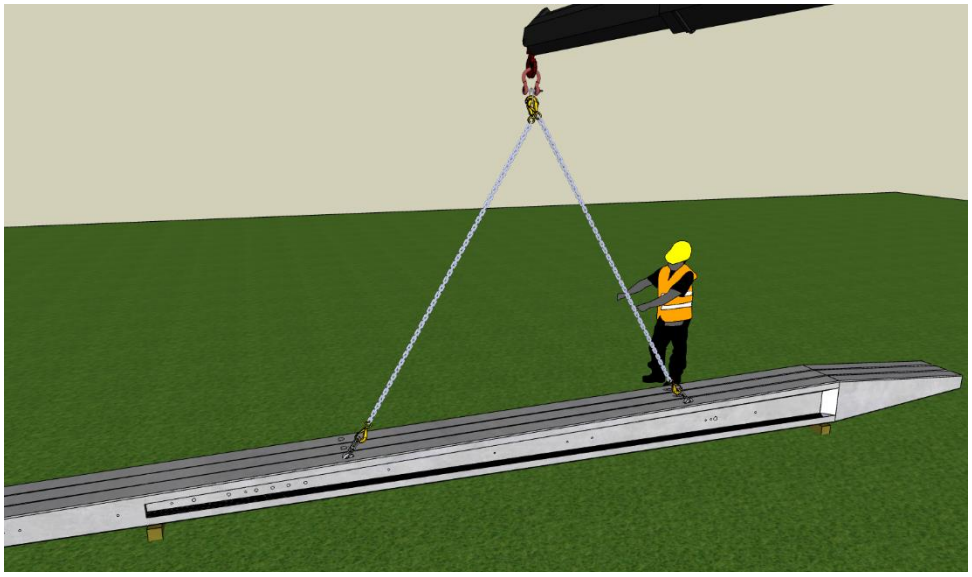
Correct chain length for 12.5m poe

CHAIN LENGTHS FOR HORIZONTAL POLE LIFTING				
Pole Type	Pole Length	Distance Between Lifting Pins	Minimum Chain Length	Attachment Height Above Pole
B7.5	7.5m	3100mm	3100mm	2700mm
B8.4	8.4m	3100mm	3100mm	2700mm
B9.5	9.5m	3100mm	3100mm	2700mm
B10.0	10.0m	3100mm	3100mm	2700mm
B11.0	11.0m	3100mm	3100mm	2700mm
B12.5	12.5m	3100mm	3100mm	2700mm
B12.4	12.4m	4200mm	4200mm	3600mm
B13.65	13.65m	4200mm	4200mm	3600mm
B14.85	14.85m	4200mm	4200mm	3600mm
B15.5	15.5m	4200mm	4200mm	3600mm
B18.5	18.5m	7900mm	7900mm	6800mm

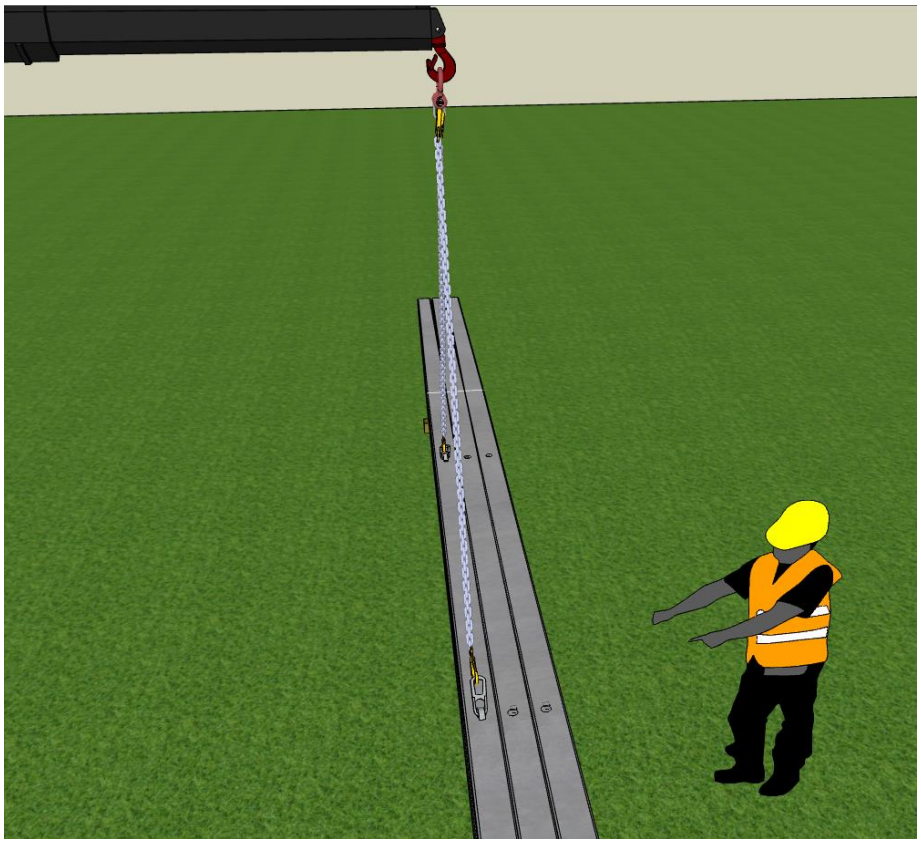
Swift Lift clutch

Swift Lift clutch on pole

Swift Lifts with chains



Always ensure the correct chain length is used when lifting a pole horizontally. A way to gauge this is to make sure the chain length is the same length as the distance between the two lifting pins.



Swift Lifts with chains

Lifting with forklift and Swift Lifts

6.2 Lifting poles on the flat

It is not ideal to lift a Busck pole on the flat with its wide face upwards. However, if it is not practical to dress the pole on its edge, the table below indicates the pole sizes that can be lifted off the wide face. It also details the maximum equipment that can be dressed on the pole during the lift from the flat position.

6.3 Stacking

Where possible poles shall always be stacked on the narrow face of the pole. If for safety reasons it is decided to lie the pole on the wide face, no other poles shall be stacked on top of the pole on its wide face.

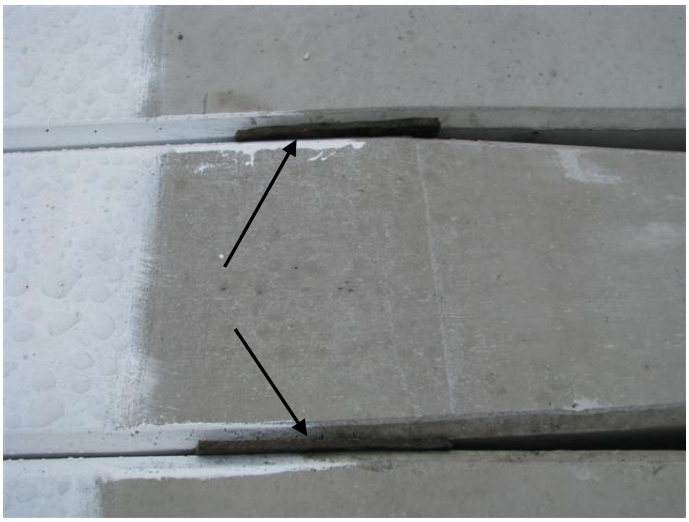
When stacking poles, suitable dunnage in similar locations as shown in the photo below, should be placed on level firm ground and between each layer of poles as shown on the Busck standard pole drawings. Each subsequent layer of dunnage should be placed directly over the first set laid on the ground. Poles shall be stacked in layers of no more than **three** high. Consideration needs to be given to location, the slope of the ground and the width and stability of the stack before a second layer is added.

Where poles are to be placed on the side of the road, consideration should be given to the possibility of the pole rolling over. In these cases the customer may choose to lie the pole on the wide face. Additional dunnage should be placed under the pole to ensure the pole stays straight over its entire length and does not deflect.

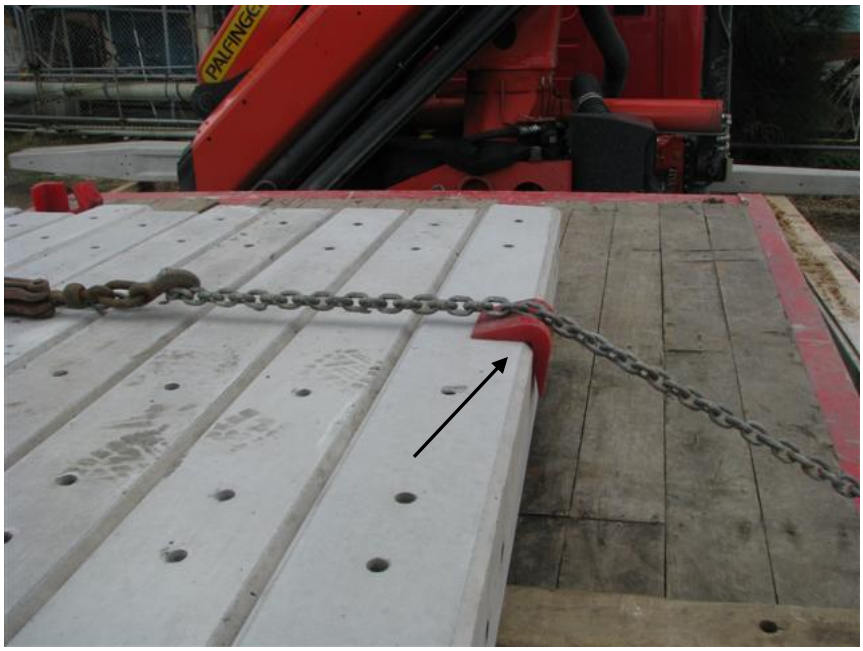
Dunnage locations

6.4 Transporting on a flat deck truck

Where multiple poles are loaded on to a flat deck truck, rubber shall be placed between each pole to ensure the poles are not damaged during transportation. Where chains are used to secure the loads, protection shall be placed over the edges of the pole under the chain.



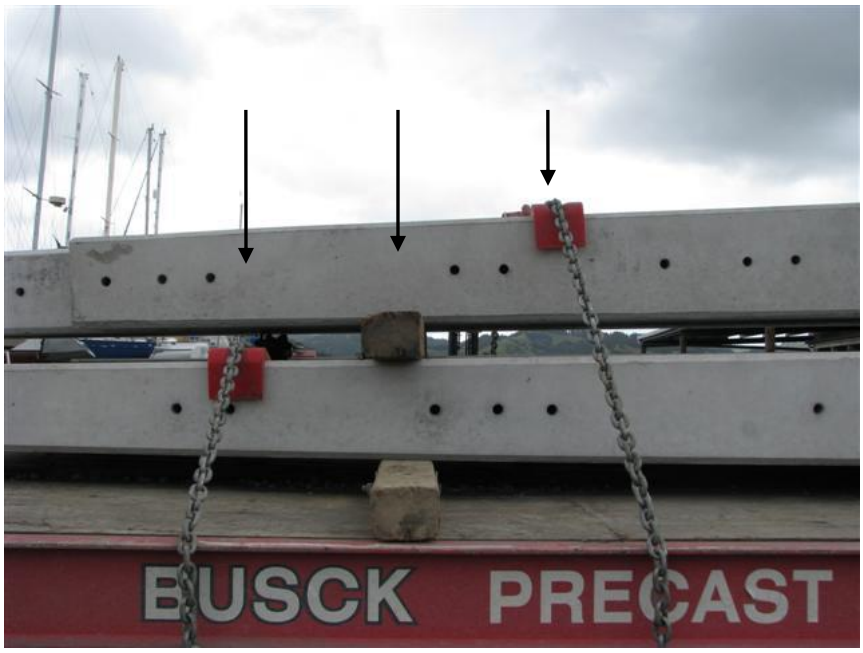
Rubber between poles at the widest point



Corner protectors under chains

It shall be the responsibility of the truck driver to ensure that all loads are correctly tied down and are secure. The driver shall also be responsible to ensure that their truck is

not overloaded. No chains shall be placed at more than 1000mm away from the dunnage.



Corner protectors and dunnage locations

6.5 Loading onto a line truck

Where poles are being loaded onto a line truck or other type of transport where the pole is not flat, the pole shall be lifted with two correctly rated "Swift Lift" chains with length adjusters connected to the lifting points in each of the poles. Poles shall always be lifted with the wide face vertical.

Using Swift Lift chains

It shall be the responsibility of the truck driver to ensure that all loads are correctly tied down and are secure. The driver shall also be responsible to ensure that their truck is not overloaded.

6.6 Erecting poles

Before unloading or erecting a pole, the crane operator shall ensure the crane truck is well stabilised, wheels chocked and park brake applied.

All poles should be lifted off the truck with two correctly rated "Swift Lift" chains connected to the lifting points in each of the poles. Poles shall always be handled and stacked with the wide face vertical.

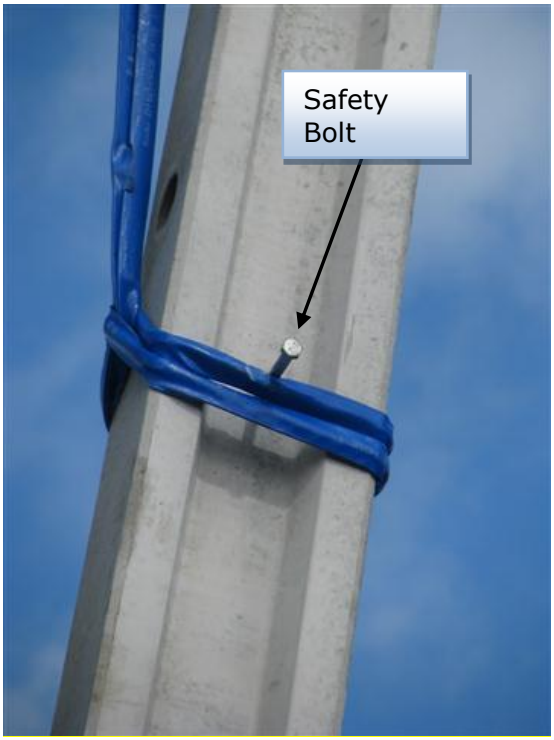
Poles shall be placed onto the ground with dunnage under the pole at the correct points. Using a correctly rated polyester or composite material sling or wire strop, which should be choked around the pole, approximately 1.5 metres above the balance point, with the butt end resting on the ground, all poles shall be erected from the narrow face of the pole unless specified above.

The use of an M16 bolt placed through a hole, and with a nut fitted above the sling, may stop the sling from slipping until the sling grips on to the pole.

When choking a single pole with a composite sling, ensure that it is pulled tightly by hand first. This will help to ensure that it will not slip when lifted by the crane. Strops made from synthetic / composite material could be damaged or even break from the friction of any movement. When a pole is erected into position it is important that the weight is not taken off the pole until the pole is in its final position. If tension on the lifting strop is let off under no circumstances attempt to lift the pole again. This is because when the pole is in a vertical position the strop will slide upwards before it grips. This will damage the strop or break it, leaving the pole unsupported. Safety chains can be used to secure the pole to the crane.

Using a choked polyester or composite material sling

Erecting with a safety bolt and polyester or composite material sling strop



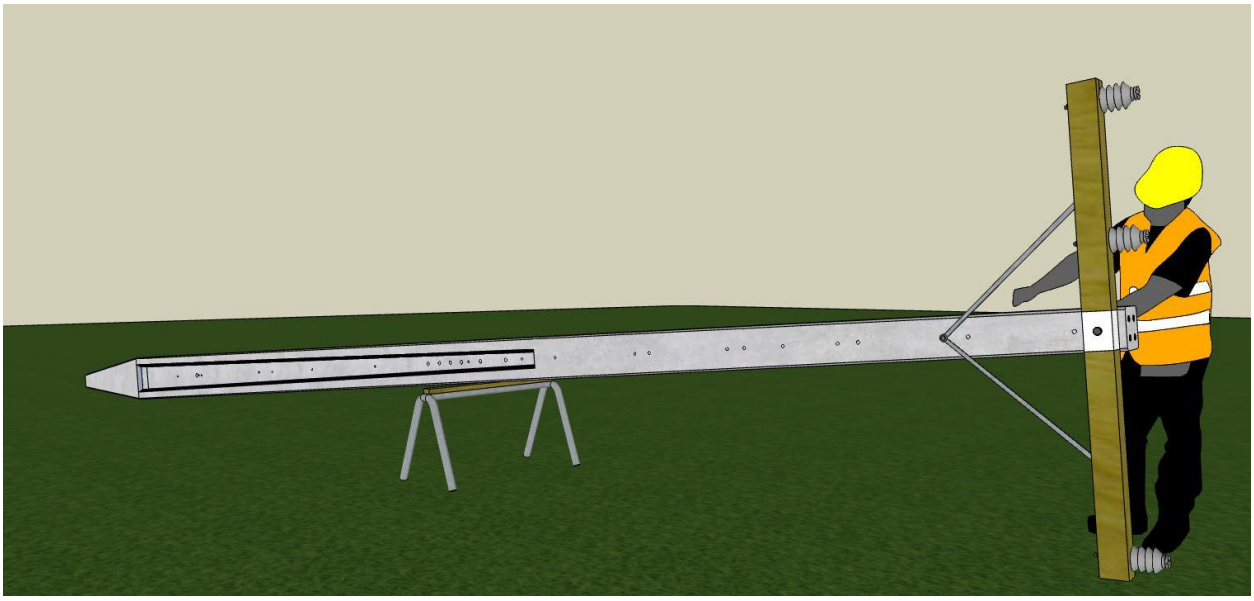
At no time should a choked chain be used for the purpose of erecting a Busck concrete pole as it may cause damage to the pole, which may affect the poles structural integrity

and life expectancy. Should the pole be damaged, the pole should be replaced at the contractor / customers expense.

LIFTING BUSCK POLES ON THE FLAT			
POLE TYPE	POLE LENGTH TOTAL	POLE LIFT ON THE WIDE FACE	MAXIMUM AMOUNT OF EQUIPMENT DURING LIFT
B7.5	7.5m	YES	CROSS ARM / INSULATORS
B8.4	8.4m	YES	CROSS ARM / INSULATORS
B9.5	9.5m	YES	CROSS ARM / INSULATORS
B10.0	10.0m	YES	CROSS ARM / INSULATORS
B10.5	10.5m	YES	CROSS ARM / INSULATORS
B11.0	11.0m	YES	CROSS ARM / INSULATORS
B11.5	11.5m	YES	CROSS ARM / INSULATORS
B12.4	12.4m	NO	NO
B12.5	12.5m	YES	CROSS ARM / INSULATORS
B13.65	13.65m	NO	NO
B14.85	14.85m	NO	NO
B15.5	15.5m	NO	NO
B15.6	15.6m	NO	NO
B18.5	18.5m	NO	NO

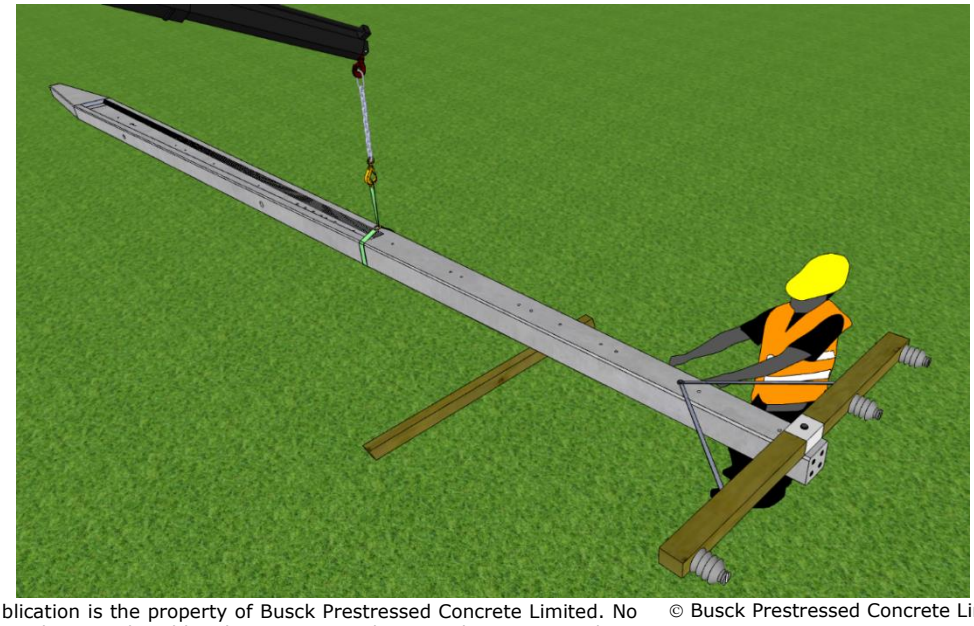
7 Dressing Busck poles

7.1 Dressing poles on edge

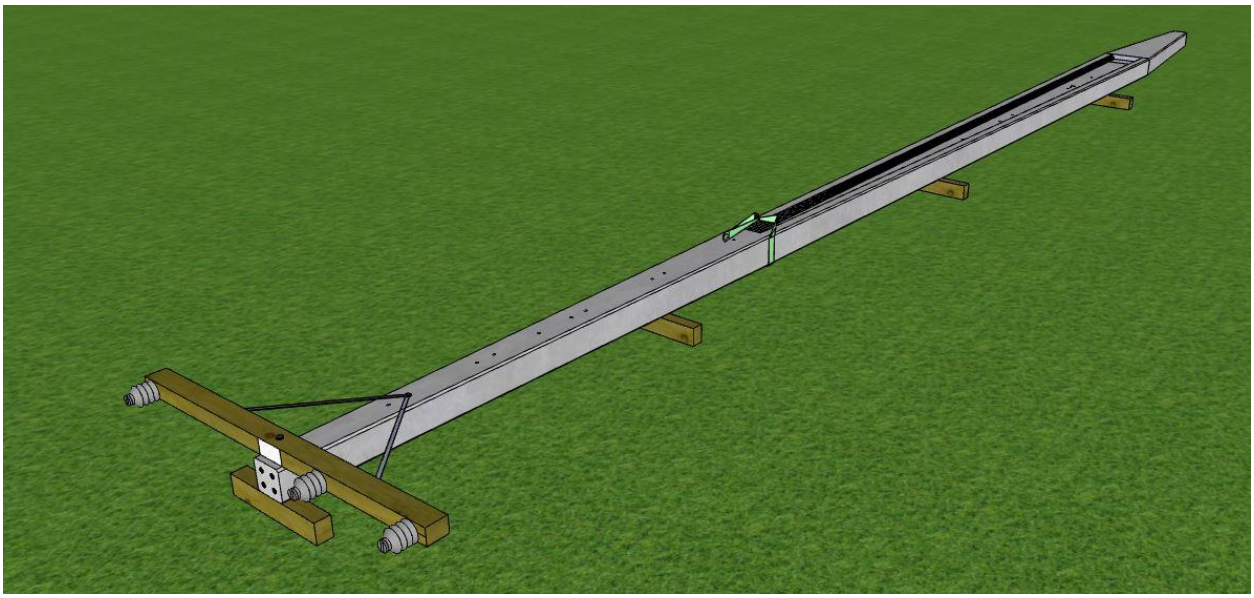


The diagram **above** shows the best method to dress a Busck pole. Having the pole on its edge is the strongest face of the pole. If the cross arm is too long and restricts the pole from being dressed on its edge, the Busck B9.5, B10, B11.0, B11.5 and B12.5 can be dressed on their flat surface. **Do not dress any other Busck pole size on the flat.** It must only be suspended for the duration of dressing the cross arms and equipment, but then laid flat on the ground or erected straight away. Note all pole stands must be suited to carry the pole weight. It is the responsibility of the user to ensure that the pole stand is appropriately rated for the job.

7.2 Dressing poles on flat

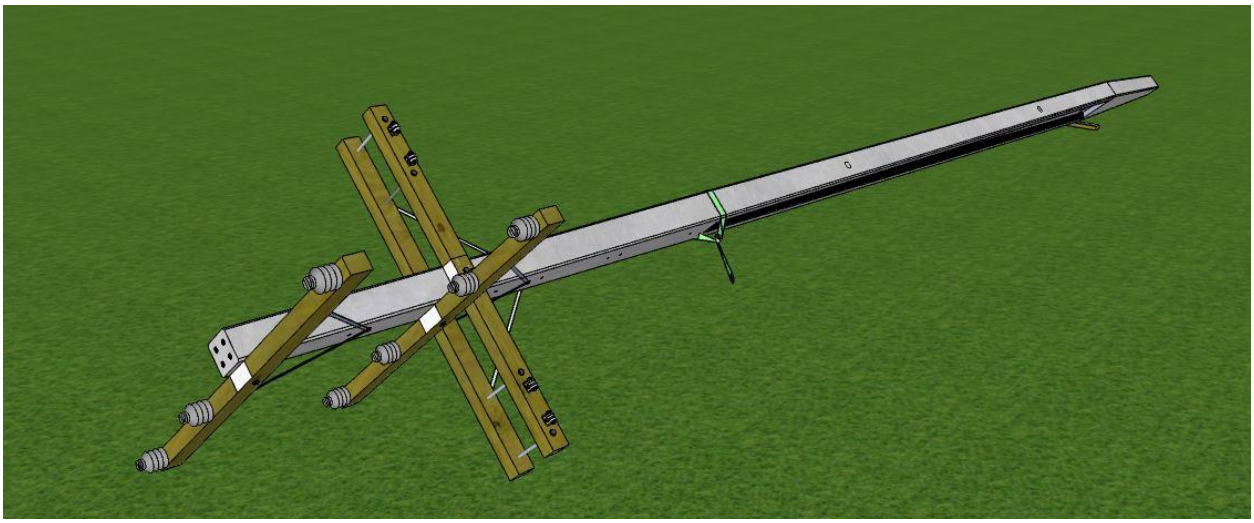


If the poles are to be stored on their flat surface, make sure that they are on level firm ground and have dunnage supporting the pole evenly along its entire length. This will stop the pole from deflecting and causing permanent damage. Do not stack poles on top of each other in this situation.

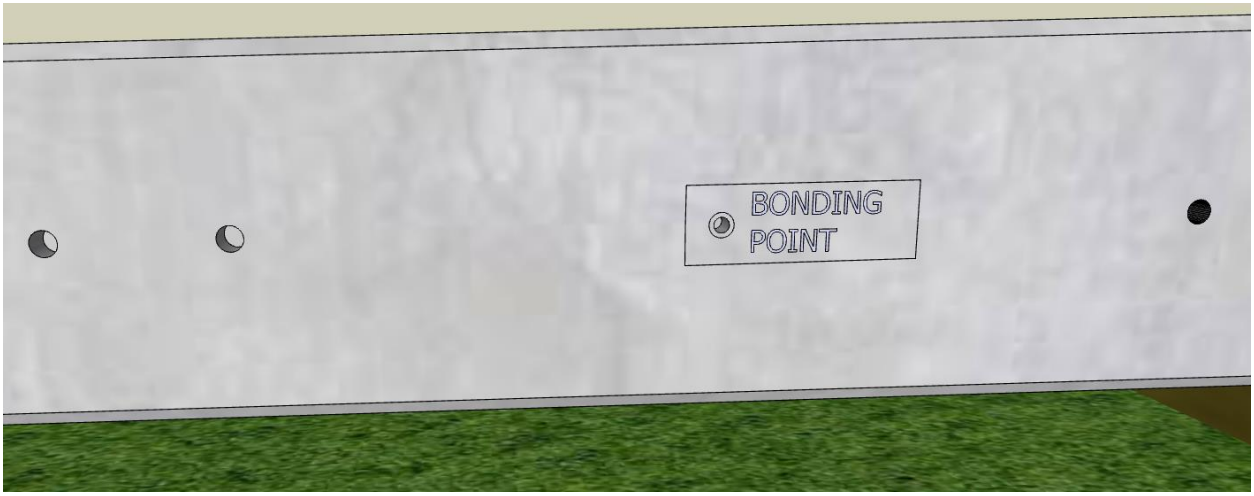


7.3 Incorrect dressing of poles

Under **NO** circumstances are Busck poles to be left in the position below. This will lead to pole failure or permanent damage to the pole.



8 Utilisation of bonding points



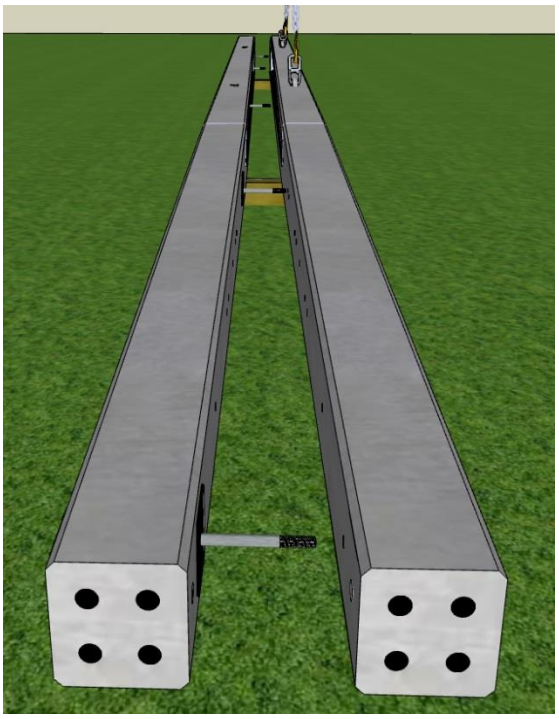
The Bonding Point is to be used for **equipotential bonding only**, do not use this point to bond transformers or switches to MEN earths.

9 Double poles

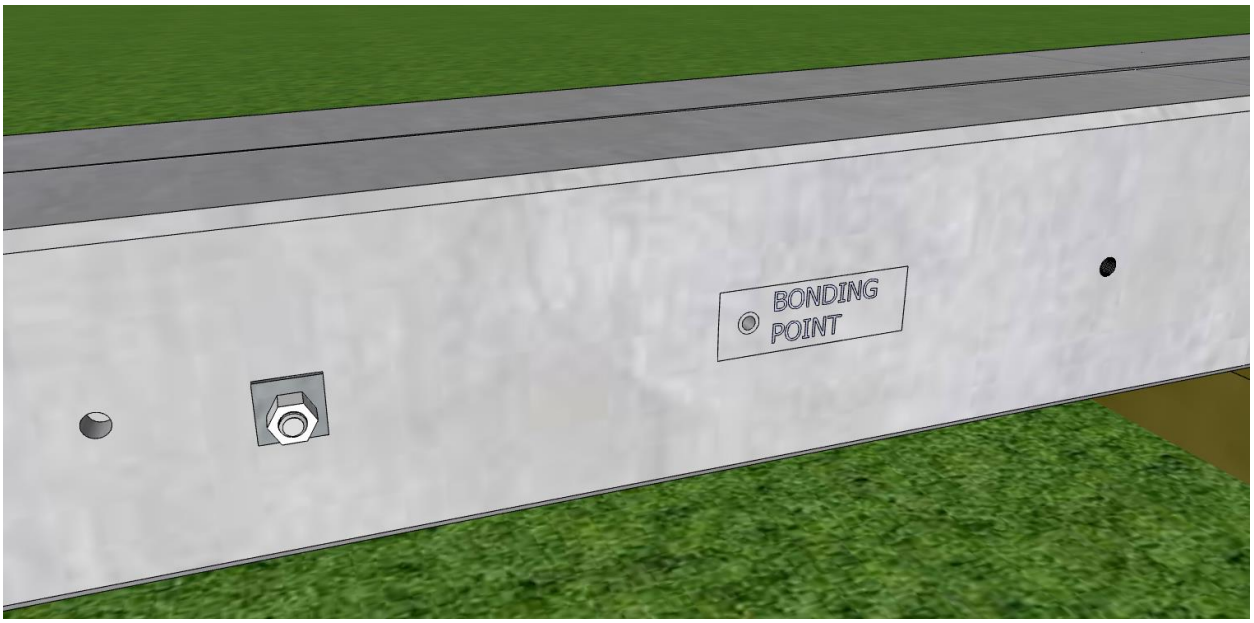
9.1 Bolting poles together

When bolting two Busck poles together, ensure that a compressible packer is placed between the poles where the bolt goes through. This will help avoid any cracking or chipping from pole movement in the direct area of the bolt hole.

Bolting two poles together doubles the strength rating of the pole, in both the in-line and across line direction.



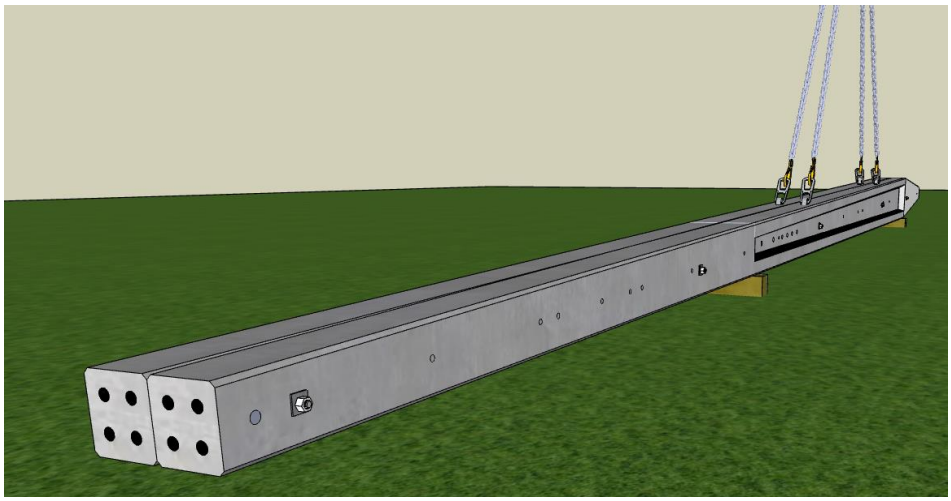
The poles must be bolted together with at least 5 x M16 mild steel bolts at even spacing along the above ground section of the poles. Where a crossarm is attached with an M16 bolt through both poles, this can be considered as one bolt location.



Ensure that when the two poles are bolted together, at least one bonding point is exposed to the outer surface. It is possible to have both bonding points enclosed between the poles. Check this before the poles are erected. No matter what size the double poles are they cannot be erected from their wide face.

9.2 Handling double poles

Double poles are double the weight and require extra caution when handling. The poles must be lifted with four properly rated "Swift Lifts" when lifted horizontally. Operators must ensure that the weight of a double pole does not exceed the lifting capacity of the crane. An example of lifting a double pole is seen below.



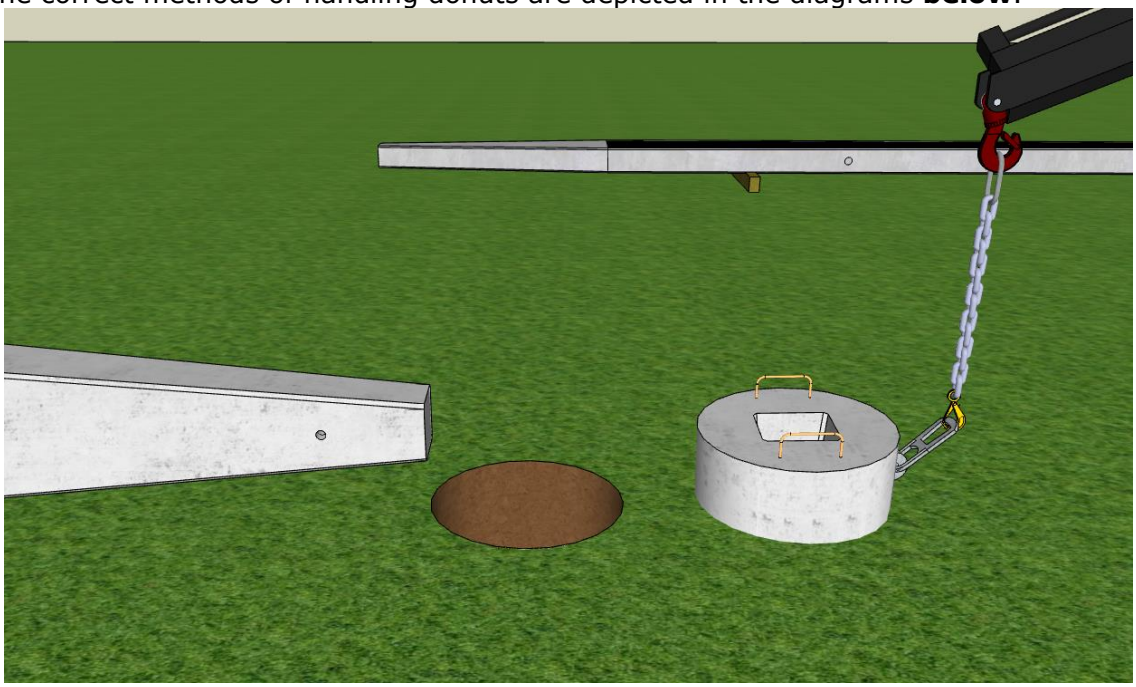
When erecting a double pole, the same method as a single pole applies, as detailed in section 6.6. Composite slings and wire strops must be rated above the capacity of the double pole weight. Safety chains can be used to secure the pole to the crane.

10 Handling Busck donuts

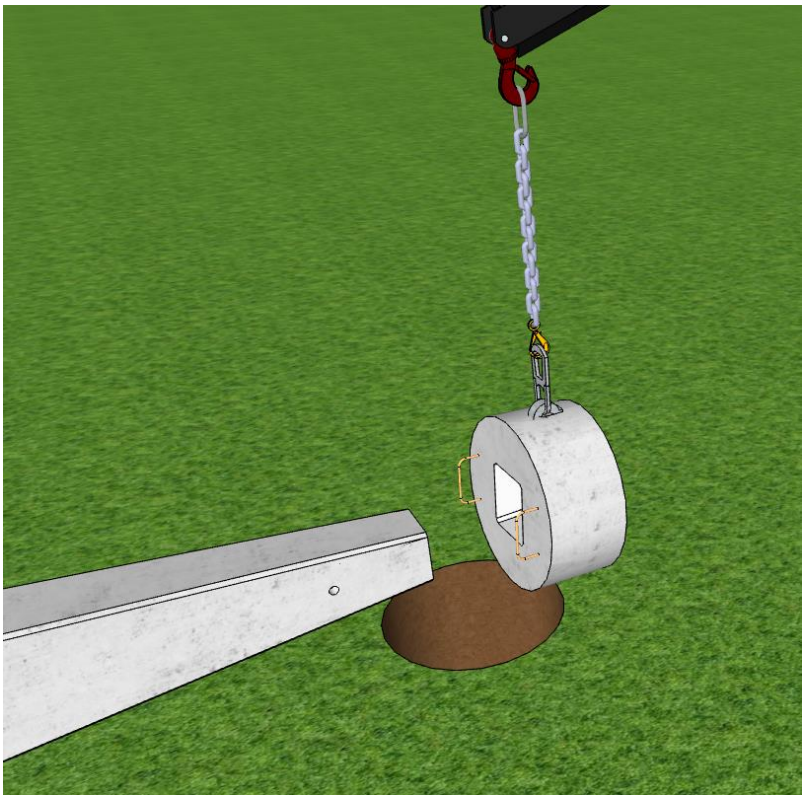
This recommendation is for the all Busck Donuts: D460, D490LT, D490, D540, DD540 and DD840. It is **not** recommended that any of the Busck donuts should be handled manually.

No one should attempt to pick a donut up off the ground or its bearing surface. Donuts can be manoeuvred on to its side for ease of displacement; this is to be done with care, practising proper lifting techniques and a two man lift. If the donut is put onto its side, it needs to be supervised or blocked so it does not roll away. All Busck donuts have lifting pins installed on their side. The lifting pins are to be used to lift and move the donuts using lifting clutch, "Swift Lift" chain and crane. Donuts can also be lifted using strop method for single donut lifts.

The correct methods of handling donuts are depicted in the diagrams **below**.



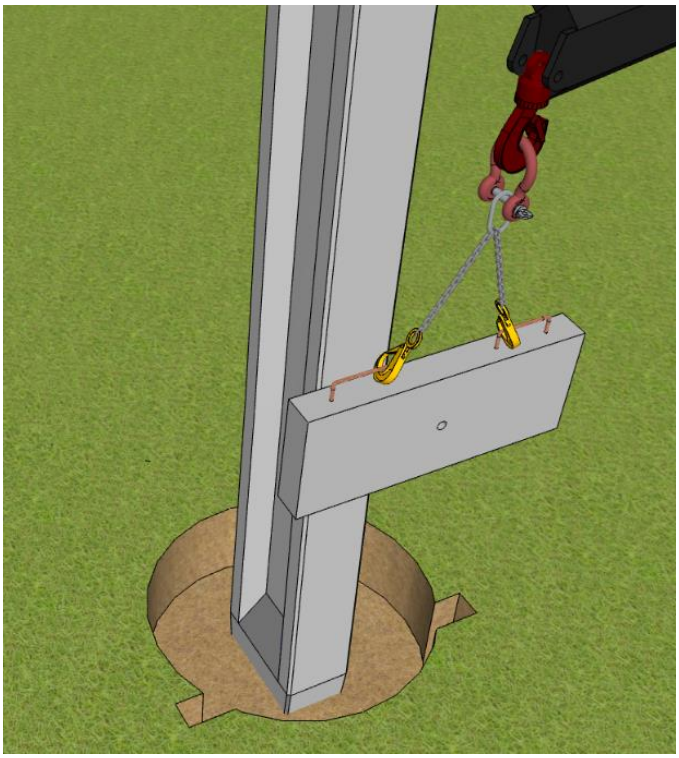
The figure above displays lifting a single donut with a crane, off its flat surface.



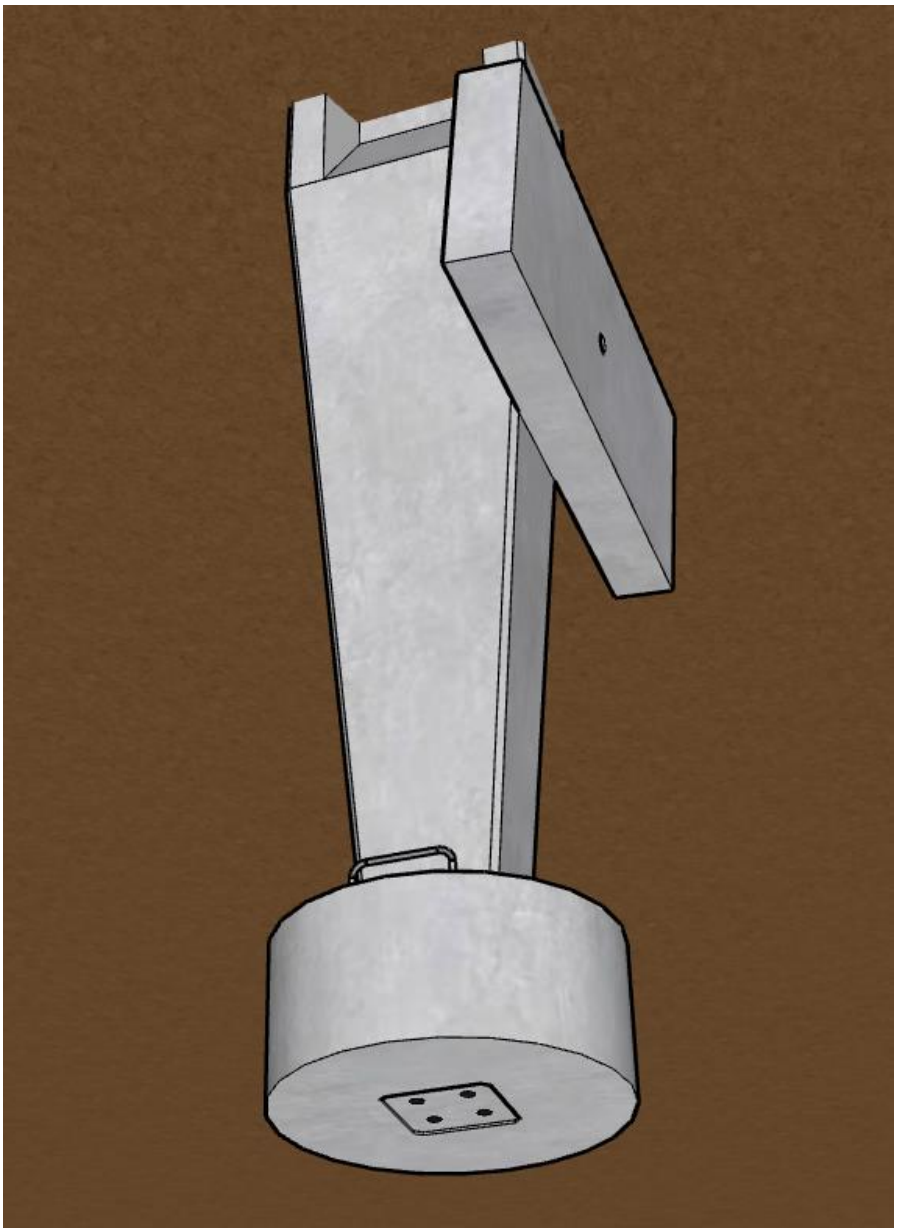
The Figure above displays how to lift and position the donut onto the pole butt.

11 Handling Busck breast blocks

This recommendation is for all Busck Breast Blocks: BB600, BB900 and BB1200. It is not recommended that any of the Busck Breast Blocks should be handled manually by one person. No one should attempt to pick a Breast Block up off the ground or bearing surface. Breast Bocks can be manoeuvred on to its side for ease of displacement; this is to be done with care, practising proper lifting techniques and a two man lift. All Busck Breast Blocks have handles that can be used as lifting points. These are to be used to lift and move the breast block using a chain or strop in conjunction with a crane.



The figure above display the proper lifting techniques of the Busck Breast Block. Ensure that the pole is fully supported or has adequate compaction around the base to support the upright pole.



The figure above shows the correct diagrammatic in-ground view of a Busck Pole foundation. It shows the installation of a Busck Breast Block and Donut

End of document