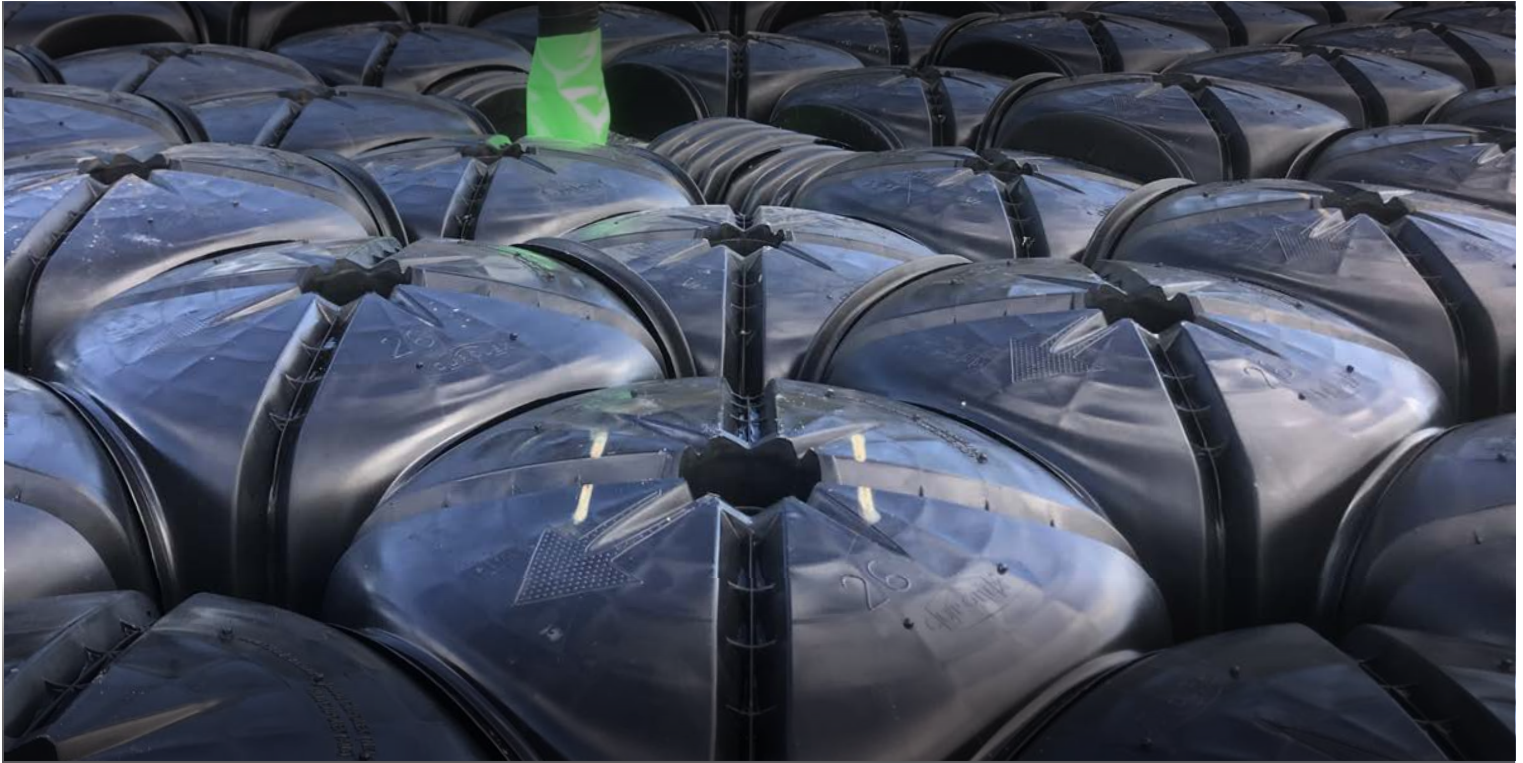


# THE INSTALLATION OF **CUPOLEX**

Reinforcing Steel Concrete



[www.cupolex.co.nz](http://www.cupolex.co.nz)



- » GROUND WORKS
- » SITE PREPARATION
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## DO IT ONCE AND DO IT RIGHT

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This manual provides information on Cupolex product installation from ground works to concrete pour.

The engineered Cupolex layout plans will be designed to maximise the structural stiffness of the slab, whilst being aware of the commercial savings that can be achieved in concrete, reinforcing steel and installation costs.

Whilst maintaining the maximised Cupolex plan layout, on site changes can be made as the product is versatile. \*This means it can be changed on site due to slab size increases or decreases or structural points added on, at any stage during the installation process.

*\*Structural changes to be discussed with your engineer first.*

The steps in the procedures can and are being used in all regions across New Zealand by concreting crews without any problems.

Each concreter has their own style and process in laying a slab and Cupolex can work within these requirements.

## GROUND WORKS

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As with all slabs the initial ground work is critical. The base needs to be level and compact or the end result will be higher volumes of concrete used, or more importantly may result in concrete cracks. Where piles are required, these need to be in place prior to sand blinding.

Piles can be either Screw, Timber or Concrete piles as directed by your Engineer as all can be used with Cupolex.

Internal piles can be installed and details are shown on how these will be combined with the slab in the middle of Cupolex clusters.

Each geographical area has a different material to be used as a maximum 50mm blinding layer, this may be either crusher dust, crushed granite, or sand. The preferred material is crusher dust as it compacts well and is easy to level and is usually available at low cost.



GOOD SITE PREPARATION



COMPACTED AND READY TO GO



VAPOUR BARRIER



## SITE PREPARATION

Before we start to lay all Cupolex products we must observe the following:

- 1 Site ground works must be complete 330-350mm below FFL\*
- 2 Site must be completely level
- 3 Up to 50mm of crusher dust or manufactured sand must be laid on the entire site
- 4 All plumbing is installed and inspected.

This gives a solid base to work on while keeping the concrete volumes required later to a minimal volume, it is then we can commence the process with the boxing.

### BOXING:

The outer boxing or shutters should be placed before placement of Cupolex.

*NB. Check FFL – allowing where relevant for polished finish, underfloor heating and a maximum sand blinding layer. Cupolex has a FFL of 320mm.*

### VAPOUR BARRIER:

The vapour barrier is next and the type is dependent on the engineering requirements as per NZS3604.

Full cover is required with taping on each lap and around plumbing risers.

As with any site, care must be taken to avoid damage or tears to the vapour barrier during the construction process.

*\*FFL refers to Finished Floor Level*

## PLACEMENT OF CUPOLEX PRODUCTS



DOMES (OR POD)

BETON STOP (OR RIB)



STOP END (OR FLAT STOP)

REINFORCING CHAIR (OR C100)



DOMES WITH BETON STOP ATTACHED

Cupolex consists of 4 main components – Domes, Beton Stops, Stop Ends and Reinforcing Chairs.

Domes come in 3 different sizes, each have a different purpose due to site classification or for step downs required on site.

The most commonly used is a H260 dome. H200 is used for step downs in wet areas. H350 dome is used mostly in commercial and use a H260 in step down areas.

Both the H260 and H350 use the 1 size Beton and Stop End in all areas.

Beton Stops have 1 - 4 ribs and these are used to vary the space required between the last dome and the edge of the beam.

The rib number required is indicated on the engineering plan and can be adjusted to suit once in place.

Stop Ends are placed where open sides aren't suitable for Beton Stops around the Cupolex Clusters ie. Edge beams and thickenings.





## PLACEMENT OF CUPOLEX PRODUCTS

Placement of the first Dome is shown on the plan in the top left hand corner. **MOST IMPORTANT:** The arrow on the Dome and the plan show the position of the Dome, usually 300mm from each side to the boxing – which is the width of the beam. Domes are placed from left to right only, as this is how the Domes are made so they lock in correctly and the feet join firmly.

Once a cluster of Domes has been laid (e.g. 6x6 or 4x8) all the Stop Ends and Betons are added and ensure that you double check the beam widths are as per the designed plan.

At this point string lines can be set to keep clusters and beams straight and in the correct position, as in some cases this is critical for block or brick work above the slab or for bracing wall tie down.

When large clusters are placed and after several have been installed, be aware, creep can occur or 'stretching' the distance of the Domes.

This means 1 or 2mm play in the locking position in the Domes. If this occurs and the Beton rib numbers don't match what is on plan, the rib numbers can be changed on the Betons to suit. This is rare but can occur on large slabs.





PLACEMENT OF DOMES



PLUMBING RISERS

## INSTALLATION OF CUPOLEX PRODUCTS

Once several clusters have been installed – check all beam widths, Stop Ends and Betons are sitting correctly and all rows are straight.

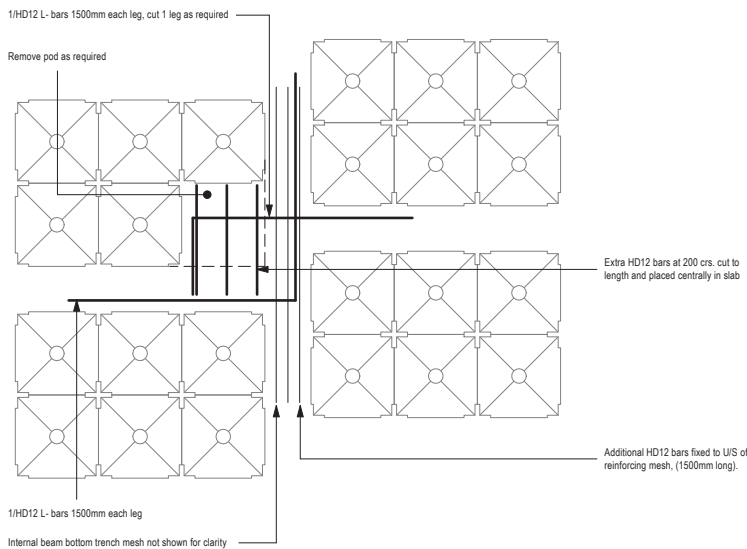
Where plumbing risers occur in a Dome space, remove the dome and replace it with Beton Stops and Flat Stops.

Once all clusters have been laid, a double check must occur to ensure that all Stops have been added, all beams are the correct width, and all Domes are seated.

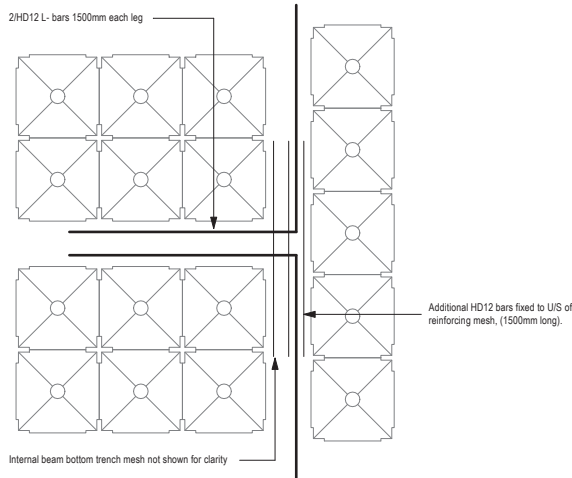
**Then we are ready to install Reinforcing Steel.**



## DOUBLE OFFSET JUNCTION



## SINGLE JUNCTION



## INSTALLATION OF REINFORCING STEEL

### BEAM REINFORCING:

Reinforcing varies from site to site so always refer to the design for accurate requirements.

Typical reinforcing details are shown with top bar fixed to the underside of mesh unless otherwise stated and bottom bars sit in the Cupolex Reinforcing Chairs.

The type and size of bar is usually HD12 or HD16 depending on the soil classification.

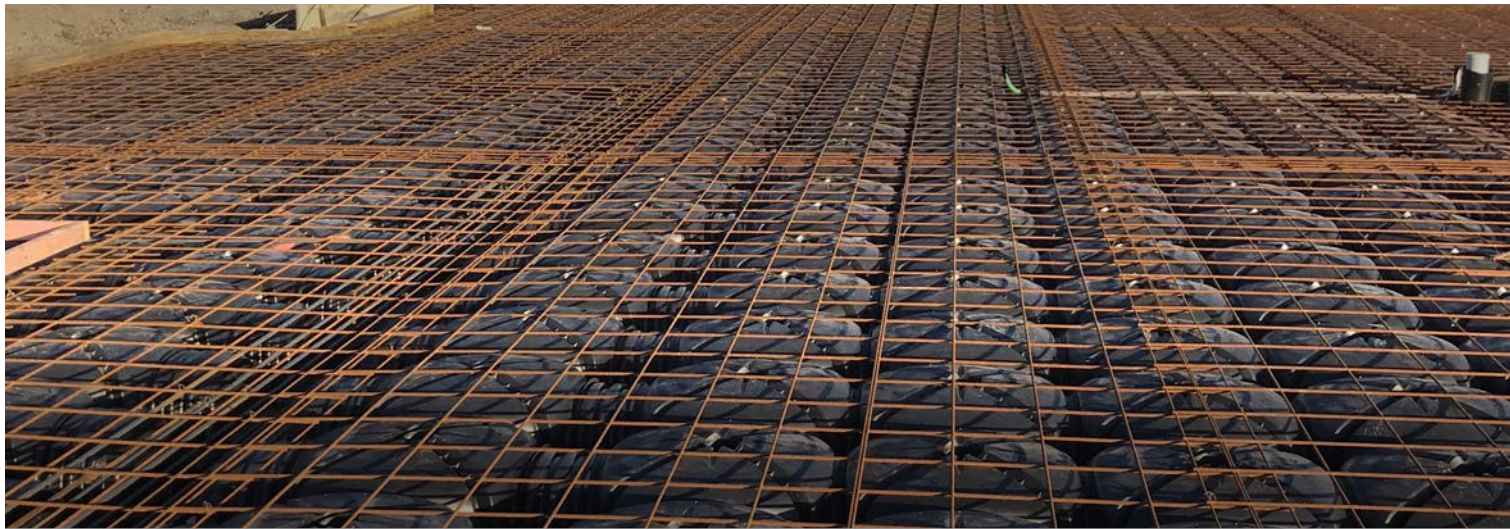
This is laid in the beams on chairs.

Junctions in corners for external or internal beams don't require corner bars if lapped correctly and with 50mm minimum cover all round (as per NZ/AS 2870).

### JUNCTIONS AND CORNERS:

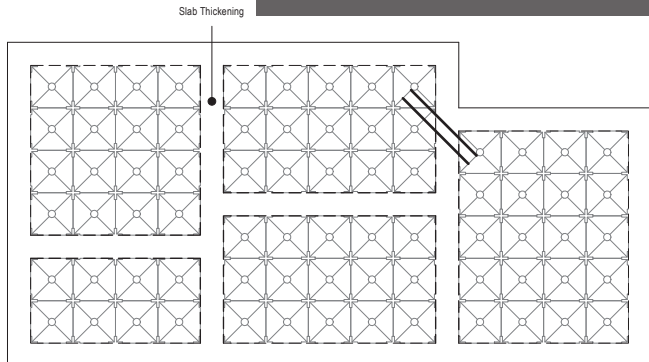
#### *Double Offset Junctions – Single Offset Junction – Stiffened Internal Corners*

These are all details that could be required in the slab and if required will be noted on the engineering plan with a \* at the required position. The reinforcing placed in these areas should be installed underneath the floor mesh so to give good concrete cover to the top mesh.



STEEL PLACED READY FOR CONCRETE

THICKENING BEAM WITH RE-ENTRY CORNERS



## INSTALLATION OF REINFORCING STEEL:

Placement of the mesh – as specified on plan is done by placing the first sheet (close to where they are delivered) in the first corner and then using each placed sheet as a walking platform.

This spreads the weight of the workers over the Domes and stops any movement of the Domes and Stop Ends. Mesh is placed as per the standards NZ/AS 2870

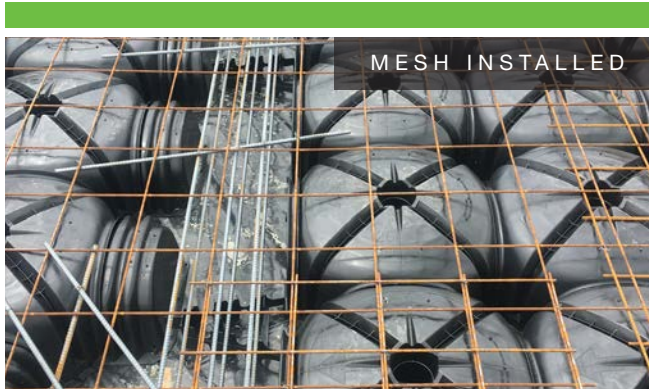
Areas to look out for are the lapping corner of 4 sheets and top bar – this can reduce concrete cover but can be resolved by cutting away the corners of lapping mesh.

No bar chairs are required with mesh as the mesh sits on the top point of the Domes.

This gives 60mm to 120mm of concrete.

**Always work to your site's stamped plans to ensure accuracy.**





## PRE-POUR CHECKLIST

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- » Dome size
- » Slab thickness
- » Mesh size
- » Beam width and Beam depth
- » Number of Domes per cluster
- » Re-entry corners
- » Crack Bars
- » Finally, are the clusters even ie. no high points; are the arrows in each cluster all pointing in the right direction. ***Does it look right!***



## PLACEMENT OF CONCRETE

The placement of concrete is similar to all concrete pours but the boom handler must understand where to place concrete first.

This is critical to ensure the Domes do not move due to pressure from volumes of concrete.

Concrete must be placed on top of the Domes first – down around their feet and centre cone on each Dome in a cluster, but no higher than the mesh.

This reduces the risk of a cold joint if there is long waiting times between concrete trucks.

Once the weight is on the Domes concrete can be placed in the beams, then finishing the top cover so screeding can occur.



## FREQUENTLY ASKED QUESTIONS (FAQ'S) CUPOLEX

### 1. Domes seem to be high in one spot?

**TO FIX:** *Dome arrows will not all be going in the same direction and their feet will not be seated correctly – pull out the problem Dome or Domes and install in the correct direction.*

### 2. Beam width is not the correct width once I reach the right hand side of the slab?

**TO FIX:** *Creep has occurred, adjust the Betons so less ribs are showing. Ensure all beams are the correct minimum width.*

### 3. A cluster has become out of square – can I shift the cluster?

**TO FIX:** *It is very difficult to push a cluster around – the easiest method is to unstack the Domes and reinstall the Domes in their correct position with maintaining the correct distance from the boxing.*

### 4. A plumbing riser is in the middle of a Dome, what is the best method in this situation?

**TO FIX:** *Remove the Dome and leave a space where the Dome would have existed, replace this with Beton Stops and Stop Ends.*

### 5. On a corner where 2 Betons are shown on the plan, but will not fit under the dome?

**TO FIX:** *Add 1 Beton and either, cut the other Beton to suit or add a Stop End to the other position.*



## FAQ'S REINFORCING STEEL

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### 1. Do I need corner bars in the corners of the external beams for the top perimeter bar?

**TO FIX:** Yes, if the external bar is not bent around the corner (NZ/AS 2870 states the diameter of the bend is 4 times the diameter of the bar) allowing a 600mm lap then corner bars are required the same size as the perimeter size bar.

### 2. I'm losing concrete cover because I have mesh lap on the top bar and re-entrant corner mesh in a concentrated area – what's the best solution?

**TO FIX:** Place the top bar and re-entrant corner mesh and/or bars under the mesh and make sure the mesh is laid as NZ/AS 2870.

### 3. Can I set brick rebates or tiled showers as I normally do (wet areas, and entry etc)?

**TO FIX:** Yes, this is done as you would normally place temporary boxing and then it is removed once concrete goes off in that area.

## FAQ'S CONCRETE PLACEMENT

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### 1. How far ahead can we go with concrete on the Domes?

**TO FIX:** It is not recommended to do more than 2 clusters at a time. We want to avoid a cold joint if trucks are slow to arrive.

### 2. Does it need to be vibrated around the Domes?

**TO FIX:** Yes, a pencil vibrate is usually used to a minimum – no different to all slabs.



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## INSTALLATION SUPPORT

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Congratulations on installing your first Cupolex slab! It is not difficult when you follow the installation process.

If you find issues on site, a quick phone call to your engineer or Cupolex staff will assist you.

**Further support is only a phone call away - no mess, no stress!**

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**CUPOLEX**  
**0800 287 6539**