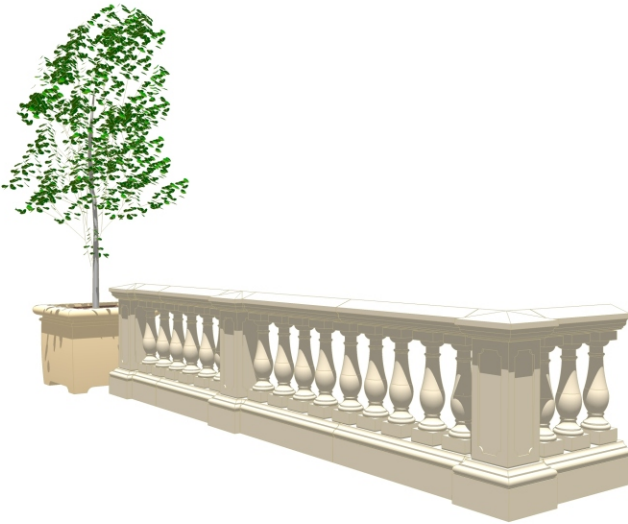


CRANBORNE STONE

Balustrade

Installation Instructions



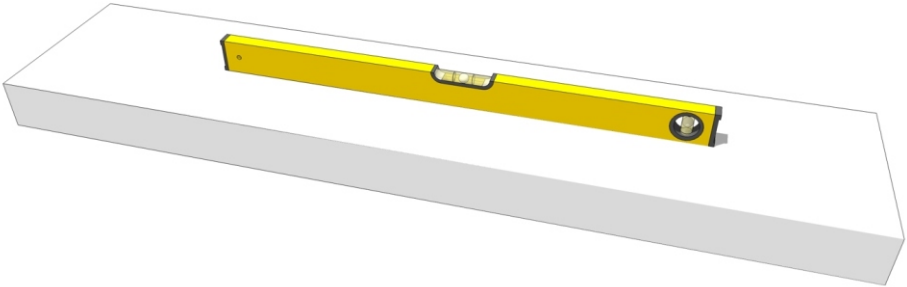
Butts Pond,
Sturminster Newton, Dorset. DT10 1AZ
Tel 01258 472685 Fax 01258 471251
www.cranbornestone.com

Step One.

The Balustrade requires a level, suitable foundation. This should be constructed to suit the chosen balustrade design and site conditions.

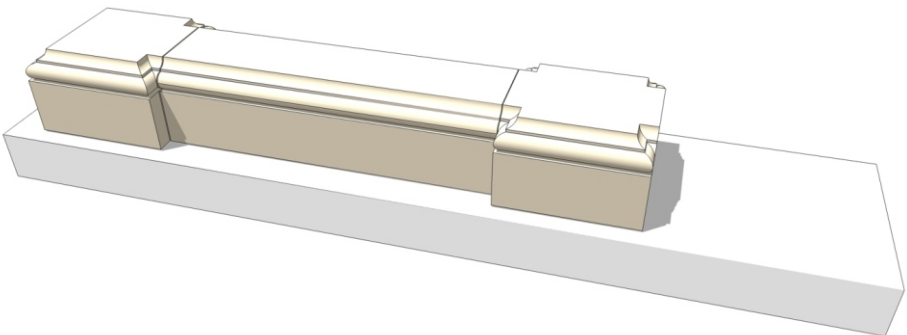
Step two.

Lay out the pier plinths starting at the end that needs to be most accurately measured (e.g. the edge of the terrace or the wall of a house). Place the plinth runs between the pier plinths, allowing 6mm for grouting between each cast. You may need to cut the plinths with a masonry saw to the right length. Mark the edges with chalk and move the casts to one side.



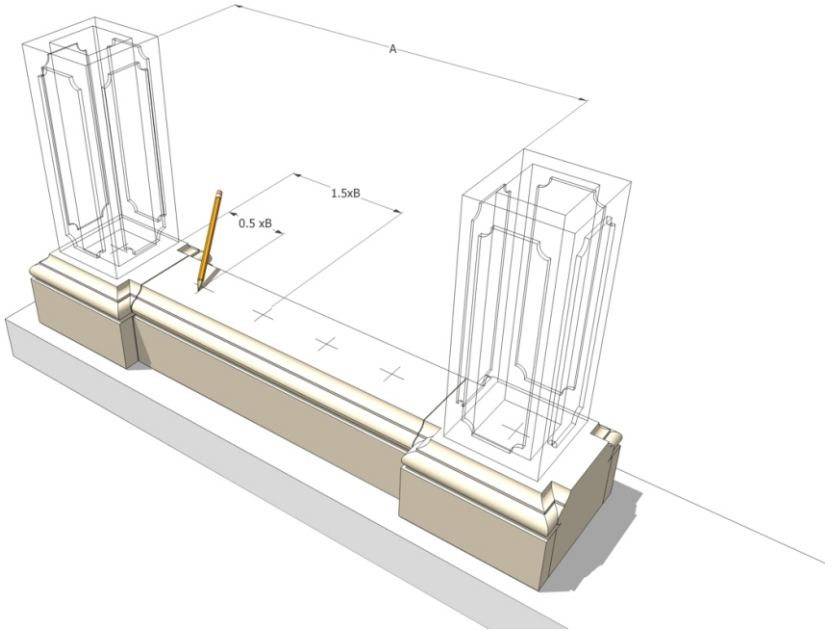
Step three.

Lay a 10mm bed of suitable mortar (do not use our colour matched aggregate if supplied this is suitable for pointing only) on the wall or foundation where the plinths and pier plinths are to be placed. Spread 6mm of mortar on the joining edges of each cast. As far as possible do not allow the mortar mix to come too near the edge of the stone, a 10-15mm gap is appropriate. If the grout does come too near the edge or squeezes out this should be raked back to leave a 10-15mm cavity for pointing.



Step four

For the first bay, measure the distance between the pier shafts along the plinths (A) and divide the length by the number of balusters to be used to find the spacing length = B. Mark the plinths at distances, from the pier shaft, of $0.5 \times B$, $1.5 \times B$, $2.5 \times B$ etc. along the centre of the plinth run, making sure that the last mark is a distance of $0.5B$ from the next pier shaft. (Note if using half balusters, e.g. Regency Balustrade style 9, the marks should be at B , $2B$ etc because of the half baluster against the pier shaft.)



Example:

For a run of balustrade where the distance between Piers is 1000mm and has four balusters.

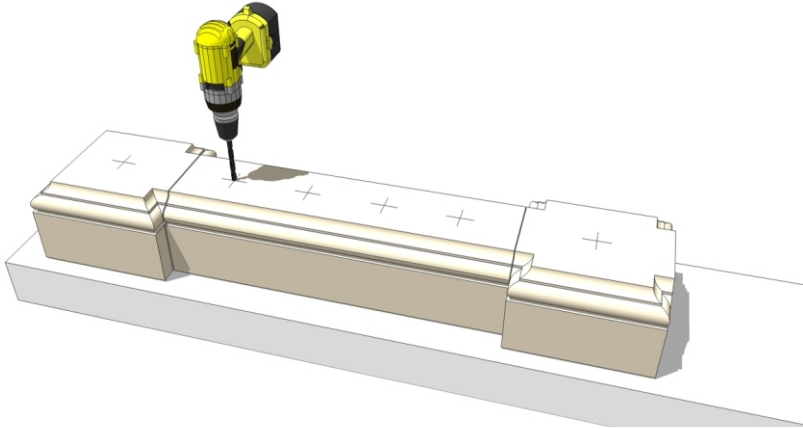
A:	1000mm		
Balusters:	4		
B:	250mm		
First Baluster	($0.5 \times B$):	125mm	($0.5 \times 250 = 125\text{mm}$)
Second Baluster	($1.5 \times B$):	375mm	($1.5 \times 250 = 375\text{mm}$)
Third Baluster	($2.5 \times B$):	625mm	($2.5 \times 250 = 625\text{mm}$)
Fourth Baluster	($3.5 \times B$):	875mm	($3.5 \times 250 = 875\text{mm}$)

Step Five.

Drill locating holes of at least 20mm through the marks. Locating holes need to be oversized to allow for accurate adjustment of balustrades. (A thin length of wood, cut to the length of the bay, can be used as a guide, drilling through the wood into the plinths. The wooden guide can then be used to locate the holes in the underside of the rails ensuring they exactly match the holes in the plinths.)

Step six.

Measure and mark the underside of the rails in the same way, remembering to start from the pier shaft (and not the end of the rail) and allowing 6mm for grouting between the rails. This is most easily done by lining up the rails (upside down) next to the plinths.

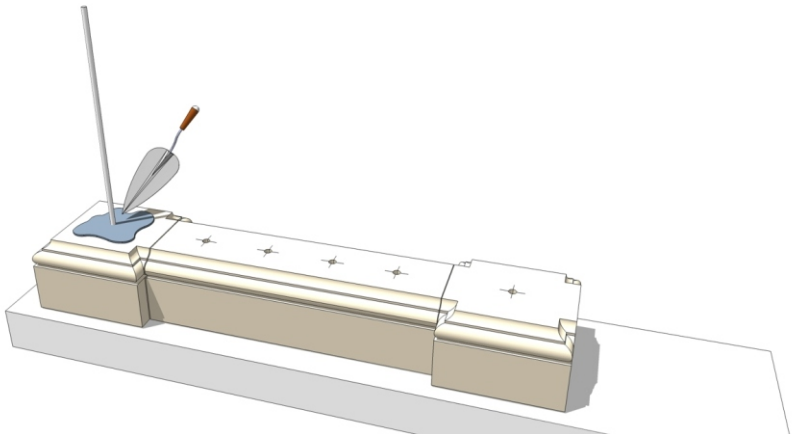


Step seven.

If additional reinforcement is required, a reinforcing bar can be resin fixed in the centre of the Pier Plinth prior to the Shaft being installed.

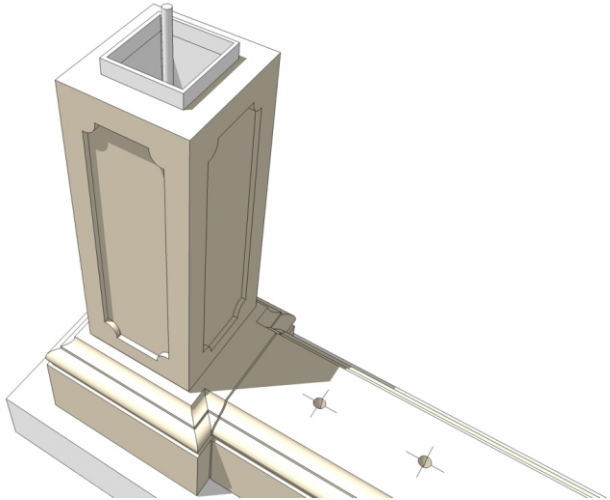
Step eight.

Make a 6mm bed of mortar on the top of each pier plinth and place a pier shaft on the pier plinths - exactly in the centre. Again there should be a gap of about 10-15mm between the mortar and the visible edges of the stone. Rake out any excess.



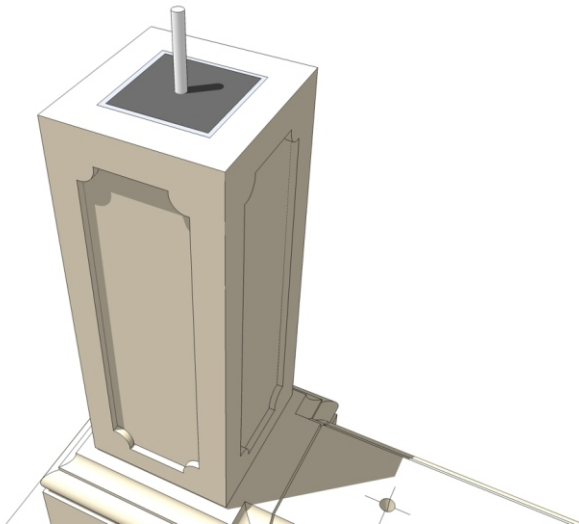
Step nine.

If the Piers are to be concrete filled, the stone should be insulated from the concrete using polystyrene foam totally covering the inside of the Pier Shaft, this will allow the materials to expand and contract independently.



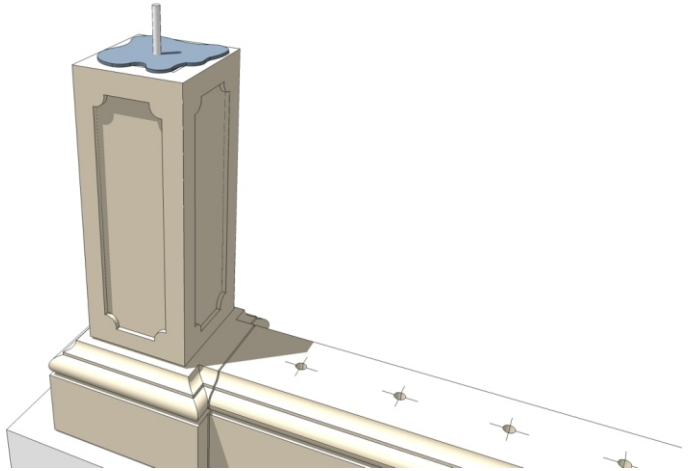
Step ten.

When the Pier shaft is filled the foam needs to be trimmed flush, and the concrete troweled flush to the top of the Shaft. If the reinforced bar is used, allow this to protrude around 50mm clear of the Shaft. Allow sufficient time for the concrete to set before proceeding.



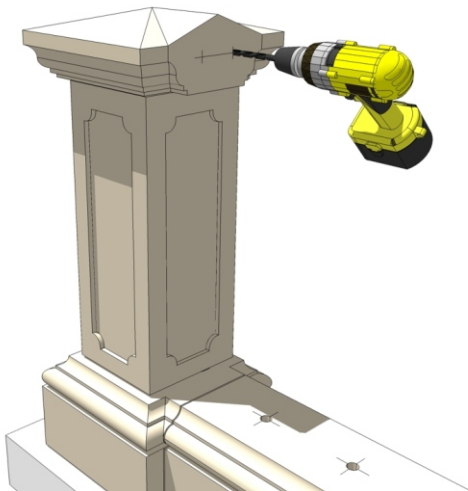
Step eleven

Bed the end pier cap onto the first pier shaft, making sure it is centred, and located on the reinforcing bar if used.



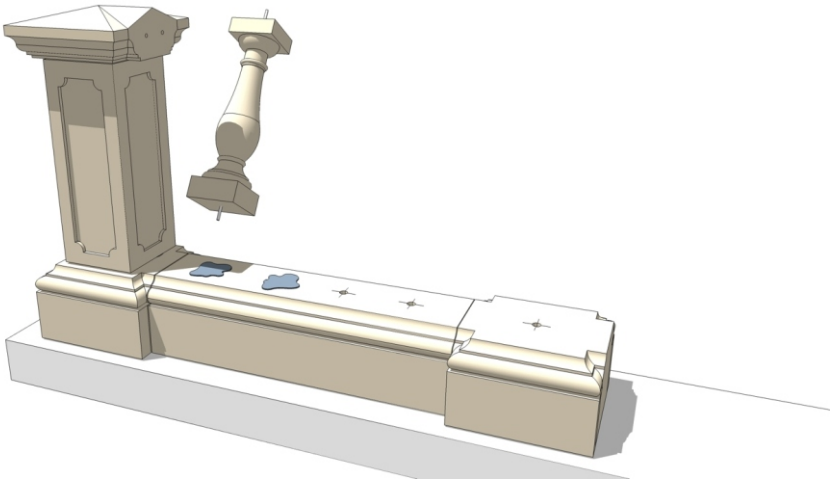
Step twelve.

Drill two 15mm reinforcement holes of about 2" depth into the ends of the rails and pier caps, using a pattern to make sure they are aligned. Prepare a number of 3 - 4" stainless steel rods supplied - (6mm diameter or more) to be grouted into the rails as they are erected.



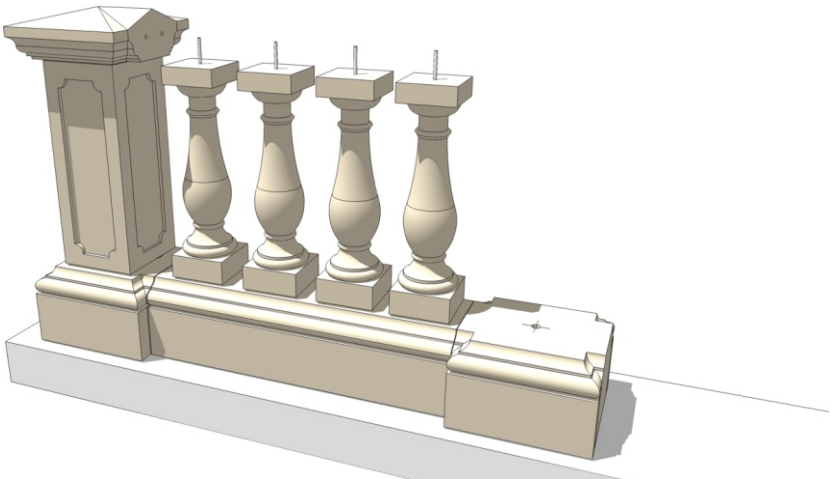
Step thirteen.

Bed the balusters onto the plinths, it may be helpful to assemble without grouting first to make sure the pieces are to hand and the holes are correctly drilled. However it may be helpful to use little 6mm thick wooden packers to keep the spacing even between the balusters and plinth.



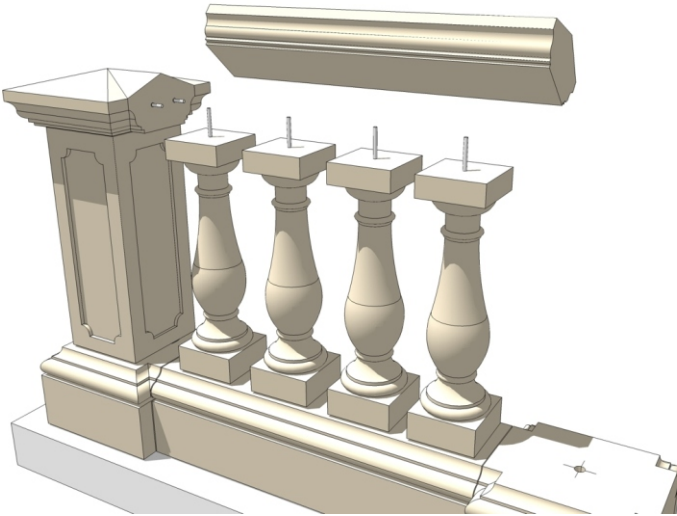
Step fourteen.

The Balusters may have vertical seams, that may sometimes be visible in the sides of balusters when new - it is best to align the seams with the line of the plinths where they are less visible.



Step fifteen.

Bed the rails onto the tops of the balusters - remembering to grout the sides of the rails to each other, incorporating the reinforcing rods.



Step sixteen.

Lastly point all the joints. Our colour matched aggregate may be used. It is a good idea to mix in some lime to add a bit of suppleness to the pointing mix to help prevent cracking. It is usual to make a few test samples first to achieve the desired colour.

