

Cupolex Building Systems  
PO Box 244 84  
Royal Oak  
AUCKLAND

**RE: CUPOLEX FLOOR SLABS  
HOLD DOWN INFORMATION**

The following is a summary of fixing requirements suitable for standard braced walls, proprietary K and X braced steel framed walls and non braced walls.

**BRACED WALLS FIXED TO:**

The Exterior Of The Slab Or Internal Load Bearing Walls

- Standard M12 trubolt fixings are applicable as the fixings are into solid concrete 300mm thick and 200 to 300mm wide. M12 chemset anchors or cast in bottom plate fixings can be used also.

Interior slabs where topping is 40mm to 55mm

6kN hold down capacity:

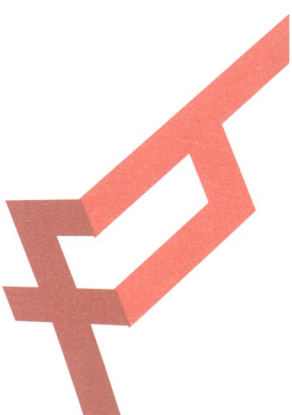
- For proprietary bracing elements or gib bracing elements a single M12 Epcon C6 anchor can be used embedded at least 40mm into the topping. A 50x50x3 washer is to be used between the bottom plate and the bolt head

12kN hold down capacity

- For proprietary bracing elements or gib bracing elements a pair of M12 Epcon C6 anchors spaced 150mm apart can be used embedded at least 40mm into the topping. A 50x50x3 washer is to be used between the bottom plate and the bolt head.

15kN hold down capacity

- Where a 15kN hold down capacity is required then the fixing point should be located where the topping thickness is at least 55mm



Interior slabs where topping is 55mm to 70mm.

For 6kN and 12kN hold down capacity refer to above fixing requirements

15kN hold down capacity

- For proprietary bracing elements or gib bracing elements a pair of M12 Epcon C6 anchors spaced 150mm apart can be used embedded at least 55mm into the topping. A 50x50x3 washer is to be used between the bottom plate and the bolt head.

Interior slabs where topping is 70mm or more

For 6kN, 12kN, and 15kN

- Use an M12 trubolt (or chemset anchor) embedded at least 70mm into the concrete slab. A 50x50x3 washer is to be used between the bottom plate and the bolt head.

## **UNBRACED WALLS**

For unbraced walls standard nails/pins (with washers) for fastening timber bottom plates should be used for the Cupolex slab. Correspondingly shorter nails/pins (with washers) for Steel frames should be used to ensure the embedment is limited to 40 mm into the slab. Spacing and set out of nails are to be in accordance with NZSS3604 and/or manufacturers requirements.

## **SPECIFICALLY DESIGNED STEEL FRAMED BRACING ELEMENTS**

The K and X braced walls used for steel framing have been specifically design and tested for the number of bracing units used. These tests were carried out using either 6kN or 12kN hold downs

As such we do not believe that these proprietary systems need any more hold down capacity than 6kN or 12kN.

Please contact the undersigned if you require any further information

Yours Sincerely

PER: HFC: Foundations



Rob Foster

**Director**

MIPENZ, Cpeng

Attachments:

(1) Ramset letter regarding epcon C6 anchor capacities.



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27 March 2008

**RE: Internal Bottom Plate Hold Down Bolts for Cupolex Floor System**

I am pleased to confirm that when installed in accordance with the instructions provided with the product and within the following parameters' Ramset EPCON C6 will provide the following Reduced Characteristic Tensile Capacity.

<b>Installation Option</b>	<b>: 1</b>	<b>: 2</b>	<b>: 3</b>
Reduced Characteristic Tensile Capacity	: 6KN	: 12KN	: 15KN
Number of Anchors	: 1	: 2	: 2
Anchor Diameter	: 12mm	: 12mm	: 12mm
Hole Diameter (minimum)	: 14mm	: 14mm	: 14mm
Washer Requirement	: 50 x 50 x 3mm	: 50 x 50 x 3mm	: 50x50x3
Concrete Strength (minimum)	: 20MPa	: 20MPa	: 20MPa
Embedment Depth (minimum)	: 40mm	: 40mm	: 55mm
Anchor Spacing (minimum)	: N/A	: 100mm	: 150mm
Edge Distance (minimum)	: 100mm	: 100mm	: 150mm
Mortar Type	: EPCON C6	: EPCON C6	: EPCON C6
Concrete Age at time of Installation (minimum)	: 7 Days	: 7 Days	: 7 Days

This statement covers the performance of the chemical anchor into the concrete but does not cover the adequacy of the concrete to transfer the load which should be accessed by a suitably qualified engineer.

Sincerely

Mark Ash  
Senior Product Engineer  
Ramset New Zealand  
A Division of ITW/NZ Ltd