



RIGID PAVEMENT INSTALLATION GUIDE

The following documents are to be consulted when installing C&M paving. These are available from www.cmaa.com.au and www.standards.com.au.

Concrete Masonry Association Of Australia (C.M.A.A) documents

- T44 "Concrete Segmental Pavements - Guide to Specifying".
- T45 "Concrete Segmental Pavements - Design Guide for Residential Accessways & Roads".
- T46 "Concrete Segmental Pavements - Detailing Guide".
- MA44 "Concrete Flag Pavements - Design and Construction Guide".
- MA48 "Concrete Segmental Paving - Maintenance Guide".

Standards Australia Documents

- AS4455: 1997 Masonry units and segmental pavers.
- AS4456: 2003 Masonry units, segmental pavers and flags - Methods of test.

The following information is a guide only, varying site conditions and ultimately the end use will determine the final laying specification. This guide is based on Melbourne City Council's paving specification and in no way replaces the services of a professional design consultant, such as an engineer. C&M Brick accepts no liability for its use in part or in whole.

Understanding a rigid pavement.

A rigid pavement is made up of four main components; concrete base, mortar bed, paving units and grout joints. All of these components combined form a monolithic pavement, as each of the elements are adhered to one-another they became one (ie laminated). Loads and forces are transferred through the pavement with little or no flexure.

Rigid pavements are generally used in residential driveways and pedestrian trafficked areas such as malls.

Design Considerations:

Paving patterns and layouts should be designed in a way to maximise the strength and durability of the selected paving units.

Control joints form an integral role in the overall pavement system and are needed at specified spacings, generally no greater than 3.5 metres in any direction or as specified by the project engineer. Any expansion or control joints in the concrete sub-base must follow up through the mortar bed and paving, and must be of similar width. Pavers abutting fixed objects such as light poles,

seats, bins, kerbs, buildings etc require a 10mm control joint. The control joint must be filled with a proprietary sealant and application shall be in accordance with the manufacturer's specification.

Components and Preparations:

1. Concrete Sub-base

The concrete base should be designed by an engineer in-line with the end use; either pedestrian or vehicle trafficked. In most cases a minimum of 20MPa reinforced concrete base will suffice.

2. Bond Slurry

The bonding slurry is applied to the top surface of the concrete base and the underside of paving unit to ensure maximum adhesion of the mortar bed.

The bond slurry general consist of the following materials:

- part Fine washed sand
- part Portland type A cement

Mixing should be performed either by hand or cement mixer by adding sand and cement to water (initially one part by volume) mixing continuously to ensure a smooth, homogenous consistency. Free of lumps.

3. Mortar Bed

Paving units should generally be fully bedded in a sand / cement mortar mix of a minimum thickness of 25mm and maximum thickness of 40mm.

The mortar bed generally consist of the following materials:

- part Brick sand
- part Washed sand
- part Portland type A cement

Mixing should be performed in a cement mixer by adding sand and cement to water (initially one part by volume) mixing continuously to ensure a homogenous consistency free of lumps.

Water may be added in specified proportions to gain a consistency such that it may be loosely hand shaped into a 'cricket ball' which will remain whole when released whilst leaving hand slightly moist (not wet).

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4. C&M Paver Units

Careful design and consideration in the early stages will ensure maximum aesthetics. The specified paving module should reflect the intended use by means of size, colour and finish. Please consult your C&M Brick representative for the complete paving range or speciality requirements.

5. Grouting

In general rigid pavements are laid with a minimum of 5mm grout joints similar to tiling, however some projects may be laid using joints of between 2-3mm.

Grout joints between paving units of 5mm require the use of a non-shrink cementitious grout. The grouting mix should be a dry mix bagged proprietary brand, fine aggregates, cement, admixtures type grout with high flow and low shrinkage properties, non-staining in the course of its application and of a compressive strength in excess of 20 MPa at 7 days. Mixing shall be in accordance with the manufacturer's specification.

Pavements using 2 -3 mm joints require fine washed sand free of impurities to be swept into the pavement joints. Re-application of the jointing sand maybe required in the future to maintain its design integrity.

Installation

The following installation procedure should be strictly adhered to:

1. Sweep concrete sub-base and remove all foreign material.
2. Prepare mortar mix.
3. Prepare bond slurry mix.
4. Dampen concrete base with clean water and apply slurry mix using a handbroom to an area not exceeding the extent of the paving unit to be laid. Slurry must remain wet.
5. Shovel mortar mix into position and loosely screed so that combined bed and stone thickness is higher than the desired surface level by 5mm.
6. Apply coating of slurry to underside of paving unit, approximately 1mm thickness.
7. Bed down paving unit and hit evenly over the whole unit to finish level. Lift and remove unit if desired level is not achieved and repeat steps 4 and 6.
8. Trowel fill any voids with mortar at front edge and/or front corners of paver.
9. Discard excess mortar.

10. After a minimum of 12 hours of curing with no traffic, the joints maybe grouted. Where necessary remove residual material from joints prior to commencing the joint filling operation.
11. Prepare grout mix.
12. Dampen joints with sponge and trowel grout mixture into joints ensuring full penetration for the thickness of the paving unit by lightly tapping down the trowel edge into the grouting mixture. Use a rubber squeegee to spread grout evenly into all joints, filling all flush with the top of paver, for best results do not slurry entire paver inturn reducing cleaning, and decreasing any chance of staining. Thoroughly remove excess grout, allow initial set and lightly broom off remaining excess perpendicular to joints.
13. Wipe stone clean using fresh water and sponge. Replace water frequently to ensure grouting residue is not left.