• Control joints and Cracking

Testing of L-Stone identified that average shrinkage of the product is 12mm in 10 metres, normal 20Mpa concrete in comparison (using Perth aggregates) is in the order of 8mm in 10 metres. Accordingly through correct design and placement, that is ensuring construction joints are placed at an adequate frequency and that the water cement ratio is minimised (poured at the correct slump) you can control cracking.

- The installer must provide adequate construction joints based upon the comments provided in this information sheet.
- BGC through the use of a super plasticiser minimise the water cement ratio. It is important that the driver does not add water to the mix (all BGC drivers are aware of this). If a higher slump is required super plasticiser should be used (it will be available on the truck with your delivery). Adding water to the mix will nullify the efforts we have taken to minimise shrinkage.
- The pattern of construction joints needs to be considered with these constraints in mind, with particular attention being made to the geometry of the concrete being poured.
- Many types of cracking, whilst not affecting the durability of concrete can have significant aesthetic consequences which must be assessed by the installer and minimised. The appearance of the finished product is critical.
- The installer, finisher and cutter must all be aware of design requirements and be scheduled prior to commencement of the pour as the frequency and timing of construction joint placement can prove critical.

• L-Stone Cutting

Each job must be considered on an individual basis to minimise random cracking, the construction joint plan taking note of the following:

- Where cracks are likely to occur.
- Job geometry.
- The requirements of the individual clients, if acceptable to the layout, the decision is yours, do not attempt to satisfy client demands if you can see random cracking being a problem in the future.
- See definitions for control and expansion joints below. Control joints should be alternating ‘Lock Joint’(full depth joints) and tooled joint type.
- Where control joints are to be tooled an adequate depth of cut, being 1/4 to 1/2 of the total depth is required to ensure that the weakness created reflects in a crack directly below the joint. This occurs when shrinkage stress are greater than the tensile strength of L-Stone. If the joint is too shallow random cracking can occur.
- You must never stagger control joints, decorative cuts can be staggered to suit the pattern required, but the latter should not impact upon the principal construction joints.
- For 100mm thick pathways, 2.0m wide and over control joints are recommended at maximum spacings of 4 linear meters alternating ‘Lock Joint’ and tooled joints. As a general rule spacings for control joints in pathways under 2.0m wide are to be twice the width of the pathway. Eg: A 1.5m pathway would have spacings of 3 linear meters.
- Expansion joints should be spaced not more than 30 linear metres on straight sections of pathways, at all deviations in alignment of pathways, at kerbs, at cast in metal items eg: hand rails and at the intersection of pathways. Special circumstances may require closer spacing of EJ’s. We recommend ‘Lock Joint’ coloured compressible filler strip is used for EJ’s in L-Stone to achieve a professional finish.
- Timing of decorative cut placement is critical, too early can damage edges to the joints, too late can result in random cracking, which everyone is trying to avoid. Be aware that you cannot cut right up to walls, your cutting layout should reflect this.
- High Summer temperatures require special attention to the jointing programme, the earliest possible opportunity should be taken for tooled control joint placement.
- L-Stone should be place to maximum area of 9 m2 for a 100mm thick slab without control joints for a square slab section.

• Scratching L-Stone

Patterns, from random to regular symmetrical design can be included as required. Please discuss your requirements prior to commencement.

• L-Stone Inlays

Inlays of brick, tiles cobbles or river stone can be designed to client request.

• Colour

L-Stone is available in a variety of colours, the base product is of a white limestone appearance, pigments are available to produce varying shades of cream to suit client requirements. L-Stone using grey cement and a choice of pigments provides a wide range of colours.

• Mesh reinforcement

It is recommended, in load bearing situations eg: driveways, vehicle crossings in footpaths etc that galvanised mesh is used. Mesh is available from BGC at competitive prices if required. Typically SL52D is used, however engineers requirements should be adopted.

• Curing

Curing compounds must be compatible with the sealer to be used. Curing and control of evaporation will assist in minimising plastic cracking and should be seriously considered in the hot summer months. As a consequence of the roughened surface, (the surface area being that over which evaporation occurs is greater than a smooth slab), L-Stone has an increased propensity to crack due to increased evaporation.

• Sealing

Sealing if required should occur at the earliest opportunity, thus avoiding staining of the concrete surface through unwanted construction traffic, paint, rusty nails, marks of rubber tyres etc ensuring future visible performance of the newly poured concrete. Clients should be made aware that application of sealers will change the appearance of the surface, being darker, potentially amplifying imperfections on smooth surfaces. We need to ensure client expectations are met as the finished product needs to leave a lasting impression of quality. Please note sealers have a limited life up to 5 years, reapplication of sealer may be necessary.

• Definitions

CJ : Control joints being alternating:
A tooled joint created in the L-Stone to a depth of ¼ to ½ of the total concrete thickness. Spacings 6m.

and

LJ Lock Joint (Control Joint) A full depth joint through concrete, at 6m centres alternating with tooled joint above

EJ: Expansion Joints being:

A 10mm wide joint of a compressible strip. Coloured EJ material is available. EJ's should be placed at 30m spacings on straight pathways, changes in direction, junctions, where metal cast in items are included, kerbs and at curves in concrete pathways.

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