DESIGNER CONCRETE COATINGS

Application Guide for

Stamp Impression

Decorative Concrete Systems

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1. Purpose:

This guide is intended to provide basic instructions for the application of Stamp Impression Decorative Concrete, a surface-formed method used on freshly placed concrete to simulate brick, stone, slate or tile paving in pathways and light-traffic driveways.

2. Introduction:

Stamp impression concrete systems originated from the United States of America and, developed as an economical alternative to installation and placement of segmental tile, slate or brick pavers. The pavement on which stamp impression concrete systems are used must be designed for the loadings and soil conditions that support it. Reference to Standards Australia, AS 3727 – 1993, Guide to Residential Pavements is recommended for the selection and construction of pavements associated with residential buildings consisting of single houses or multiple dwellings in medium density housing development. It does not apply to the design and construction of public roads or streets where stamp impression concrete systems may not be applied.

Stamp impression concrete systems should only be selected on the basis of providing an acceptable probability of serviceability during the design life of the pavement. The systems would normally be applied by experience concrete placers and, rely on proper and workmanlike installation and finishing practices for decorative effect and, serviceability.

Stamp impression concrete systems basically require a five (5) stage process to complete the work. First, a dry-shake color hardener (base coat) is cast twice over the fresh concrete surface and, completely and thoroughly trowelled after each cast. The base coat colour is the dominant colour seen in the completed work.
The next step requires a release agent powder (sometimes in liquid form) to be cast over the freshly trowelled base coat colour to prevent suction (sticking) of the stamp-mats used to produce the pattern design in the concrete surface. Release agent material would normally be pre-mixed with a colour pigment to produce a highlight or contrasting colour tone in the simulated slate, tile or brick impressions in the finished pavement.
The third step is applying the stamp matrix to achieve the paving pattern design in the concrete surface. Step four requires removal of the release agent powder from the surface when the concrete has achieved hard-set and, cured for an initial period of not less than 72 hours after completion of the work. The release agent powder must be removed to the point where only pigments of its pre-mixed colour remain in the impressions in the finished pavement. Finally, a clear sealing compound is applied (two coats) to promote cleanability and, limited protection against most accidental spillages.

3. Basic Application and Finishing Instructions.

3.1 Concrete Consistency.

Concrete shall be of such consistency that it can be readily placed and compacted in the forms without segregation of materials and without excess bleed water collecting on the surface. Concrete slump shall be greater than 85mm and should not exceed 110mm unless a high range water reducing admixture is approved. Concrete grade of 25MPa is recommended.

3.2 Initial Concrete Finish.

Fresh concrete shall be compacted and worked until all the coarse aggregate is below the surface and the mortar comes to the top. It shall then be struck off and initially finished with at least a metal float to produce an even, closed surface.

3.3 Application of Base Coat Colour.

Use CMM 3000 Multi Mix grade colour hardener. Cast colour hardener twice - two separate casting operations evenly and uniformly over the entire concrete surface. Wide areas may require the use of a bridge to ensure consistent coverage. Cast at least two thirds of the total volume of colour hardener first; then completely and thoroughly trowel into the concrete surface. Repeat this operation with the remaining one third of the total volume of colour hardener. Final finish must achieve surface texture to promote skid resistance and may require use of a coving trowel or similar .

Colour Hardener Application Rate: 2kg to 2.5kg x m2
equivalent to 8m2 to 10m2 x 20kg bag of
CMM Multi Mix grade colour hardener product.

3.4 Application of Release Agent Powder.

Use RA 3000 Release Agent powder. Cast release agent powder once – evenly and uniformly over the entire concrete surface. DO NOT trowel into the surface.
Note: Release agent powder is similar to talc powder in weight and, softness in touch. Special precautions must be taken on days of medium to high wind velocity to prevent air-borne spread of the product to adjacent areas. The use of windbreaks around the perimeter of the work in these conditions is recommended.

Release Agent Application Rate: 6m2 x 1kg.

3.5 Application of Stamp Impression Mats.

Proprietary manufactured concrete stamping mats are produced in a range of paving impressions that simulate the appearance of slate, tile, stone or brick and, are packaged in sets that normally comprise of five hard mats, and one 'floppy' mat used to complete a run that abuts a fixed structure or pavement edge.
Stamp mat placement for consistent pattern match and decorative uniformity within the dimensions of any given pavement requires competency on the part of the concrete contractor. It is critical that contractors are familiar with the geometry of stamp mats and, how they interface with each other so as to plan and complete the work in a professional manner.

The stamping process should commence as soon as possible before hard-set occurs, but not so early as to cause unacceptable raveling or scuffing of the concrete surface.
For large areas, the use of surface hard retardants may extend critical time to complete the work in a proper and uniform manner.

Each mat is placed separately with the pattern side on the concrete surface, interlocking with each other until the full set of mats combine together to form a matrix.
Downward, even pressure must be applied over the stamp mat matrix to form the impression of the paving design in the concrete surface. This is normally achieved by walking on the mats, relying on body weight to induce the stamp impression or, by lightly tamping the mats with a purpose-made tamping tool.

This process is repeated time after time while standing on mats already in position until the entire paving area has been stamped.

3.6 Removal of the Release Agent Powder.

Release agent powder must not be removed from the surface before the critical 72-hour concrete curing period has elapsed. Lightly sweeping and collection of excess release agent powder from the surface is permissible only when the concrete has achieved hard-set. Freshly finished surfaces must be protected from rain or damage from other sources.

When the critical 72-hour concrete curing period has elapsed, use DCC Decorative Driveway Cleaner, as directed on instruction label, to scrub and remove the release agent powder from the surface. When completed, the colour pigment from the release agent powder must only be apparent in the stamp impressions on the pavement surface.
If this pigment colour is clearly noticeable over the entire surface, wash the surface with a mild hydrochloric acid solution. Minimum dilution rate: 1 part acid : 25 parts clean water. (200ml acid : 5lts clean water).

Important Precautions – Acid Washing Pavement Surfaces.

The pavement surface must be saturated with water before application of diluted acid solution. Diluted acid solution must always be placed on wet concrete surfaces – never put acid solutions on dry surfaces.
Apply diluted acid solution (use a standard acid-resistant plastic watering can to dispense acid solution) onto the wet concrete surface and lightly broom over the applied area – then immediately flood with clean water to completely remove the acid solution.
Repeat this process until the entire pavement surface has been washed with the diluted acid solution.

Allow pavement service to dry for at least 24 hours in summertime, longer in wintertime.

3.7 Application of Clear Sealing Compound.

Two coats of clear sealer should be applied to the surface to complete the work and, to promote cleanability and, maintenance of the RA pigments that form the highlight-colour tones in the stamp impressions in the finished pavement surface.

Use Designer Concrete Coatings 'Prime & Seal' for the first coat.
Use Designer Concrete Coatings 'Decorative Concrete Sealer' for the second coat and apply not less than 3 days after application of the first coat.
DO NOT walk on sealed surfaces for 24 hours after application and, DO NOT park motor vehicles on sealed surfaces for 72 hours after application.

Best method of application: use a lambs-wool paint roller for the first coat – and a soft polypropylene bristle or natural bristle broom for the second coat. Apply evenly and uniformly over the surface.

Application Rate: 4m2/litre

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4. Precautions and Limitations of Stamp Impression Concrete Systems.

Before Application - Protect Adjacent Exposed Structures:

Colour hardener and release agent products are manufactured in powder form and, when applied, particles may or will be carried in the surrounding atmosphere by prevailing wind. Protect adjacent exposed surfaces of all structures with plastic film sheeting or equivalent to prevent stain damage.

Pavement Grade Limitations:

Stamp Impression Concrete Systems typically simulate the smooth-surface properties of slate and cobble-type stone paving that normally have lower slip resistance to other paving materials that have a textured surface in the finished product.

Application of stamp impression concrete systems on moderate to steep grades is not recommended.

Limitations of Clear Acrylic Sealing Compounds:

Clear sealing compounds are applied to the finished work to promote cleanability of the surface and, to a lesser degree, to seal the pigmented colours that remain on the surface from the release agent powder to promote a highlight-colour effect.

Permanent colour enhancement and unlimited protection against staining and/or petrochemical residues are not the intended purpose nor is the product designed to satisfy this performance expectation.

Clear acrylic sealing compounds must not be applied to damp or wet surfaces nor can they be applied in ambient temperatures below 10 degrees Celsius or above 28 degrees Celsius. Product failure may or will result from improper application, or use contrary to the manufacturer's advice and instructions issued on labels attached to pails and drums.

Materials Safe Handling Information:

DCC Manufacturing has Materials Safety Data Sheets for all products produced and/or marketed by Designer Concrete Coatings Pty Ltd in compliance with Work Cover requirements.
All information is supplied with product purchases for reference and, recommended safe handling procedures by end users.

Normal Maintenance Requirements:

Pavement owners are required to affect a reasonable standard of maintenance of the finished pavement surface to ensure an acceptable probability of serviceability and durability of the work. Principles of maintenance include routine pressure cleaning and regular removal of oil spillages from motor vehicles and, general sweeping of leaves and other staining agents such as dirt and grime from the surface.

For advice about maintenance requirements of a residential pavement that are the responsibility of pavement owners, refer to Clause 4.3 of AS 3727 – 1993 Standards Australia Guide to Residential Pavements.

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