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A Review on Stencil-Crete Decorative Concrete

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ABSTRACT

Plain concrete surfacing for the exterior of your home or place of business can be replaced with stencil Crete. The distinctive Stencil Crete surface offers the primary benefit of a high-quality image and finish at a very affordable cost and in a very quick amount of time. The product mimics the appearance of paving but does away with the issues that other paving forms have with structural mobility and weed development. It is used as various purposes. They are: roadways, poolside, traffic forms and commercial places.

Keywords: Stencil Crete Concrete, Plain Concrete and Commercial Buildings.

I. INTRODUCTION

On recently laid concrete, stencil pattern concrete systems are surface produced. According to the goals of AS/NZS 4586 - 1999, the colouring agent is cast onto the freshly laid concrete surface with the stencil in place and trowelled to create a closed textured skid resistant surface suitable for pavement slope. The concrete beneath the stencil is left uncoloured once the stencil is removed, imitating the mortar joints between cast-in-place paving brick or tile pieces. To help the concrete cure, a clear concrete sealant is applied to the finished pieces.

Stencil Crete uses in bot inside and outside. It is frequently employed in public spaces such as streets, traffic islands, parking lots, pedestrian bridges, and retail malls. It is a common choice for driveways, walkways, patios, and the surroundings of swimming pools as well as personal and public footpaths. You can design your own unique customised appeal using a wide variety of colours, patterns, and textures.

Fig-1: Stencil Decorative concrete

II. BASIC APPLICATIONS AND FINISHING INSTRUCTIONS

a. Concrete consistency:

Concrete must have the right consistency to be easily poured and compacted in forms without material segregation or excess bleed water accumulating on the

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top. Unless a high range water-reducing admixture is authorised, the slump of concrete must be larger than 85mm and should not exceed 110mm. For residential applications, concrete grades of 20 MPa or 25 MPa are typical. Higher concrete grades used in certain commercial applications might or might not call for a mix design that slows setting periods so that concrete systems with stencil patterns can be cast-in-place properly and skilfully.

b. Initial concrete finish:

It is necessary to compact and work fresh concrete until all of the coarse material is below the surface and mortar is visible. To create an even closed surface, it must then be struck off, edged, and initially finished with at least a metal bull float.

c. Stencil pattern matrix application:

With a variety of traditional and modern pavement designs that mimic the look of brick, stone, or tiles, stencil matrix is made from highly durable water-resistant paper. Rolls of stencil matrix measuring 50 m2 and 100 m2 are available for laying over the paving. The 50m and 100m rolls of header stencil are packaged for application along the pavement's edge. Rosette stencils with diameters of 900mm, 1.6m, or 2.2m are already created and can be used to add details to the paving.

d. Color hardener:

Employ Designer Concrete Coatings CCH 3000 or CMM 3000 grade colour hardener. Two different casting operations should be used to distribute colour hardener evenly and consistently over the full surface of fresh concrete. Vast expanses might need to be covered consistently by a bridge. At least two-thirds of the needed amount of colour hardener should be cast first, and then the concrete surface should be properly and completely trowelled (worked). For the remaining third of the whole volume of colour hardener, repeat this procedure. According to the criteria of AS/NZS 4586 - 1999, the final finish must achieve a surface roughness to increase slip resistance appropriate for pavement slope.

Application Rate for Colour Hardener: 2kg to 2.5kg x m2 (= 8m to 10m x 20kg)

e. Removal of stencil pattern matrix:

Lift a small section of the stencil to check that it will "pull out" without unacceptable chipping or ravelling to the edges of the paving brick units when the concrete reaches initial set, which is the point at which it can support the weight of an adult without causing surface damage, and before hard set occurs. The stencil can be fully removed once the proper surface colour depth hardness has been reached. Use the proper shoes to prevent surface damage; removing stencil from drying concrete surfaces is best done by wearing two pairs of thick socks.

III. PROCEDURE FOR MAKING OF STENCILCRETE CONCRETE

Mixing process:

- Begin the mixing process by adding the water requirements for the Sakrete Flo-coat to a 5-gallon bucket.
- Add the selected cement color additive to the water and briefly mix the water and color additive together using a drill.
- Add in the Flo-coat re-surfacer and mix for several minutes using the drill. The mix should be fluid and free of lumps.
- Pour the colored Flo-coat re-surfacer into the hopper of the spray gun assembly.

Preparation:

- Prepare the concrete surface by pressure washing. It is important that the surface is clean and free of dirt and build up.

- Prepare the spray gun assembly in advance of any stenciling project.
- Once the concrete surface have been thoroughly cleaned and has had adequate time to dry, your chosen stencil can be laid in the desired design. Tape the edges of the stencil to secure it into place.

Fig-2: Laying of stencil concrete

Application:

- Begin spraying the stenciled area, using cardboard to catch any over-spraying that occurs. Spray in circular patterns. Don't try and cover the area all at one time. Heavy spraying can result in product running under the stencil.
- Once the stenciled area has been adequately sprayed, remove the stencil from the area. Do not allow the Flo-coat Re-surfacer to dry with the stencil in place.

Fig-3: Removing of stencil layer

Finishing:

- Allow the area adequate dying time. Do not allow foot traffic for 24 hours after application or vehicle traffic for 72 hours approximately.
- To ensure long-lasting color, Flo-coat Re-surfacer should be sealed 24 hours after the application.

Clear sealing compound:

The application of sealer to completed works is intended to aid in concrete curing, which enhances the durability of hardened concrete, and to aid in regular maintenance obligations of pavement owners that are only limited to surface cleanability. Two coats are recommended for the best results.

- For the initial layer, apply Designer Concrete Coatings' "Prime & Seal." Apply within 24 hours of the work being finished to help the concrete cure.
- For the second layer, apply Designer Concrete Coatings' "Decorative Concrete Sealer." Apply at least three days after the first coat of "prime & seal" has been applied.

IV. ADVANTAGES OF STENCILCRETE CONCRETE

- The stencil Crete laying process if extremely quick and easy.
- It delivers the same aesthetic appeal as conventional paving at a fraction of the cost. The highly efficient stencil Crete system requires less labor in laying.
- It delivers the flexibility to create the perfect appeal for your home.
- It is extremely hard-wearing and is treated against discoloration and fading.
- Its designed to handle high traffic loads and lasts for years under the most stressful situations.

- It can be finished to provide a slip reducing surface over the concrete slab.

V. CONCLUSION

The results of the investigation demonstrate that cement made using low-iron raw materials has a pale hue. The whiteness coefficient is 72%. This powder can therefore be utilised as a decorative binder. The strength, longevity, and corrosion resistance of decorative concrete created with cement obtained as a binder are excellent. As a result, the substance produced using mineral leftovers from sludge-lignin and other human-caused waste has several potential uses. Also, the building sector finds such cement to be economically appealing due to a large decrease in energy expenses (reduced fuel consumption, power costs for raw material preparation and grinding).

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