8205 Stencilling to Concrete Surfaces

REVISION 24/02/2025

8205.1 Introduction

This supplementary specification refers to the stencilling of concrete surfaces only. Stencil pattern concrete systems are surface formed on freshly placed concrete. The colouring agent is cast onto the fresh concrete surface with the stencil in place.

This specification does not deal with stamped concrete surfacing due to their likelihood of **not** being slip resistant.

8205.1.1 Definition of Terms

The following items apply specifically to this specification.

Term	Definition
Stencilled Concrete	Refers to the laying of a stencil on new or existing concrete and overlaying with a coloured pigment, the stencil forming the pattern and being removed when the process is complete
Stamped Concrete	Refers to the process of imprinting the pattern into the surface of freshly poured concrete by the use of stamp mats

8205.2 Referenced Documents

This supplementary specification shall be read in conjunction with the following:

- MRS01 and MRTS01 *"Introduction to Technical Specifications"*;
- MRS03 and MRTS03 *"Drainage Structures, Retaining Structures and Embankment Slope Protections"*;
- MRS50 and MRTS50 *"Specific Quality System Requirements";*
- MRS70 and MRTS70 *"Concrete";*
- AS 4586 - Slip Resistance Classification of New Pedestrian Surface Materials;
- AS/NZS 4456.9 Masonry Units and Segmental Pavers and Flags – Determining Abrasion Resistance;
- Manufacturer's specifications; and
- the project Drawings.

8205.3 Description of Work Items

Work items incorporated by this supplementary specification are identified in Section 8205.6 and 8205.7 with individual activities/tasks for measurement and payment sourced from the Bill of Quantities and listed in MRC Supplementary Specification Annexure 8205_1 Hand Placed Coloured Concrete Paving Section 1.

8205.4 Quality Systems Requirements

The Contractors quality system shall meet the requirements of MRS50 and MRTS50 and comply with specific quality requirements as nominated below or within this Supplementary Specification.

8205.4.1 Std Test Methods (Testing Regime)

Unless otherwise approved by the Superintendent the following minimum testing regime applies to this specification:

The minimum test frequencies and minimum numbers of tests shall be as follows:

- As required by AS/NZS 4456.9 for abrasion resistance,
- As required by AS4586 for slip resistance with relevant test method surface location and environmental conditions (external – wet slip resistance).

Where there are additional testing requirements these are included in Clause 2 of MRC Supplementary Specification Annexure 8205_1.

8205.4.2 Hold Points, Witness Points and Milestones

The following table represents the minimum inspection and milestone requirements for this specification.

Activity	Inspection Type	When
Construction Procedure and other required documents as per 8205.5	Milestone	4 Weeks prior to works commencing
Inspection of delivered items	Hold Point	At delivery time for each item.
Prepared surface for stencilling	Hold Point	Prior to stencilling works commencing
Laying of stencil template	Hold Point	Prior to top coats being applied
Installation process of coloured stencilled surfacing to freshly poured concrete	Witness Point	During application of all coats of coloured surfacing
Inspection of completed coloured stencilled surfacing to freshly poured concrete	Hold Point	After coloured surface installed/applied, prior to sealing of concrete surface
Installation process of coloured stencilled surfacing to existing concrete	Witness Point	During application of first coat of coloured surfacing
Installation process of coloured stencilled surfacing to existing poured concrete	Witness Point	During application of second coat of coloured surfacing
Inspection of completed coloured stencilled surfacing to existing poured concrete	Hold Point	After coloured surface installed/applied, prior to sealing of concrete surface
Slip resistance testing of stencilled surface	Hold Point	After sealant application and prior to opening to public
Work site cleaned, debris disposed of, slip resistance tests available	Hold Point	At completion of works prior to opening to public.
Works as executed documentation submitted and accepted	Hold Point	4 weeks prior to Works as Executed inspection request

8205.4.3 Construction Geometric requirements and Tolerances

Unless otherwise approved by the Superintendent the following construction geometric requirements and tolerances shall apply to this Supplementary Specification.

The construction activity outcome shall not depart from the widths, lengths, heights, and shapes specified by the relevant specifications as applies to this specification.

- Concrete tolerances in accordance with MRTS70 Concrete.

Geometric requirements and tolerances specific to the project are detailed on the design drawings and are included within each Clause, or as required by Clause 2 of MRC Supplementary Specification Annexure 8205_1.

Slip resistance shall be as specified in the design drawings and AS 4586.

8205.5 Preliminary

The Contractor is to submit the following documentation 4 weeks prior to commencing work or a prestart is conducted:

- Works procedure – all activities and order of construction.
- Environmental Management Plan.
- Quality Plan detailing requirements of Clause 8205.4.
- Erosion and Sediment Plan (as required for site/s).
- Traffic Management Plan and TGS's.
- Workplace Health and safety Plan

MILESTONE

Other requirements unique to the project will be listed in the MRC Supplementary Specification Annexure 8205_1 Stencilling to Concrete Surfaces.

MILESTONE

The contractor is to ensure their construction activities are based on the design drawing requirements, this specification, and site specific conditions and requirements. Alternate construction materials and procedures are not acceptable.

8205.5.1 Materials

Supply of all materials to site is the responsibility of the Contractor at their cost, where items are Principal supplied the nominated storage site shall be obtained from MRC Supplementary Specification Annexure 8205_1 Stencilling to Concrete Surfaces Section 3 and shall be the point of supply.

Stencil Template – Shall be made of tear resistance paper with a water-resistant coating (similar to milk cartons) or reusable urethane stencil, be in the pattern as required by the design drawings.

Colour Pigment – Shall be of synthetic or natural oxides to be added to the overlay compound and be of the colour specified on the design drawings.

Resurfacing Base Compound – Shall be a coating used as a colour tinted base compound for application over existing cured concrete surfaces.

Colour Hardener – Shall be only used where the concrete is freshly laid and applied by hand across the stencilled pattern.

Surface Sealant – Shall be a durable protective clear coating with UV resistance for sealing the coloured stencilled overlay of the concrete applied in 2coats.

Surface Primer – For penetrating and stabilising the concrete surface and increases adhesion.

8205.5.2 Material Delivery, Storage, and handling

Materials must be stored in accordance with the manufacturer's requirements including:

- In dry conditions not exposed to direct sunlight, not in contact with a damp floor or ground.
- Within the specified maximum and minimum temperature range.
- In their original, sealed moisture resistant bags or containers.

All materials shall be brought to site in the original sealed bags or unopened containers clearly labelled with the appropriate manufacturer's name, product type, reference number and batch number.

All materials must be demonstrated to be compatible with all other products used in the concrete stencilling activity works.

Any materials delivered to site damaged or outside the manufacturer's expiry date shall not be used and shall be returned to the manufacturer.

The Contractor shall ensure handling of materials on site is carried out as required by the manufacturers MSDS for the applicable product.

8205.5.3 Environmental Plan

Four weeks prior to site works commencing the Contractor shall submit their Environmental Plan for the works, of particular note wind borne contaminants.

MILESTONE

Nuisance caused by dust and wind borne contaminants shall be addressed and necessary measures provided to avoid nuisance caused to the public and surrounding environment. Complaints shall be handled and recorded as per the Contractors management plans.

The Contractor shall keep pollution in the vicinity of the Works within reasonable minimum limits noting that this clause does not exempt the Contractor from complying with the limits controlled or required by legislation.

The Contractor shall remove all rubbish, debris, disused materials etc., from the Site. The Site shall be maintained in a clean state.

8205.5.4 Environmental Conditions

The Contractor shall take into account the Environmental conditions existing on the day of the stencilling activities and shall consider such things as temperature fluctuations, humidity levels, sunlight, and wind and their effect on colour consistency and discoloration.

8205.5.5 Construction Procedure

Council requires the submission of the contractor's construction process and procedures a minimum 4 weeks prior to site works commencing, including proposed testing and inspection regimes.

MILESTONE

As a minimum the construction procedure will include but not be limited to the identified works operations and cover the full concrete colour stencilling activity of preparation of the surface, priming,

applying, finishing, curing, and sealing of pigment/s. Based on the project requirements the Contractors works procedure shall cover stencilling of freshly laid concrete or existing hardened concrete, both have different methodologies in the application of the stencilled surface.

8205.5.6 Work Health and Safety

As a condition of this document, it is required that the Contractor and its workers (including all sub-contractors etc., and their workers) engaged to perform a service or work on site must at all times ensure (so far as reasonably practicable) the health and safety of all persons who are, or may be, affected by work under this specification or the services provided.

A Workplace health and Safety Plan shall be submitted by the Contractor for approval by the Superintendent four weeks prior to site woks commencing.

MILESTONE

8205.6 Work Operations

The Contractor shall ensure their works operations procedure reflects the required stencilling surface, fresh concrete or existing hardened concrete.

Work operations incorporated in this item will include:

a) Work operations included in Clause 2.1.5 of MRS01 “Introduction to Standard Specifications”;
b) Supplying all materials;

All materials, plant, and labour required to carry out the works under this Specification is to be supplied by the Contractor, where materials are Principal supplied the designated storage site will be the point of supply for the purposes of this Specification.

All items shall be inspected at delivery to site prior to use. Any items which are damaged are not to be used and are to be returned to the supplier.

HOLD POINT

c) Preparation of surface, in accordance with manufacturer’s specifications;

The surface shall be prepared in accordance with the manufacturer's specifications ensuring that all dirt/grime or previously applied decorative surface is completely removed.

Where the surfacing is existing (not freshly poured) it shall be etched to enable proposed surfacing compound to adhere. Preparation of existing surfaces shall also include repairing any damage or cracks and sealing the concrete.

In accordance with the overlay system and as required by the manufacturers requirements an approved primer shall be applied at the rate specified prior to laying the stencil template. A base coat shall then be applied evenly over the primed surface in the colour stipulated on the design drawings.

Where the concrete has been freshly poured just prior to setting, the Contractor shall ensure that the surface is clean and clear of dirt.

When constructing patterned concrete paving, apply the stencil only after the bleed water has evaporated from the concrete surface.

The Contractor shall arrange for the Superintendent to inspect the prepared surface, approval to proceed shall be granted upon acceptance of the surface by the Superintendent.

HOLD POINT

d) Stencil pattern and laying, as required by Design Drawings

Upon approval to commence the Contractor shall lay the stencil on the concrete ensuring the pattern complies with the design drawings;

i. Fresh concrete;
- Cut stencils to slab width and lay on wet concrete. Overlap mortar joint on trailing edge of each section of stencil onto leading mortar joint of previous section.
- Ensure direction and continuity of the pattern are maintained as set out in the design drawings.
- Slightly embed paper stencil into concrete by rolling with stencil roller.
- Trim stencils to fit slab and special patterns, such as soldier courses, cobble circles.

ii. Existing Concrete;

- Stencil to be laid and adhered to the primed concrete, bonding agent, or a base coat as required by the manufacturer's requirements and the design drawings.
- Overlapping of the stencil on trailing edge of each section and differing pattern.
- Direction and continuity of the pattern shall be maintained as set out in the design drawings. The contractor shall reset the stencil template where this does not occur.

- The stencil template shall be laid flat and adhered to the primer, bonding coat, or base coat. This acts as a masking tape and protects the base from being overlaid by the top coats ensuring contrasting and clean textured finish.
- Trim the stencil as required to comply with the requirements of the design drawings.

The Contractor shall arrange for the Superintendent to inspect the laid stencil template prior to any top coats being applied, approval to proceed is conditional on the Superintendent accepting the laid template.

HOLD POINT

e) Carrying out all works required to apply stencilled surface treatment.

The application of coloured top coats shall be carried out as required by the manufacturer's specification and in accordance with the design drawings.

The colour tint shall comply with the design drawing requirements, it is the Contractors responsibility to verify the colour compliance at time of delivery to site and prior to use.

i. Fresh Concrete;

- Apply dry-shake colour hardeners to the fresh concrete surfaces according to manufacturer's instructions, the method of spreading the colour hardener shall also be as required by the manufacturers specification/directions. This shall be reflected in the Contractors works procedure.
- Apply each coat of colour hardener at a consistent rate achieve a total thickness of between 3 mm and 4 mm.
- The Contractor shall mix/impregnate the colour into the still wet concrete surface.
- Where more than one top coat is required the manufacturers requirements shall be followed, this includes any curing requirements.

WITNESS POINT

- As required, apply liquid or pigmented-powder release agent according to manufacturer's instructions prior to carrying out the required surface finish to the concrete.
- Prior to the surface coatings drying the Contractor shall carry out texturing of the surface as required by the design drawings, i.e. using a texture roller.
- The top coat shall be allowed to dry, and in accordance with the manufacturers specification the stencil peeled away to reveal the pattern. Care shall be taken when removing the stencil due to the overlapping nature of the stencil template.
- The surface shall be cleared of debris prior to curing and sealing occurs. Curing shall commence as required by the manufacturer's requirements, the Contractor shall arrange for the Superintendent to inspect the stencilled surface prior to sealing of the concrete surface commences.
- On removal of the stencil, the surface must exhibit a well defined pattern with no edge ravelling.

HOLD POINT

ii. Existing Concrete

- Apply surface colour pigment according to manufacturer's instructions, the method of spreading the colour pigment shall also be as required by the manufacturer's specification/directions. This shall be reflected in the Contractors works procedure.
- The Contractor shall evenly spread the colour pigment over the concrete surface, working and finishing the surface to achieve the decorative finish required.
- Apply each coat of colour hardener at a consistent rate achieve a total thickness of between 3 mm and 4 mm.

WITNESS POINT

- Where more than one top coat is required the manufacturers requirements shall be followed, this includes any curing requirements.

WITNESS POINT

- As required, apply liquid or pigmented-powder release agent according to manufacturer's instructions prior to carrying out the required surface finish to the concrete.
- Prior to the surface coatings drying the Contractor shall carry out texturing of the surface as required by the design drawings, i.e. using a texture roller.
- The top coat shall be allowed to dry, and in accordance with the manufacturers specification the stencil peeled away to reveal the pattern. Care shall be taken when removing the stencil due to the overlapping nature of the stencil template.
- The surface shall be cleared of debris prior to curing and sealing occurs. Curing shall commence as required by the manufacturer's requirements, the Contractor shall arrange for the Superintendent to inspect the stencilled surface prior to sealing of the concrete surface commences.
- On removal of the stencil, the surface must exhibit a well defined pattern with no edge ravelling.

HOLD POINT

f) Curing and sealing.

Curing shall commence immediately as the surface has dried and continued until the sealant is applied. The curing agent shall be approved by the Superintendent and compatible with all other materials used, including the sealing agent.

The contractor shall apply the sealant coats as required by the manufacturer's instructions and in accordance with the timeframes laid out in their specification. The sealant shall be applied in two coats, it is not acceptable to seal in a single coat. The second coat shall be applied once the initial application is dry and tack free nominally three (3) days later.

The sealant shall have slip-resistant additive added to the mix as required by the design drawings and manufacturers requirements.

Prior to opening area to public use slip resistance testing shall be carried out in accordance with AS 4586, the Contractor shall notify the Superintendent when slip resistance testing is to be carried out.

HOLD POINT

g) Disposal of any rubbish incurred from this work activity. Clean and remove any excess colour treatment from nearby surfaces.

The Contractor shall clean the work site and remove and dispose of all debris and colour treatment/pigment from all nearby surfaces. The Superintendent shall be notified when slip resistance test results are available, the site is clean, and a works acceptance inspection can be carried out.

HOLD POINT

8205.7 Post Construction

a) **Collection and submission of all As Constructed data including QA data requirements.**

Format of submitted "As Constructed" documentation shall be compliant with MRC Supplementary Specification 8919.

Contractor is to supply and submit Works As-Constructed documentation as required by *MRC D20 - Drawings and Documentation* for approval by the Superintendent 4 weeks prior to requesting a practical completion inspection.

HOLD POINT

8205.8 Measurement and Payment

No separate payment will be made for the works specified in this Supplementary Specification. Provision for these works shall be deemed to be included in the scheduled unit rates for the items shown at Clause 8205.3. Any concrete works required shall be deemed to be included in items elsewhere in the project Documentation.

Version Control:

Version	Description	Reviewed / Endorsed	Date
1.0	Original issue	MRC	20.09.2020
1.1	Revision	R. Mogg	24.01.2022
2.0	Revision	C. Sultana	24.02.2025