

Technical Note 50

Surface Treatment of Prestressed Concrete Elements

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1 Introduction

This document provides guidance on acceptable surface finishes of prestressed precast concrete elements (other than piles), manufactured in accordance with MRTS73 *Manufacture of Prestressed Concrete Members and Stressing Units*. For prestressed piles, refer to TN45 *Surface Finish of Prestressed Concrete Octagonal Piles*.

1.1 Assessment

Acceptance and inspection of surface finishes can often be subjective, therefore common agreement between parties at the commencement of a production run is advised. On-site sample panels demonstrating acceptable and unacceptable finishes are highly useful for comparison.

Consistency and depth are the 2 primary criteria used for visual inspection. Depth does not need to be measured; a visual or manual (touch) assessment is sufficient. Patchiness of surface texture is a concern and scabbling may be required in discrete areas to achieve a compliant surface. As a general guideline, isolated patches smaller than an A4 sheet are acceptable, provided they don't comprise more than 10% of the total surface area.

2 Steel-float finish

A steel-float finish is required for exposed surfaces and in areas designated as such on the Drawings. These are typically around edges, for example, where tape is applied to bridge the gap between adjacent girder flanges.

This finish is smooth, flat and visually similar to the off-form finish.

3 Broom finish

A broom finish is used to create a bond between the concrete element and an asphalt overlay. It creates a rough surface without exposing the aggregate. The timing of application is crucial: if applied too early, the furrows will collapse; if applied too late, the concrete will resist any indentation. Although no criteria are specified for texture depth, but furrow depth would typically be around 5 mm (refer to Figure 3). Note that this is a coarser finish heavier than would typically be used for pathways.

Figure 3 – Acceptable broom finish

4 Construction joint finish

Construction joint finishes are required where new concrete will be poured against the precast element. The defining feature of this finish is exposed aggregate that remains securely embedded in the concrete. MRTS70 *Concrete* specifies the means to create the construction joint, permitting:

- a) sand blasting
- b) manual tooling
- c) high-pressure water blasting, and
- d) proprietary surface retarding agents.

Activities should be planned as to reduce the generation of airborne respirable silica dust.

MRTS73 *Manufacture of Prestressed Concrete Members and Stressing Units* permits an alternative construction joint that provides an equivalent macro-texture without exposing the aggregate. This can be achieved by raking. The resulting furrows are much deeper than those produced by a broom finish and less regular than tining (as with pavements). As with broom finishes, timing is crucial. If clumps of aggregates can be broken off by hand (unassisted by tools), the affected areas should be rectified to prevent breakage during subsequent pours.

Figure 4(a) – Acceptable construction joint finish



Figure 4(b) – Acceptable raked finish



