7.5.4.2 Floating

7.5.4.2.1

The purpose of floating is to further remove imperfections, embed large aggregate, and prepare the surface for trowelling.

When floating removes marks left by the edger or groover, these tools shall be rerun after floating.

Notes:

(1) *Under normal conditions, the time lapse between initial and final finishing is 1 h to 4 h, but it could be up to 15 h under adverse conditions.*

(2) *Under certain weather and concrete temperatures, evaporation will exceed the rate of bleeding. This causes the surface to appear to be dry enough for final finishing before bleed water has stopped rising. A densely trowelled surface can trap bleed water and cause flat bubbles to appear or the surface might stick to footwear and peel off. When this occurs, the surface concrete should be refloated to open the surface and then retrowelled.*

(3) *If subgrade and base course temperatures are substantially colder than that of the surface concrete, the surface concrete is likely to take its initial set before the concrete below. This can lead to delamination due to bleed water trapped at the interface of the two layers.*

7.5.4.2.2

The application of cement or other fine materials for the purpose of drying up excess water on the surface shall not be allowed as this can compromise the quality of surface concrete.

Note: *When concrete is trowelled before bleeding is complete, the surface might spall in thin flakes. To reduce excessive bleeding, the water content may be reduced by using plasticizing admixture or adjusting mixture proportioning.*

7.5.4.3 Trowelling

7.5.4.3.1 Interior or non-air-entrained concrete

Two or more passes of the trowel shall be made at suitable time intervals to obtain a dense, hard, smooth surface, free of trowel marks.

Notes:

(1) *The main purpose of additional trowelling is to increase compaction of fines at the surface, giving it greater density and wear resistance. The final pass of the trowel should produce a clear ringing sound.*

(2) *Concrete is generally ready for trowelling when it has hardened to the point that a footstep barely marks the surface.*

(3) *After final finishing, curing should commence as soon as practicable, in accordance with Clause 7.4. For further information, see Spears, 1983.*

7.5.4.3.2 Exterior or air-entrained concrete

One or more passes of a magnesium float or concrete broom shall be made at suitable time intervals to obtain a level finish free of ridges. A steel trowel finish shall not be applied to air-entrained concrete.

Notes:

(1) *After final finishing, curing should commence as soon as practicable, in accordance with Clause 7.4. For further information, see Spears, 1983.*

(2) *Special care should be taken when applying dry-shake surface hardeners to air-entrained concrete to avoid blistering and scaling.*

(3) *Blistering or scaling might occur if a trowel finish is applied to air-entrained concrete.*

7.5.5 Abrasion and wear resistance

The owner shall specify the concrete properties, finishing procedures, surface treatments, and curing period appropriate to the intended use of the surface.

Notes:

(1) *The most important factors affecting the abrasion resistance of concrete surfaces for a given type of aggregate are compressive strength, water-to-cementing materials ratio, commencement of curing and duration of curing period, type of finish, and time of finishing.*

(2) *See Annex F for further information on abrasion resistance.*

(3) *Special extra-hard mineral or metallic aggregate significantly increases resistance to abrasion.*