

Case Study – 3

USING Sand - addressing mapping / crazing Cracks

Site: Many of our potential customers are using River Sand facing cracks of mapping and crazing on their first and second coats.

Problem: Walls plastered with River Sand are forming cracks. Closely spaced cracks are called crazing, while widely spaced are called map-crazing (mapping).

What can happen further?

Cracks formed as crazing will extend to the surface the putty will crack as well eventually. Map-crazing coupled up with drying shrinkage also extends further into the putty.

How crazing / map-crazing forms?

Presence of clay in sand is detrimental to plaster. Clay present in plaster expands and contract with water. Map crazing is usually formed on the first coat of the plaster where the sand is having clay. Crazing happens due to presence of clay and rich mix contributing to plastic shrinkage from high powder content and water, this usually happens on the second coat. During the first few days, crazing and map-crazing are not visible until the wall is washed with water.

Map crazing is initiated on the first day of plaster while setting due to loss of water and clay travelling to the surface. Map crazing is propagated with drying shrinkage due to curing operations. Crazing can be avoided by avoiding rich mixes as second coat. However, if the first layer had map crazing, it usually forms map crazing / crazing on the next surface as well.



Wall Crazed / Map-Crazed

How drying shrinkage contributes to cracking?

Depending on the porosity, plaster absorbs water during curing. This water reaches the gel pores inside the plaster. However, due to ambient temperature and wind, all this water dries up very soon, demanding more water for curing. This leads to an alternate wetting and drying of the plaster.

The gel pores expand when water is absorbed into them and contract when water is released due to drying. This expansion and contraction of water from the gel pores leads to drying shrinkage. Drying shrinkage is also aggravated by porosity due to high water-cement ratio, high water content and high powder content, alternate wetting and curing conditions.

How RenderCon '5S' addressed the problem?

Understanding the problem: It is a common problem across South India, where sand for plastering is available containing clay. Plastering sands are always fine and clay contents are usual.

Addressing the problem: We requested the customer to bring CRF at much cheaper price than sand and apply it with RenderCon '5S'. The surface finish improved with the CRF and the wall was looking better.