

C - 18: Durable Concrete: The Do's & Don'ts for Exterior Flatwork

The time to think about what you want from concrete in terms of appearance, performance and durability is prior to placement. The most prevalent concerns of owners are scaling and uniform appearance.

DO's

1. Use air-entrained concrete: Air-entrained concrete is effective in resisting freezing and thawing when the volume of air in the mortar fraction is about 9% to 10%.
2. Cure the concrete. Only quality curing compounds should be used. They should be applied the same day and immediately after finishing operations. They should only be used when the concrete surface will not be marred.
3. Seal the concrete surfaces: Sealing protects the concrete from moisture penetration and prolongs its life. Seal only after the concrete has air dried for 30 days and only after any curing membrane compound has been removed from the concrete surface).
4. Specify 4000 psi (32 MPa according to CSA A23.1) concrete at 28 days for improved durability.

DON'Ts

1. Do not produce high slump concrete by adding water to the mix. High slump concrete produced from adding extra water weakens the concrete and affects its density. If a slump greater than 4 inches (100 mm) is required then the concrete mix should be designed specifically for the higher slump by using

superplasticizers or other admixture combinations.

2. Do not finish the concrete slab too early: The presence of moisture on the concrete surface during any finishing operations creates a very high w/c ratio at the surface, which can result in scaling and cracking. Any surface moisture on the concrete surface should be removed or allowed to dissipate prior to any finishing operation.
3. Do not overfinish the concrete surface. In general, the less finishing performed the more durable the concrete. For residential and light commercial work, only screeding, bull floating and broom finishing are required to attain a durable exterior concrete surface.
4. Do not permit the fresh concrete to freeze: Freezing weakens the concrete and adversely affects durability. Never place concrete on frozen subgrade.
5. Do not encourage the use of deicing chemicals. If deicing chemicals are used, make certain the concrete has dried out for 30 days before being applied. Instead, use sand to provide the required surface traction.

Plan ahead by placing, finishing and curing quality 4000 psi (32 MPa according to CSA A23.1) air-entrained concrete in accordance with commonly accepted principles of good concrete practice. When these principles are followed, potential problems are minimized and long-term durability is greatly improved. ©

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