THE ASHFORD FORMULA AND SALT INTRUSION

In applications like bus garages and parking decks, concrete treated with The Ashford Formula is exposed to road salts carried in by the vehicles. Usually, the danger posed by such exposure is corrosion to reinforcing steel members inside the concrete. Chloride ions from the salt migrate through the concrete, producing an electrochemical reaction that over time breaks down the steel. The trouble stems from the fact that these ions are extremely small, making it easy for them to work their way through the concrete. In addition, salt draws water in with it, compounding damage from freezing, and contributing to surface spalling.

Some remedies are available because of general advances in construction technology. Rebar, for example, can now be coated or treated to protect it from salt ingress. Progress has also been made in reversing the natural polarity of reinforcing steel so that it repels, rather than attracts the chloride ions. The remedies, however, can be expensive or hard to implement for now. The focus is still primarily on treating the concrete so that the chloride ions cannot penetrate.

The Ashford Formula has been used extensively in parking decks, bus garages, and vehicle maintenance facilities. The Ashford Formula will certainly preserve and extend the life of concrete exposed to salt, and has done so as the only concrete treatment in many of these facilities. Despite this impressive record of performance, we still like to be conservative in our recommendations in environments where salt exposure is prevalent.

Below are summarized the basic issues when it comes to salt:

1. The Ashford Formula will protect the concrete for even longer if it is placed on slabs that are regularly cleaned. The longer the salt is allowed to sit on the slab surface, the more difficult it becomes for Ashford to do its job. (Remember though, that concrete treated with The Ashford Formula will last much longer, even in a heavy salt environment, than it would without the Ashford) Bus garages and vehicle maintenance facilities are cleaned quite regularly, so The Ashford Formula is appropriate for these facilities. Parking garages, on the other hand, are cleaned infrequently or irregularly; in these facilities, The Ashford Formula should be recommended with additional protection, such as a silane♦.

2. The Ashford Formula takes several months to seal the concrete, so it will not provide salt protection right away. In those instances where the building must be

used shortly after application, a silane on top of The Ashford Formula is again recommended.

3. In parking garages, the heaviest concentrations of salt drip from automobiles in the lower levels. Perhaps The Ashford Formula could therefore be recommended by itself in the higher levels, but with a silane on the lower levels.

In our experience over the years, there has been no problem applying a silane to concrete treated with The Ashford Formula. In fact, a surface treated with The Ashford Formula, being richer in silicates, provides an excellent chemical environment for silane reaction. There is no problem with penetration either, as long as the silane is applied before The Ashford Formula has sealed the floor. Because of their small molecular size, silanes will readily penetrate the concrete surface.

The Ashford Formula, in combination with silanes, produces excellent results. The Ashford Formula seals, hardens, and preserves the concrete, while the silanes gives added protection against salt-bearing water. Silanes normally need to be re-applied after five years or so, but this procedure is usually forgotten or neglected. When this happens, The Ashford Formula provides continued strength and protection.

♦ ***What is a silane?** Derived from the silicone family, silanes are available from most construction chemical manufacturers. Reacting with the silica available in concrete, and catalyzed by moisture, they produce a film that repels water. Silanes are monomers that become long-chained polymers in a high pH environment, making them ideal for concrete.*