The Next Generation of Balcony Repairs?

VIEWPOINT

By Robert Pusheck

Concrete deterioration and the typical corrosion source are often described as a "cancer" when explaining the problem to owners and inexperienced outsiders. The typical repair program usually finds the contractor removing the deteriorated areas without taking out "good" concrete. Perhaps it is time to borrow strategies from the medical professionals treating real cancer, i.e. to develop longer-lasting repair strategies. These professionals are driven by the goal of getting all of the cancer, and think nothing of removing some good tissue if cancerous tissue is present. Balcony edge repair is one area where this more aggressive approach makes sense.

Balcony repair techniques and strategies in the mid-Atlantic area have continued to evolve over the last 25 years. With the development and publishing of concrete repair guidelines, repair techniques have become standardized. Chipping ¾ inch around the reinforcing steel, sandblasting the reinforcing steel as preparation for the repair, and pouring a cement-based material similar to the original concrete are all steps that ICRI has helped standardize. What is still variable from project to project is the strategy of what encompasses the "balcony repair project." Fixing the delaminated concrete (as identified by sounding) or chasing the corroded reinforcing steel is as far as we as an industry have gone. But do these steps, applied piecemeal, give our owners the best value for their money?

In the mid '80s, balcony projects would be completed with the then-current technology, and be out for bid for another round of repairs in 3 to 5 years. With ICRI's help, the projects completed in the early 1990s have lasted much longer. But many of those projects are still experiencing a second round of restoration 5 to 10 years after the initial repairs. In the mid-Atlantic region, however, we are learning that different specifications and strategies can make for longer-lasting repairs.

Removing railing embeds, modifying the railing for surface mounting, installing a urethane deck coating, and surface mounting the rail on top of the deck coating are gaining acceptance as a standard strategy for long-term balcony repairs. However, an owner that we have been working with over the last several years has developed a different strategy. Because we tend to stick with what we "know" are our proven methods, it took us several projects to consider the benefits of their non-traditional approach.

This prominent high-rise residential property owner owns over 60,000 units, and rarely, if ever, sells one of their buildings. Because they keep their buildings, they have developed a unique strategy for their balcony repair projects. They remove and replace 100% of the balcony perimeter one foot back from the edges on all balconies in the repair project. Deterioration beyond the one-foot perimeter is repaired using conventional partial and full-depth unit price repair for the deteriorated areas. They then coat the decks with a urethane deck coating, and install surface-mounted aluminum rails.

They had repaired several of their properties in the 1980s using the conventional approach of only repairing the areas that exhibited signs of deterioration. This left them with several problems or

concerns. Using analysis of their own 1980s repair projects, they came to the conclusion that more than 80% of their concrete repair was to the outer one foot of the balcony perimeter, even though the edge was less than 25% of the balcony area. They identified that the quality control of three items: embedded railing systems, placement of reinforcing steel, and placement drip edge led in some combination to most failures of the outer edge. First, with conventional spot repairs, each balcony edge had many patches pieced onto the edge. This resulted in many joints and bondlines in a small area. Second, the area left in between the patches still had some unknown level of deterioration. Third, any quality control problems with reinforcing steel placement or coverage could not be corrected because of the restraint of the remaining concrete. The patches were too small to allow replacement of the reinforcing steel or significant bending. Fourth, any quality control issues with the drip edge and the reinforcing steel placement also could not be corrected. Finally, they found that there was inevitably some degree of undetected deterioration that was never corrected by the regrouting or the spot repairs.

In the projects that they had tried in the 1980s using piecemeal repairs, they experienced additional failures within 5 years on more than half of the repaired projects. They spent time reviewing the additional failures and realized that they had repaired the damage, but not the actual cause of the damage.

Once they had determined the continued deterioration was not due to faulty workmanship, they analyzed the costs of different repair approaches, including removal of the entire balcony, removal of the outer one-foot perimeter, and the piecemeal repair. They then analyzed the cost versus the life expectancy of each repair method. The full removal option was quickly dismissed, because so much of the work was on the outer edge and very little was in the inner 80% of the balcony. The patch repair method had already proven to be ineffective. They performed their first full edge replacement project in 1990, establishing actual costs from contractors for 100% edge repairs per linear foot versus piecemeal edge repair per linear foot.

They found that the unit price for full edge repair, one foot deep, was about 2/3 the cost per foot of the conventional piecemeal unit 8 inches deep. The cost for mobilization and access was factored into the cost for each repair method. By 1998, with the prototype full edge replacement 8 years old and experiencing no repair other than rout and seal of reflective cracks, they had their life expectancy information. With railing pockets every 4 to 5 feet, they were replacing a minimum of 25% of the edge on every project. The one additional piece of information they had to factor into their decision was the loss of tenants each time they had a balcony project underway. The loss of tenants during a nine-month repair project is significant. Being on a 10 to 15 year cycle instead of a 6 to 10 year cycle is important to high-end landlords.

After 10 years of accumulated data, the actual life cycle costs clearly substantiated the owner's conclusion of the cost-effectiveness of the full edge replacement method.

Having specialized in balcony repair since 1988, it was impressive and educational to see an owner establish a long-term strategy years ahead of the industry. The logic is so simple, and the results so seemingly obvious. The question is, why don't more contractors, consultants, and owners consider this approach?

This Viewpoint article has been selected by the editors as an offering to the interest of our readers. However, the opinions given are not necessarily those of the International Concrete Repair Institute or of the editors of this magazine. Reader comment is invited.

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