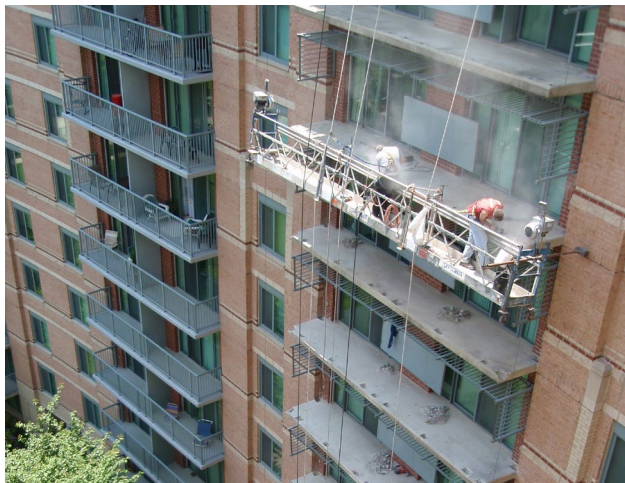


Metropolitan Apartments – Concrete Balcony Restoration Forensic Analysis, Repair Design & Construction Phase Quality Assurance



This mixed-use retail and apartment property located in Bethesda, Maryland consists of a multi-story concrete frame structure set in the central business district. Public sidewalks flank the perimeter of the building and a pedestrian bridge spans a major thoroughfare, connecting the second floor of the property to adjacent parking and commercial/retail areas. Individual apartments have cantilevered concrete balconies.

Challenge: Analyze the nearly systemic failure of concrete around the embedded guardrail support posts at balconies and develop appropriate, cost effective repairs to restore concrete integrity and mitigate future damage, while maintaining access to ground floor retail and pedestrian safety.

Value Added: Through the use of visual observations, non-destructive testing, material sampling and laboratory analysis D&A was able to verify the use of expansive, gypsum-based grouting material at the support posts, deficiencies in original concrete finishing, and inadequate coverage of the reinforcing steel, causing the concrete failures. This allowed the owner to avoid enacting prior repair recommendations that would not have addressed the root causes of the deterioration. D&A developed a comprehensive repair scope and provided Construction Quality Assurance services throughout the duration of the construction phase of the project.

Services performed: Forensic analysis, repair construction document and specification preparation, bidding and contract negotiations, and quality assurance during construction.

Client: Bozzuto Management
Duration: 2006 – 2009

Contractor: American Restoration
Magnitude: \$793,000