

Façade Assessment & Repair

In over 45 years D&A has developed a vast experience in assessing and repairing buildings including multifamily, offices, schools, university buildings, and historic structures with a diverse range of construction types including concrete high rise, podium, wood frame, and various proprietary structural systems.

D&A Proprietary Database

With over 1,000 projects, our team of forensic architects have the skill to develop technical solutions that are most cost effective while least disruptive to occupants. Where traditional repair methods are not feasible or cost effective, D&A has an established record of providing innovative remedial designs based on our prior projects. D&A's propriety analytics database provides our team with convenient reference to unique remedial methods that have been refined over time. This also serves as a source of projects that have demonstrated ongoing performance of these methods over the years, and even decades.

Façade Assessment – Phase 1

Through our 45 years of forensic investigations, D&A architects have developed the skills to rapidly identify deficiencies in building envelopes, many that have been overlooked by prior forensic consultants and often this is achieved as early as during initial site observations. **On over 30% of our projects, D&A was retained after prior remedial efforts had failed.** Failures or omissions during this analysis phase will result in performance and cost inefficiencies or even failure in the remedial design and implementation. An accurate and comprehensive building envelope assessment is not only dependent on the experience of the forensic architect, but also the technical quality and diversity of testing equipment. Proper



HISTORIC SCHOOL REPURPOSE ANALYSIS
– SAMUEL WHEATLEY ELEMENTARY



BALCONY AND SIDING REPLACEMENT –
TIMBERLAWN CRESCENT APARTMENTS

in-house testing equipment provides better continuity and efficiency of the analysis with less probability of omissions.

- Substantiation of the existing as-built intent, components causing the deficiencies, and configuration dimensions is necessary to determine the most effective and cost-efficient remedial design.
- The initial borescopic analysis can then be expanded to substantiate consistency of the concealed conditions at a cross-sample of floors and elevations to determine if the remedial scope needs to address systemic conditions, or can be reduced to specific areas.

See “Construction Forensics Services” for detailed information.

Remedial Design – Phase 2

With more than four decades of proven excellence, Davidson & Associates stands as a leader in forensic architecture and remedial design solutions. Repeat clients are the best demonstration of D&A’s analysis expertise, effective cost, efficient remedial design, and comprehensive construction administrative skills. **More than 95% of our business comes from repeat clients and their direct referrals.**

We are proud of our ongoing relationships with clients that include stakeholders from developers, contractors, engineers, architects, lenders, to property management companies, HOA’s, and property owners. They consistently turn to our team of formally educated and licensed architects over engineers or material science-based firms.

The Comprehensive level of analysis provided by D&A’s expertise augmented by comprehensive testing has several advantages.

The remedial design will be comprehensive as the analysis will identify where multiple of different deficiencies occur at the same location or when several sources of water infiltration manifest at the same locations. Such occurrences are not uncommon and a major factor in the 30% failures D&A is retained to correct.

- When deficiencies are confirmed as not systemic, the repair scope is limited to the pattern and magnitude that is determined to be of issue. This not only reduces cost but avoids disturbing occupants in unaffected areas.



EIFS AND WINDOW REPLACEMENT – RESIDENCES AT SPRINGFIELD STATION



DETRIMENTAL CONCRETE BALCONY REPAIR REPLACEMENT – METROPOLITAN

- The largest benefit is increasing the viability of using innovative methods based on principles of Evidence-Based-Designs and not limited to more costly or less effective traditional approaches.

Construction Phase Services

The Comprehensive level of analysis provided by D&A's expertise augmented by comprehensive testing has several advantages.

- Pre-Construction/Coordination Meeting: The purpose of these meetings is to review the schedule and scope of work, with a focused discussion of anticipated problem areas (based on D&A's past experience of common errors and misinterpretations of construction documents). This is also to confirm safety including ground protection, staging/privacy issues as well as procedures to minimize disruption of occupants and dust control. Pre-construction/coordination meetings are also held to review the requirements for proper coordination of work between multiple trades
- Mockup Wall Installations: For difficult installations these may be performed to determine constructability and reviewed jointly by D&A and the contractor for efficiency modifications. These may also be tested to confirm anticipated performance.
- Initial Installation Reviews: At the commencement of each critical trade their understanding of design intent and integration with other trades is verified shortly after it has commenced
- Construction Progress Reviews: D&A will conduct progress reviews of each critical trade to generally check for conformance of the work to the agreed-upon standards and assist in resolving any problems that arise during the construction or disruption/safety issues with occupants.
- Fenestration and Drainage Cavity Wall Assembly Testing: D&A may periodically perform in-house testing to assure required performance criteria.

See "Construction Forensic Services" for full D&A capabilities of in-house testing.

Innovative Design Case Studies

D&A's 45 years as forensic architects provides the advantage of: Effectively identifying deficiencies, a factual based proprietary database of what is effective in remedial design and what will fail, and in-house testing capabilities necessary for creating remedial designs that effectively address multiple deficiencies. Innovative remedial methods, made possible by these combined advantages, result in sizable cost savings and minimized disruption that other forensic consultants are unable to claim. Let the numbers below demonstrate who is best for your next project.

General Track Record

- 45 Years of experience
- Over 1,000 projects
- 95% of business during the last 15 years is repeat clients or their direct referrals
- 30% of projects D&A was retained after failure with other forensic consultants or remedial contractors

The Vue Condominium

- During the initial visual observation **D&A identified that cantilevered cast stones were in imminent danger of falling from the 27th and 29th Floors.** Safety measures were immediately implemented to protect the public below. Numerous previously retained forensic consultants failed to recognize this life safety deficiency.
- The board obtained a proposal to replace the cast stone for \$2,784,600. D&A developed a unique staging and hoist method that was notably more efficient. **Based on this modification the project was contracted with a 23.8% cost savings.**

Georgetown Condominium

- With use of customized in-house testing equipment **D&A was able to document concealed fire rated deficiencies that resulted in a favorable settlement.** Defendant forensic consultants did not have the capabilities to perform this level of documentation.
- To correct corridor wall deficiencies for compliance with the project UL Design requirements would have been extremely invasive and increased the full remedial cost to \$30 million. By changing the compliance requirement to a different UL Design D&A was able to achieve compliance by incorporating an overlay on the corridor side. **Access and demolition inside of the units was avoided which resulted in a savings estimated at 70%.**

Forum Condominium

- The spandrel panels which span between exposed concrete columns were constructed of unreinforced 8” masonry instead of the designed 12” reinforced masonry. The masonry has also deteriorated due to over 20 years of water infiltration. Recommending to replace the masonry would require vacating the units. Instead D&A developed a remedial design that structurally reinforced the masonry and eliminated all water infiltration while leaving the block backup in place. **This method allowed all work to be performed from the exterior and avoided the need for residents to move out.**
- The exposed concrete columns and slab edges had extensive deterioration which were repaired per standard ICRI methods. Areas where the deterioration extended into the units were stabilized with epoxy injection accessed from the exterior. **This approach avoided concrete demolition and repairs from inside the unit.**

South River Condominium

- Between 2008 and when D&A was retained in 2022 the South River Condominium had been subjected to numerous repairs in response to water damage occurrences that did not correct the water infiltration. **The consultants and contractors incorrectly assumed the issues were common masonry through wall flashing deficiencies without substantiating the actual as-built conditions and implemented standard flashing remedial designs.**
- Borescopic analysis of concealed conditions determined that the primary issue was the omitted isolation of the masonry drainage cavity from the precast construction, and masonry wall flashing deficiencies were only secondary.
- A pilot remedial program included two full unit mock ups. One unit with traditional repair methods and the other location used an innovative design developed by D&A that did not require removal of brick work at vertical deficiencies. Both methods were water tested with spray racks substantiating that both remedial designs eliminated all sources of water

infiltration. **Comparing the actual costs of both mockups determined that this innovative method would reduce total project costs by 30%.**

Cathedral Avenue Condominium

- The masonry walls were originally designed as “barrier wall construction.” This relies on solid masonry to prevent water from passing through the outer brick wythe in order to prevent leaks. Unfortunately, the workmanship of the original construction was poor and resulted in water infiltration through the voids in the mortar joints and collar joint. The scope of a 1998 façade restoration project included full tuckpointing. Due to numerous reasons this was currently no longer effective at preventing water infiltration.
- A comprehensive borescope analysis determined consistent characteristics of the masonry assembly concealed conditions. Determining such detailed information is necessary to evaluate the viability of innovative remedial approaches. Borescopic analysis confirmed that the grout fill of the collar joint had been omitted, forming a continuous void at the floor and roof slabs. There was a black membrane beneath the block back-up and only the back half of the brick, allowing any water infiltration to drain into the floor level below.
- D&A is currently implementing a remedial program to stabilize the brick veneer. This design has been modified. New flashing was installed where the brick was already being removed and tied into the membrane. This created full depth through wall flashing, including back dam, without removing the block. The continuous open collar joint functions as a drainage cavity which now evacuates any water infiltration through the exterior face of the brick.

At no additional cost, **this modification changes the defective “barrier wall assembly” into a properly functioning “drainage cavity assembly”.** This eliminates the need to redo the tuckpointing, at a savings of over \$3.8M.