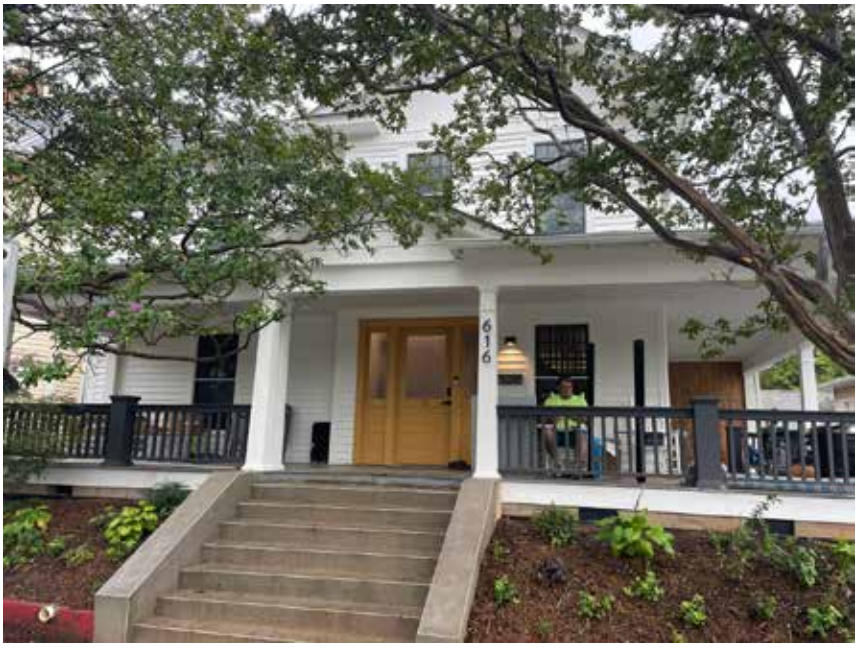
2025 Honorable Mention Project



Historic district regulations required that no visible changes be made to the front of the home (LEFT) during renovation and pool construction, but we made it a party in the back (RIGHT).

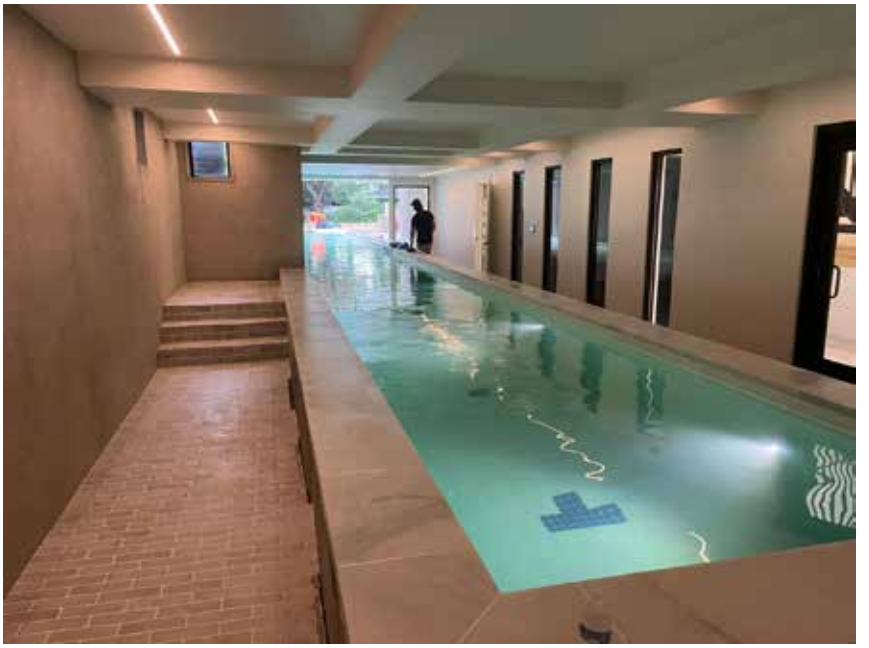
Business in the Front, Party in the Back

By Ryan Oakes

PROJECT OVERVIEW

This project began as a conventional form-and-pour pool installation before the homeowner recognized that the scope, access limitations, and structural implications required a specialized pool contractor and design professional. By the time Revolution Gunite was engaged, excavation was largely complete and footings were already in place — revealing a set of constraints that ultimately made shotcrete not just advantageous, but essential.

The pool is located in a dense historic neighborhood with limited access, strict permitting requirements, and adjacent structures on all sides. The final design integrates the pool shell as both a recreational element



Nearly finished interior photo

and a structural component of the residence. Approximately half of the pool is located indoors, with the remainder extending into a modern rear addition of the home. At several locations, the pool shell abuts the existing foundation walls.

SITE CONSTRAINTS AND STRUCTURAL CHALLENGES

The most significant challenge involved soil stability and proximity to neighboring structures. Excavation extended directly to the adjacent property line, exposing unstable soils and creating a risk to the neighboring home. Compounding the issue, portions of the homeowner's foundation were exposed and required immediate support. Helical piers were installed to temporarily support the existing structure while excavation and pool construction proceeded.

In its final configuration, the pool shell functions as a retaining wall for the adjacent property and as a load-bearing structural wall for a portion of the residence. A deep, concealed well for an automatic floating pool cover was constructed immediately adjacent to the home's foundation, leaving virtually no room for conventional forming or backside access.

SHOTCRETE MEANS AND METHODS

Given the access limitations and structural demands, shotcrete was the only viable method of concrete placement. Floor placement was sequenced first, with reinforcing steel for the walls stubbed upward. In several areas, wall-to-floor intersections exceeded 3 ft (0.9 m) in depth with heavily congested reinforcing steel.

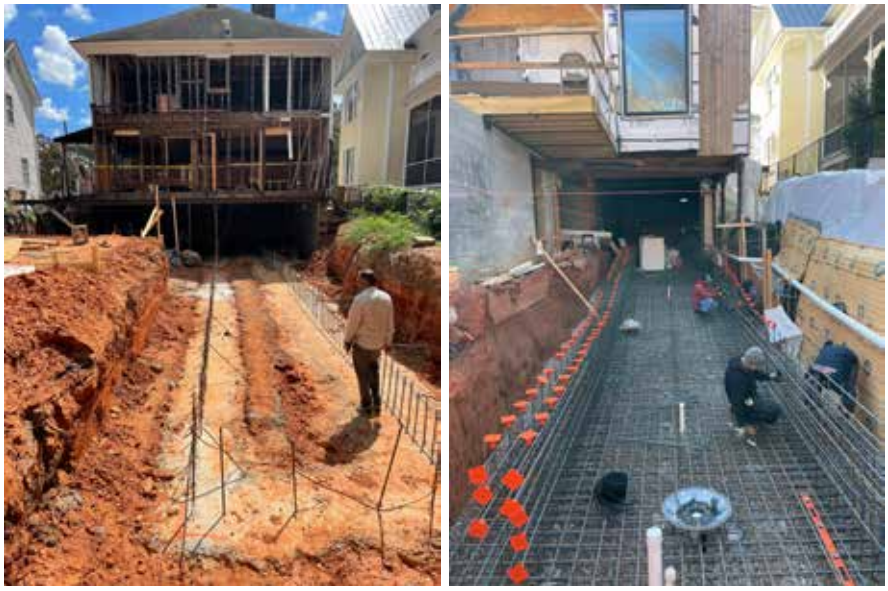
The high velocity inherent to shotcrete placement allowed material to be placed efficiently at the back of deep sections with excellent consolidation, even in areas where vibration or conventional placement methods would have been impractical or impossible.

Walls were shot with the permanent backfill and drainage system already in place. A combination of geogrid and gravel was used to create a stabilized backfill zone between the pool shell and the adjacent property. This system served multiple purposes: It eliminated the need for temporary soil anchors that would have crossed under the neighboring home, provided long-term drainage, and functioned as permanent formwork where conventional forming could not be installed due to lot constraints.

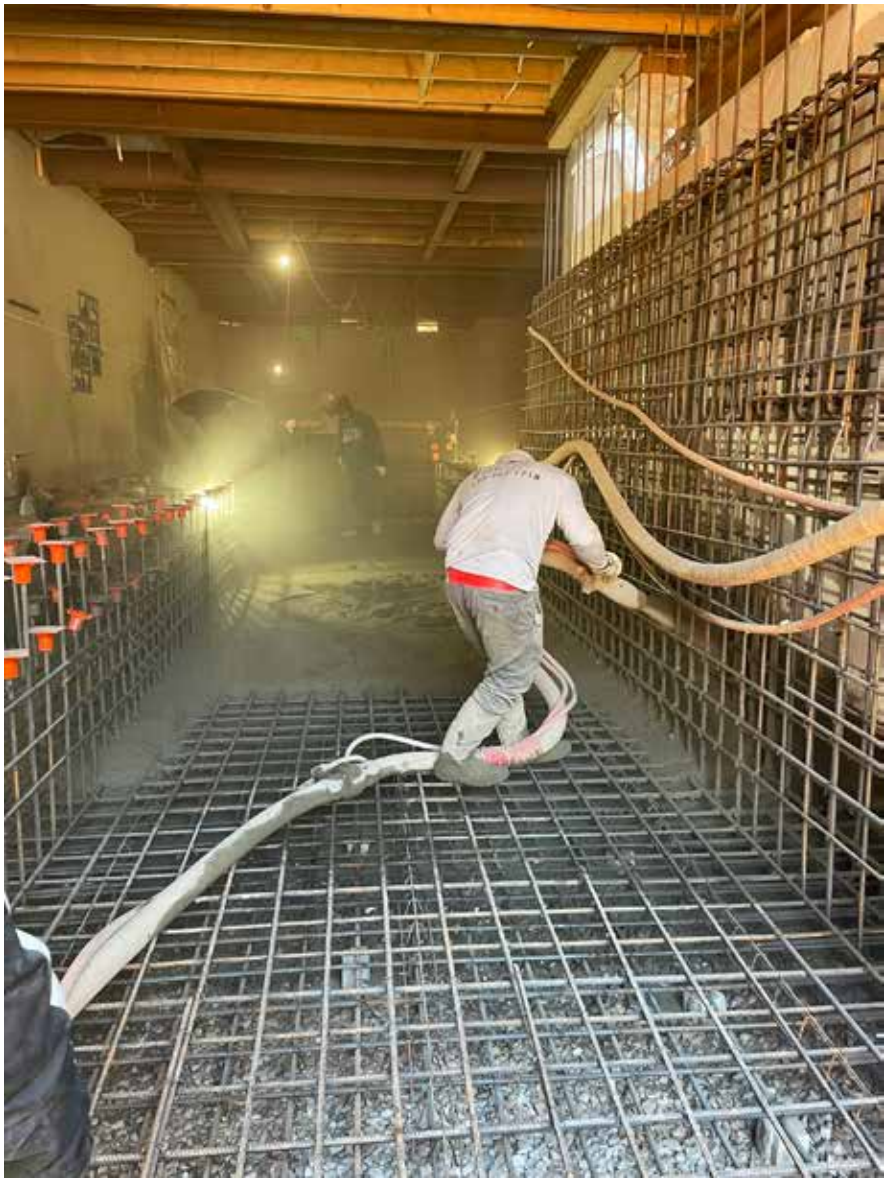
Excavation extended directly to the property line (LEFT), leaving no room for ground-supported forming and creating significant safety and stability concerns. Conditions during excavation illustrate the limited tolerance for delay. Construction sequencing progressed rapidly to mitigate further soil movement and structural risk (RIGHT).

REDUCED FORMING AND ACCELERATED SCHEDULE

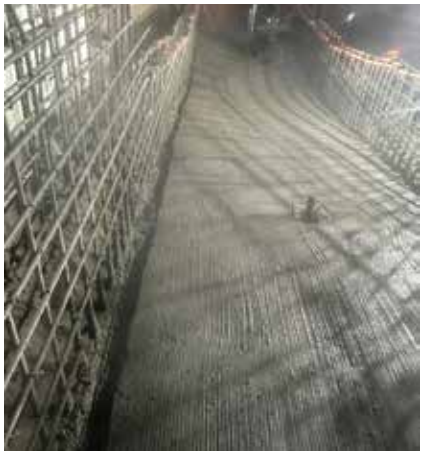
Forming was minimized throughout the project — not only in areas where access made it impractical, but also where the pool shell was placed directly against foundation walls and footings. In many locations, forming



Rear of the residence showing existing footings from the original planned form-and-pour construction (LEFT). All previously installed footings were removed prior to shotcrete work. Reinforcing steel installation showing stubbed vertical bars for tying the floor to the pool walls (RIGHT).



Shotcreter placing material beneath cantilevered foam forms for the engineered footing extension. Perimeter footings were shot first, followed by floor infill to create a continuous floor placement. High-velocity shotcrete placement ensured proper consolidation in these confined areas.



Completed pool floor with formed notch for subsequent wall placement.

Notched floor with reinforcing steel in place at a cut-in step location prior to wall placement.

installation and subsequent removal were eliminated entirely.

By using shotcrete placement, more than a month of construction time was removed from the schedule. The ability to place concrete without extensive formwork also reduced safety risks and simplified sequencing on an already constrained site.

SPECIALTY DETAILS AND CRAFTSMANSHIP

The automatic floating cover system introduced additional complexity. The cover well required precise geometry and intricate detailing, including continuous shelves running the full length of the 82 ft (25 m) lap pool on both sides. These shelves were hand-carved directly into the shotcrete shell to provide support for the insulating cover — details that would have been extremely difficult to achieve with conventional formwork.

Entry steps were formed by cutting voids directly into the shotcrete walls after placement but before final set. The stiff, cohesive concrete mixture design allowed steps to be sculpted cleanly during the transition between the plastic and hardened states of the concrete, producing crisp geometry without the need for secondary pours or inserts.

HISTORIC CONTEXT AND FINAL OUTCOME

Constructed within a designated historic district, the project required strict adherence to permitted working hours and careful coordination on a narrow residential street. The flexibility of volumetric delivery and dry-mix shotcrete placement proved critical in meeting these constraints while maintaining production efficiency.

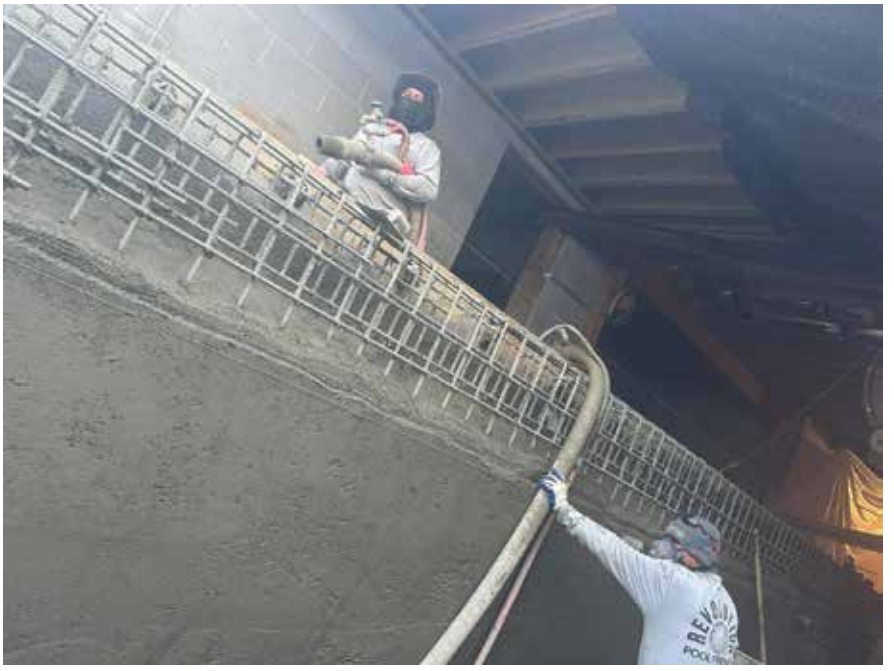
The completed pool reflects a striking contrast between the historic front of the home and the modern rear addition — hence the project's name, *Business in the Front, Party in the Back*. Beyond its architectural impact, the pool serves as a structural extension of the residence and a permanent solution to complex site constraints.

This project demonstrates

how shotcrete, when applied with thoughtful engineering and skilled craftsmanship, can solve problems that conventional construction methods simply cannot — delivering structural performance, architectural flexibility, and schedule efficiency in a single operation.

Wall forms prepared and ready for shotcrete placement.

Shotcreter placing concrete while a blowpipe operator maintains a rebound-free section, ensuring proper encapsulation of reinforcing steel.



Construction joint prepared between wall lifts, clean and intentionally roughened to provide full bond for the subsequent shotcrete placement.

***Ryan Oakes** is President of Clearwater Construction Group, Inc., Revolution Gunite, and Revolution Pool Finishes, all of which are award-winning firms in their respective trade. He continually aims to raise the bar in the concrete swimming pool construction industry. Oakes is a member of ACI Committee 506-Shotcreting, and ACI Subcommittee 506-H-Shotcreting Pools. He also serves as Secretary to ACI Committee 322-Concrete Pool & Watershape Code. He serves as Chair of the ASA Pool & Recreational Shotcrete Committee, a voting member of the ASA Contractor Qualification Committee and former Board of Directors for ASA.*

2025 HONORABLE MENTION PROJECT

Project:
Business in the Front, Party in the Back

Project Location:
Raleigh, NC

Shotcrete Contractor Company:
Revolution Gunite*

Engineer Company:
Waterforge, Inc

Materials Supplier Company:
Revolution Gunite*

Swimming Pool Contractor:
Raleigh Pools

Owner:
Jiten Patel

**ASA Sustaining Corporate or Corporate Member*