

## Echo Brickell Residences

Brickell, Florida

Keller performed a first-of-its-kind testing program to verify the load capacity required of the tangent bearing elements (TBEs) for one of the tallest buildings in South Florida.



### The project

Echo Brickell is a 57-story building including 5-star restaurants, retail space, infinity pool, luxury condominiums, and a penthouse suite – all on a 16,000 sq ft footprint. The original drilled shafts system was over budget with a long schedule. HJ Foundation provided an alternative deep foundation solution within the budget and required time frame.

## The challenge

Keller's engineering team worked with the geotechnical and structural engineers to design-build a Tangent Bearing Element (TBE), a new foundation element developed by Keller a few months prior to the beginning of the project. A TBE is a group of auger cast piles drilled tangent to one another, providing a load capacity similar to other foundation elements with bigger cross-sections.

## The solution

Working with new technology, such as TBEs, always has its risks. Consequently, the City of Miami required an extensive first-of-its-kind test pile program, including constructing pile caps for groups of two and four piles. After self-performing the entire test pile program, we demonstrated that TBEs performed better in Miami limestone than a drilled shaft had on previous high rises. We completed the project by installing over 150, 36-in.-diameter piles to depths of 122 ft below grade ahead of schedule and without any injuries.

## Project facts

### Owner(s)

PMG Brickell, LLC

### Keller business unit(s)

Keller

### Main contractor(s)

John Moriarty and Associates

### Engineer(s)

NV5 Global, Inc.  
CHM Structural Engineers LLC

### Solutions

Deep foundations

### Markets

Commercial  
Residential

### Techniques

CFA (auger cast) piles  
Tangent Bearing Elements (TBEs)

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