



Key Achievements

- McKinney Drilling Company (MDC) safely operated amongst other subcontractors and completed the project while allowing the airport to run simultaneously during construction.
- Upon MDC's counsel, Hensel Phelps agreed to use the more efficient BarSplice terminators to help replace hook bars.

The project

A 115,000 ft² expansion of Concourse D and 200,000 ft² addition to the north and south terminals at Nashville International Airport (BNA) were planned. Initial overburden was a mixture of loose to dense gravel, sand, silty clay, and cobbles. Preliminary borings showed minimal seams and voids within the bedrock while evaluations showed drilling locations were in a low karst susceptibility.

The challenge

MDC worked alongside other subcontractors on an accelerated schedule at this active airport. Multiple utilities existed within the limits of the drilled shafts. A few shafts required the use of a specialty rig for low headroom capability. Also, the amount of hook bars in the smaller-diameter shafts created issues with setting anchor bolts and allowing access for the concrete subcontractor, thus requiring replacement. MDC initially planned to backfill open areas with sand or gravel.

The solution

MDC furnished and placed concrete, reinforcing cages, and the layout of the drilled shafts; stockpiled spoils; and installed test holes in the bottom of the shafts. MDC completed three load tests and developed a layout plan that allowed the testing to use the minimal amount of spacing and testing/support piles in a tight area. A BarSplice terminator helped to effectively replace the hook bars. MDC then installed replacements after the grade beams and caps had been dug out.

Application

Deep Foundations

Technique

Drilled Shafts (Caissons)

Market sector

Infrastructure – Transportation

Owner

Metropolitan Nashville
Airport Authority

Main contractor

Hensel Phelps

Engineer

Langan

Keller business unit (s)

McKinney Drilling Company