

OCCI Engineering Contractors uses a 3352-mm crane-mount oscillator and a BUMA 3150 spherical grab to place 7-ft-dia. and 11-ft-dia. shafts for a BNSF railroad bridge in Bosworth, Mo.

PHOTO: COURTESY OF ROC

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Underground Today III

Digging Deeper

Underground projects benefit from the evolving innovation of tools, technologies and techniques

WHAT'S INSIDE

- ◆ New Sports and Entertainment Arena Utilizes Hybrid Foundation System
- ◆ Reliable Enclosures Protect Underground Utilities
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- ◆ Rammed Aggregate Pier and Rigid Inclusion Technologies Solve Geotechnical Challenges

Sports and Entertainment Arena Paced to Score

Like basketball, foundation projects are a team sport: A group of trained professionals works through challenges to achieve a slam-dunk finish.

Underground construction efforts are well underway on the Golden State Warriors' Chase Center in San Francisco, which is scheduled to open for the 2019–20 NBA season.

Chase Center adds more than just a sports and entertainment venue to this urban waterfront site; it also encompasses office space, mixed-use/retail and underground parking. Due to varied soil conditions and design elements, Malcolm Drilling developed a hybrid foundation system of both drilled shafts and continuous flight auger

(CFA) piles. The finished foundation will include 1,000 CFA piles and 300 drilled shafts, with the deepest shaft reaching 170 ft.

Foundation work is expected to be complete this fall and, to meet high production demands, Malcolm has had as many as two CFA rigs, three drill rigs and seven cranes on the site simultaneously. Constant, real-time coordination has been crucial on the project, with drilled shaft and CFA operations running simultaneously and multiple trades moving in and out. Expert leadership and a flexible team that includes the experienced Mortenson-Clark JV crew has been key to managing the daily throttling up and down of work on this complex foundation project. The project is managed for the Warriors by ICON Venue Group. ♦



Foundation work is underway on the Chase Center in San Francisco.

PHOTO: MALCOLM DRILLING CO. INC.





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Deep CFA Piles into Rock
Chase Center, San Francisco

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