

UNITED STATES

**Putney Garage**  
Richmond VA



**Owner**  
Sauer Properties

**Engineer**  
Froehling & Robertson, Inc.

**General contractor**  
L.F. Jennings

**Dates of work**  
2020/01 2020/02

## Description

In a plan described as a "priority economic development project" by the City of Richmond, Sauer Properties proposed the construction of multiple structures in the next phase of its Whole Foods-anchored development along West Broad Street. Plans were submitted to the city to add a four-story, 52,400-sq-ft office building and 790-space, five-story parking garage next to the existing Putney Building, which had sat vacant for years after previously housing the state's Department of Taxation.

Sauer Properties, the development subsidiary of Richmond-based spice manufacturer C.F. Sauer Co., proposed building the structures on a surface parking lot on the 5.5-acre property that it shares with the Putney Building.

## Main figures

**Controlled Modulus Columns**  
290 EA.

Due to the compressible nature of the soils at the site, Menard USA was contracted to provide ground improvement to support the parking garage – the selected technique was Controlled Modulus Column (CMC)® rigid inclusions.

## Ground conditions

The soils consisted of surficial fills underlain by clayey sand with deeper loose to medium dense sands, sandy silts and fat clay. The native soils below the fills were relatively soft and compressible. Placing the building on shallow foundations without ground improvement would have led to excessive settlement

## Solution

In order to minimize settlement, Menard proposed CMC rigid inclusions. The existing asphalt parking lot served as the working platform. Menard anticipated having to predrill the upper parking lot surface pavement and underlying fills, but was able to avoid predrilling by using a very powerful Bauer BG 24 drill rig. The CMC elements reached an average depth of 58 ft and a maximum depth of 65 ft. To ensure that the tops of the CMC elements were at the required elevations for foundation construction, Menard used a mini excavator to cut off the tops of the elements.

The design provided a maximum of 1 in of post-construction settlement with a ½-in differential settlement, meeting the performance criteria for the parking garage.

To support the 790-space, five-story parking garage, Menard USA installed 289 CMCs to a maximum depth of 65 ft. All work was done in one continuous phase and met the client's requirements for quality, schedule and safety.



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