

CASE HISTORY

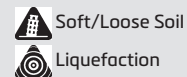
Farrell Helps Reclaim a Chapter of Sacramento's History



Foundation Systems



Geologic Hazard(s)



Location

Sacramento, CA

Owner

Presidio Companies

Geotechnical Engineer

Geocon Consultants

Structural Engineer

Buehler Engineering

General Contractor

davisREED Construction

Made of century-old brick and steel, Marshall Hotel was selected by Hyatt to join elite cities like New York, San Francisco, and Paris as an expansion site for their newest lifestyle brand, Hyatt Centric. Marshall Hotel, a historic landmark, opened in 1912 in Sacramento is located blocks from the State Capitol and directly adjacent to the Golden One Center Arena.

In 2016, the same year Golden One was completed, Hyatt received the green light to transform the 109-year-old Marshall Hotel into an 11-story, 159 room, modern luxury hotel, helping to revitalize Sacramento.

davisREED Construction awarded Farrell Design-Build the subcontract to design and build deep foundation support for the project. Because of the historic landmark status, HRGA Architects and Buehler were challenged with preservation of the facade and using the facade as a focal point of the new hotel. davisREED and the project team were up to the challenge.

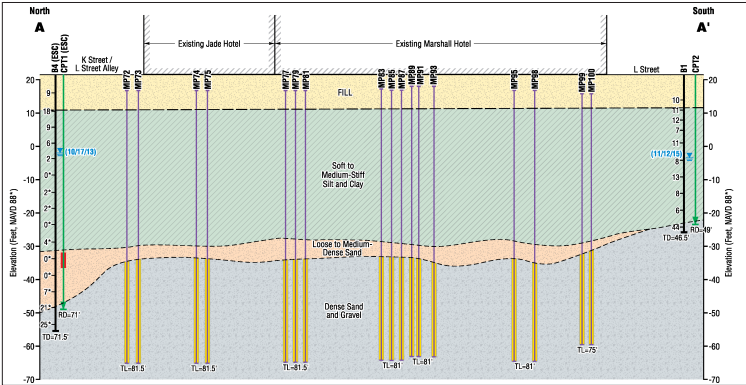
Farrell's work included four distinct scopes with three deep foundation systems and shoring to preserve the

5-story, brick façade walls, directly support the new 11-story hotel, and protect the adjacent arena.

Geocon explored the site with drilled borings, cone penetration tests, and dilatometer tests. The subsurface soil generally consisted of undocumented loose, sandy fill with occasional brick, wood, and metal debris to 12 feet deep. Soil beneath the fill was identified as "recent" alluvium with interbedded, soft to medium-stiff sandy silt and clay which lay over loose to medium dense, poorly graded sand and silty sand to 57 feet deep. The bearing layer, at 58 to 65 feet, consisted of "older" alluvium with dense, poorly graded gravel with sand. Geohazards include liquefaction and static settlement (Geocon 2017).

Marshall Hotel would soon prove to be a fine example of engineering collaboration, adaptable skill, and well-executed design-build solutions for multiple foundation support elements on a single project.

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West side soil cross section. (Geocon 2017)



Marshall Hotel circa 1911.

Project Details

Farrell collaborated with Geocon, Buehler, HRGA, and davisREED to develop solutions to preserve and support the historic brick walls and support the new hotel.

In Phase 1, Farrell designed and installed no-vibration, Helical Piles (HP). HP consist of a 2-inch steel shaft with 10-12-14-inch helix that was encased in 8-inches of grout and drilled 55-feet deep directly under the facade. HPs are versatile and can be installed in tight access areas with low headroom for added foundation support and bracing of historic building walls.

Demolition exposed stacked brick and concrete foundations that lead to a redesign of the HPs. After the HPs were adapted and installed, new concrete grade beams were poured directly on HPs and beneath the brick walls and the façade walls were shored and braced.

Phase 2 required deep foundation support of the exterior steel-frame exoskeleton. The exoskeleton provided full-height lateral support of the façade during inside demolition and hotel tower construction. Because of sidewalk utilities and deflection requirements, Farrell provided an adaptable deep foundation solution that would 1) have reliable, high-capacity support of the lateral loads and 2) protect existing utilities in the sidewalk. Drilled Pipe Pile (DPP) were selected for exoskeleton foundation support. The no-vibration, high capacity DPP consisted of a 6-inch steel pipe pile with a 14-inch helix that was fully encased in 12-inches of grout and drilled 55 feet deep below the sidewalks.

For Phase 3, Farrell designed and installed no vibration, Auger Cast Pile (ACP) deep foundation support for the new 11-story concrete and steel hotel. The actual condition of the interior shoring of the brick walls

required Farrell and Buehler to redesign ACP locations. Once new plans were approved, Farrell installed 18-inch diameter ACPs to depths between 58 and 76 feet and into the dense gravel bearing layer.

Before they could go vertical, davisREED needed to shore the excavation to install the fire water storage tank. Farrell designed and installed Cantilever Soldier Beam and wood lagging shoring for the water tank excavation inside the new hotel.

Finally, with the historic façade preserved, all the deep foundations installed, and the adjacent arena protected, davisREED could begin the work to go vertical with the steel and concrete of the hotel structure.

Award Winning - CalGeo OPA

CalGeo, the California Geotechnical Engineers Association, awarded Farrell the 2020 *Geo-Contractor Outstanding Project Award* for geotechnical design innovation and deep foundation construction success on this fantastic project. This award belongs to the whole team with Geocon, Buehler, and davisREED.

Today, the deep foundation beneath the Hyatt Centric Marshall elevates this historic landmark to new heights with 11-stories of modern engineering while preserving and showcasing 5-stories of 1910 era, brick façade construction. Sacramento's history has been preserved for future generations. Marshall Hotel has withstood the test of time to **Go Vertical with Confidence![®]** in 2020.

View pictures on our Marshal Hotel Case History Video at <https://youtu.be/OX7zoL7uePY>

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