

A CASE HISTORY

Project: Yoshi's Restaurant & Jazz Club at Jack London Square Oakland, CA	Geotechnical Engineer: Harza Consulting Engineers & Scientists Oakland, CA	General Contractor: Rudolph & Sletten, Inc. Irvine, CA	Anchor Contractor: Sunstone Construction Campbell, CA
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Problem:

Part of the ground floor of the Jack London Square Garage had been allocated for retail shops. Deep foundations were needed due to higher loads for Yoshi's Japanese Restaurant & Jazz Club and a 10-foot layer of loose sand (2 blow counts SPT) located 10 feet below ground level.

Repair solution:

Chance HELICAL PIER[®] Foundation Systems anchors were specified because of the low overhead clearance (9 to 15 feet) and their lower installed cost compared to other foundation types. A total of 123 Type SS175 (1³/₄"-square steel shaft) anchors were used.

The design load was 45 kips. Three compression tests were conducted to 75 kips. Net deflection was less than 1/4 inch. The three-helix (8-, 10-, 12-inch diameters) anchors were installed 31 to 36 feet into a very dense sand layer with blow counts to 60. Minimum installation torques of 8,000 ft.-lb. were achieved.

The anchors were cast into grade beams tied into the parking garage footings. The anchor end termination was an 8" x 12" x 1¹/₄"-thick steel plate welded to a 3¹/₄" steel pipe with a 3/8" wall. A hole through the pipe allowed a 7/8" bolt to pin the pile cap to the 1³/₄" anchor shaft.

The parking garage is located about a half mile from the double-deck



section of I-880 that collapsed during the 1989 Loma Prieta earthquake. The original floor was a floating slab which could subject the restaurant's contents to considerable damage during an earthquake. A slab on grade beams supported by Chance anchors was chosen to mitigate potential seismic damage. Because the anchors were cast in grade beams, lateral restraint was supplied by the parking garage's foundation.

The site had a potential for liquefaction in the loose to medium-dense sand layers during an earthquake. Concern for buckling of the anchors in very loose sands was addressed by a buckling analysis using the computer program LPILE by Ensoft, Inc. of Austin, TX. The analysis showed that with axial loads up to 90 kips, the very loose sand layer from 10 to 20 feet depth did not adversely affect the buckling response of the anchor.