Earthquake retrofit: Multi-story Hotel, San Francisco

The Challenge

This hotel was built on unstable fill and sands and was in danger of collapse in the event of a severe earthquake. A structural analysis showed that the inner core of the building needed to be reinforced with shear walls and underpinned with cast-in-place reinforced concrete piers.

Overhead shot of pier drilling in corner of courtyard

Action:

The inner courtyard was inaccessible except for an 8 ft. tall x 5 ft. wide opening. The height of the building prevented the use of cranes to place equipment or material into the courtyard. Furthermore, since the soils were noncohesive, all piers had to be cased for the top 25 ft.

A small track rig was used that fit through the narrow opening. Groups of 4 piers 40 ft. deep were placed in each of the 4 corners. 18" diameter continuous flight augers and steel casing were used for the pier drilling.

The cages were winched through the opening in sections and then assembled to full length with rebar couplers. They were then raised over the piers and lowered in using temporary tube steel pole and winch systems bolted to the sides of the building. The piers were then poured as the casing was retracted.

Starting a new pier hole before inserting casing

Detail showing rebar couplings

Raising a reinforcing cage consisting of #8 rebar and spiral ties

RWR Construction Inc. 200 Gary Place, San Rafael, CA 94901 (415) 457-5658 www.RWR-inc.com

Beresford Arms Hotel

Case Study

Earthquake retrofit: Multi-story Hotel, San Francisco

Placing a reinforcing cage into a pier hole in the corner

Lowering a cage down into a pier hole with the temporary winch system

Overview of construction site showing continuous flight augers and one set of completed piers at upper left corner.

Picture showing temporary winch systems bolted to building and suspended cage at right side. Access opening visible at center bottom.

Results:

This initial phase of a multi-phase retrofit program helped bring the Beresford Arms Hotel up to current earthquake standards.

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