

## PROJECT DESCRIPTION

<b>PROJECT:</b>	Sleep Inn Hotel
<b>LOCATION:</b>	Portland, Oregon
<b>DESIGN TEAM:</b>	<i>Architect:</i> ICON Architecture <i>Structural Engineer:</i> TRT Engineering, Inc. <i>Geotechnical Engineer:</i> Braun Intertec Corporation
<b>CONTRACTOR:</b>	E.A. White Construction Co.



### DESCRIPTION:

- 5-stories above grade with partial basement parking
- Concrete and wood frame construction
- Liquefaction mitigation
- Casing of Geopier elements during construction

The site is located near the Portland International Airport approximately ½ mile from the Columbia River. Subsurface conditions consist of over 70' of very soft flood plain deposits ranging from silty sands to sandy silts, with Standard Penetration Test values (N) of 0 to 1 blows. The general site area has been mapped as a high hazard area for liquefaction.

The foundation plans initially called for the grade beam foundation to be placed on grade. The project geotechnical engineer estimated liquefaction induced settlements in the range of 12"-18", with potential differential settlements across the building of 8"-12". During plan review for foundation permits, the City of Portland required the Owner to include liquefaction mitigation in addition to the rigid grade beam system. Approved methods of mitigating the potential effects of liquefaction-induced settlements included (1) transferring structural loads to a lower soil stratum with up to 100' long piles and (2) stiffening the upper soils at the site with the Geopier® system.

Rammed Aggregate Pier® (RAP) elements extending to depths of 18'-20' below ground surface were selected as the most cost effective alternative. The combination of the rigid grade beam foundation and the stiff crust that the Geopier elements developed was accepted by the City as a reasonable and prudent approach to mitigating the liquefaction hazard.

Due to the extremely soft soils and groundwater near the ground surface, most of the piers were constructed through 30" diameter steel casing, which was withdrawn as each 12" lift of stone was placed and compacted.