Chapter 10. Seismic Retrofitting

Context & Character

Many historic structures were built during times when there was less knowledge of seismic design and building codes were less restrictive. This may make them vulnerable to damage or destruction in earthquakes. However, today there are methods of reducing the risk of earthquake damage. If carefully planned and executed, these retrofitting techniques can upgrade the safety of the home, while at the same time being sensitive to the historic fabric of the house. By upgrading such features as foundations, floors, ceilings, walls, columns, and roofs, homeowners can improve the resiliency of their historic houses. This will ensure increased personal safety and protection of their investments.

The first step in retrofitting a historic house is to investigate the premises and identify its weak points and features that can be strengthened and reinforced. For an inspection checklist and more information, see “Bracing for the Big One: Seismic Retrofit of Historic Houses,” published by the State of Utah’s State Historic Preservation Office. Alternatively, consult a structural engineer with experience in assessing older buildings.

Design Objective

Retrofitting a historic structure in Salt Lake City to improve its ability to withstand seismic events can be carried out while minimizing negative impacts upon historic features and building materials.
10.1 Seismic retrofitting of a historic building should be designed in a way that has the least impact on the architectural integrity of the building.

- Building materials used in seismic retrofitting should be located on the interior and/or blended with existing architectural features.

Seismic Risk Factors (Courtesy of Utah Division of State History, Office of Historic Preservation).

Seismic bracing on one of the many decorative chimney stacks in the city.

Vista from the Avenues highlighting architectural variety in historic and topographic contexts.

Additional Information

Utah Division of State History, Office of Preservation. “Bracing for the Big One: Seismic Retrofit of Historic Houses,” 1993
http://heritage.utah.gov/history/earthquake

http://www.preservationnation.org/resources/technical-assistance/disaster-recovery/earthquakes.html#UbZJ1p3nYXw

http://www.nps.gov/tps/how-to-preserve/briefs/41-seismic-retrofit.htm