111 Sutter Street Office Building Seismic Strengthening

San Francisco, California

Owner
Ellis Partners

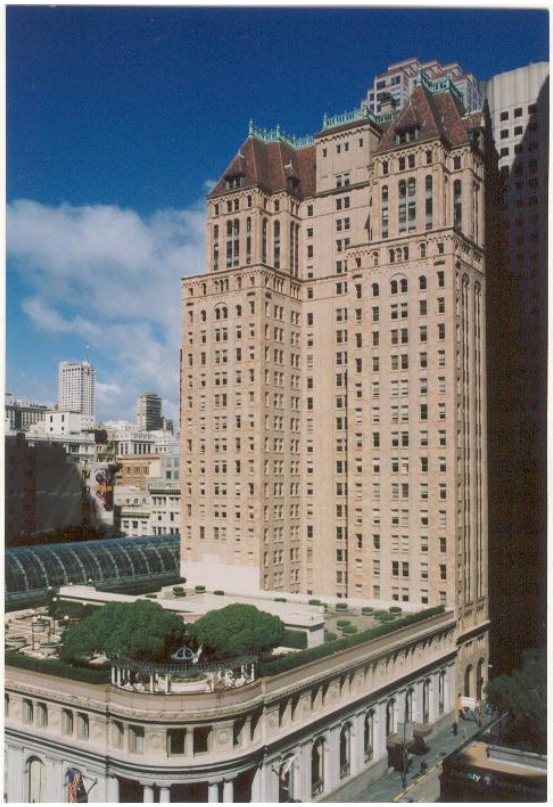
Architect
Lionakis

Completion Date
2001

Construction Cost
$15 million

Total Area
320,000 sf

Number of Stories
24



Thornton Tomasetti performed a structural evaluation and seismic retrofit of 111 Sutter Street in San Francisco, a 24-story 1920s vintage steel-framed office building of approximately 320,000 square feet. The seismic evaluation used a nonlinear static pushover analysis per FEMA 273 and ATC 40 that accounted for the structural contribution of all existing building elements including the building's concrete fireproofing and masonry cladding. This approach led to a calculated elastic strength for the building of approximately twice what would have resulted from the strength of the bare steel frame, thereby justifying a significantly reduced retrofit while still meeting all local building code requirements for seismic upgrade.

Working closely with the owner, the construction manager, and the architect, Thornton Tomasetti developed an efficient retrofit program to effectively strengthen the most critical elements in the structure and mitigate the building's undesirable torsional response while minimizing construction costs and tenant disruption. The retrofit scheme includes column strengthening and strategically placed concrete shear walls.