

The Cosmopolitan

Location: 819 Virginia Street, Seattle, WA 98101

Submitted by: Cary Kopczynski & Company

Owner: 9th and Virginia LLC

Engineer(s): Cary Kopczynski & Company

Contractor: Mortenson

P/T Supplier: Central Steel



Overview:

With stunning views of Elliot Bay, the Olympic Mountains and downtown Seattle, the Cosmopolitan tower features 25 stories of residential condominiums (plus eight more stories devoted to parking), as well as a rooftop terrace and ground-level retail space. Thanks to a post-tensioned design, most interior columns were eliminated in favor of a concrete shear wall core wrapped by a 6-foot-wide thickened drop-head slab on three sides. Because the 8-inch-thick post-tensioned slabs can span almost to 40 feet from the core to the building's perimeter, designers were able to leave both residential units and parking space completely open. High-strength concrete also contributed to the considerable amount of open space, since it eliminated the need for ductile frames, while also minimizing wall size and maximizing views. The post-tensioned slabs were able to accept mechanical ductwork, water supply lines and most building utilities, eliminating the need for dropped ceilings in the units. As an added bonus, housing the utility lines within the slab also improved efficiency by eliminating vertical shafts. Balconies created from cast-in-place post-tensioned concrete were designed without the need to bring down ceiling height, and a gradual reduction in thickness of the concrete to 5½ inches on the edges provides adequate drainage. The building's exterior features structural columns and walls, incorporated in order to reduce cladding and cut costs on the fascia. By eliminating the need for certain materials (such as vertical rebar), post-tensioning helped create a structure that was not only flexible but also economical..