

## GARDEN PLAZA, RENTON, WASHINGTON

**OWNER:**

E & H Properties Bellevue,  
Washington

**ARCHITECT:**

Curtis Beattie &  
Associates Seattle,  
Washington

**STRUCTURAL**

**ENGINEER:** Cary  
Kopczynski & Company,  
Inc., Bellevue, Washington

**CONTRACTOR:**

Baugh Construction  
Seattle, Washington

Garden Plaza uses cast-in-place post-tensioned concrete for the structural frames of both the office building and the parking structure. Concrete was chosen for its unique combination of quality and economy. The quality inherent in a cast-in-place concrete frame is multi-dimensional. From a structural standpoint, the frame is highly redundant which enables loads to be carried multiple directions. This provides an extra margin of safety against temporary overload. From the standpoint of the user, a cast-in-place concrete system creates excellent sound dampening characteristics, and also results in floors with minimal vibrations.

Both the office building and the parking structure used post-tensioning to achieve longer spans and minimize deflections. The concrete mixes were custom designed to meet the needs of the various elements of the buildings. As an example, the water/cement ratio and other key characteristics of the parking struc-

ture slab concrete were specified to reduce permeability and minimize cracking. These characteristics were monitored closely during construction and did, in fact, result in durable, virtually crack-free slabs. Finally, the use of cast-in-place concrete permitted an accelerated construction schedule. Since all materials were locally available, the need for the long lead time sometimes associated with other competitive systems was eliminated. The project was completed and occupied on schedule.

The structural system is comprised of a long-span beam/slab system with lateral resistance provided by a combination of shear walls and ductile frames. Floor beams are 14 inches by 36 inches, with five-inch slabs spanning twenty feet. Both beams and slabs are post-tensioned using half-inch diameter unbonded tendons. The seismic system consists of cast-in-place shear walls in the longitudinal direction, with up-turned concrete ductile frames in the transverse direction.

