## CARILLON POINT PARKING STRUCTURE, KIRKLAND, WASHINGTON

**OWNER:**
Skinner Development
Kirkland, Washington

**ARCHITECT:**
The Callison Partnership
Seattle, Washington

**STRUCTURAL ENGINEER:**
Gary Kopczynski & Company, Inc. P.S., Bellevue, Washington

**CONTRACTOR:**
H.S. Wright Construction Co.
Seattle, Washington

The use of cast-in-place concrete for the Carillon Point parking structure successfully solved a complex series of problems posed by the project. Parking structures typically must be constructed on tight budgets. The use of concrete for the structural frame resulted in a very economical construction price. Formwork, material specifications, and construction details were fine tuned to meet the unique demands of the project. This resulted in a parking structure of exceedingly high quality at a very attractive price.

Although construction economy was important, of equal if not greater importance was the necessity that the Carillon Point Parking Structure blend esthetically with the neighboring buildings. The overall character of the project is of extremely high quality. It was desired that the parking structure be designed and constructed to the same standards. The use of a cast-in-place concrete frame, which allows shallower spandrels than other competing systems, resulted in a very handsome finished product.

Finally, it was desired that the structure be nearly maintenance-free over its design life. Again, the use of high-quality, cast-in-place concrete floor slabs successfully filled this need. In addition to the use of a very low water/cement ratio, a variety of admixtures were also incorporated which resulted in dense, impermeable, and virtually crack-free floors. A fully encapsulated post-tensioning system was used along with a high level of air entrainment in the concrete and additional clear cover over the reinforcing steel. With these quality design and construction features, the Carillon Point parking structure should maintain its beauty and durability for many years to come.

The structural system is comprised of a long-span beam/slab system. Lateral resistance is 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 cable. The seismic resistance is provided by concrete ductile frames in the transverse direction. Lateral loads in the longitudinal direction are carried by the interaction of the ramps and floors to form a vertical truss.