Station Place Parking Garage

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The Station Place Parking Garage was a National Winner in the American Institute of Steel Construction's 2006 'Innovative Design in Engineering and Architecture with Structural Steel' (IDEAS2) in the 'Less than $15M' category. These annual awards recognize those designs where structural steel forms a prominent architectural feature of the building.

Station Place Parking Garage at Dusk.

In Portland, Oregon's Pearl District, residential and retail developments are transforming a former industrial area adjacent to downtown into the city's most dynamic neighborhood. The Station Place Parking Garage is an integral part of a mixed-use project that sits at a gateway to this vibrant destination place and its adjoining districts.

Station Place includes a 14-story, 176-unit residential tower and a five-story parking garage, which has the potential for future build-out of 1,000 square feet of commercial space at the ground level. The 149,670 square-foot parking structure provides 413 vehicle spaces.

The City of Portland required that all parking be located on flat floor plates as opposed to ramps, so the architects designed the building with flat one-way parking levels and an interior two-way ramp. The typical floor construction consists of wide flange beams supporting galvanized 3-inch metal deck, with vent holes and a 3½-inch concrete topping.

All projects in this emerging district must undergo a meticulous design review process, and the city's review commission imposed the following requirements:

1. Exposed structural steel diagonal bracing was not acceptable.
2. Glare from vehicle headlights had to be screened from view.
3. Vehicles parked on the top parking level had to be screened from view of the residents in nearby high-rise residential buildings.

Concrete shear walls in the building's interior addressed most of the structure's lateral loads. The city's review commission did not want a large concrete shear wall to be visible along the south façade, however, as it is the most prominent side of the building. Instead, engineers designed exposed diagonal steel braces for the lateral load, and the architects designed a full-height wall of folded stainless steel plates to hide the structural bracing from view.

The design team called for folded stainless steel guardrail panels with laser-cut holes around the building perimeter to mitigate headlight glare. Four-inch diameter holes filled with colored discs are installed at headlight elevation so that the lights of moving vehicles illuminate them at night, animating the building's exterior. Colors vary by parking level to assist user orientation.

When viewed from above, more than 40% of the building's footprint is "green." A 1,812-square-foot atrium located on the third parking level is open to the sky. The top parking level has 2,411 square feet of landscaped planter space and an 8,887 square-foot exposed steel trellis structure. The trellis acts as an extension of the steel W14 columns, with channels cantilevered from the tops of the columns using a combination of 2¼-inch-diameter grade 50 thru bolts and 1-inch-diameter tension rods. Combined, the atrium, planter and trellis space offer 13,110 square feet of "green" area for the garage.

Because Portland has a mild climate with wet winters, the team specified all exposed structural steel with shop-primed zinc-rich primer, and had the steel field-painted with a high-performance coating.

Designed to relate to Portland's nearby steel bridges, the shed roofs of the Amtrak train platform and the historic train station, the parking structure's signature element is the main stair tower. Seismically isolated from the main garage, the stair tower's vertical truss form incorporates the architectural intent and provides a lateral force resisting system in combination with the stair treads, which act as structural diaphragms.

Folded stainless steel guardrail panels with laser cut holes to mitigate headlight glare.

The main vehicle entry is identified by 77-inch-high block letters that spell "P-A-R-K" fabricated into a four-story glass wall comprised of 25 panels measuring 8 feet by 8 feet. A steel HSS frame holds the glass panels. The frame connection to the structure isolates it from interstory drift, protecting the glass panels from in-plane deformation of the frame that would otherwise occur.

Once construction began, weekly meetings took place with the steel fabricator to identify and resolve potential issues. This ensured that the preparation of more than 1,300 shop drawings and fabrication of 1,069 tons of steel remained on schedule. The total construction cost was approximately $9 million — around $21,910 per parking space.▪

The GARAGE at Station Place

Project Team

Owner
Portland Development Commission

Developer
Williams and Dame Development, Inc.

Architect
Leeb Architects, LLC

Structural/Civil Engineer
KPFF Consulting Engineers

Landscape Architect
Perron Collaborative

General Contractor
Andersen Construction Company, Inc.

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