When a Fortune-100 company located in downtown Columbus, Indiana, announced a major office expansion, it created the need for a unique parking structure with a large footprint. The project team (American Structurepoint and F.A. Wilhelm Construction) worked closely with the corporation to design a 5-story, 954-space, 291,300sf parking garage incorporating many sustainable design principles and maintaining the architecture and historical features of the exterior to blend into its surroundings.

The open parking structure allowed for natural ventilation, and eliminated the need for mechanical ventilation. The garage also features highly efficient light fixtures that offer a softer glow, which would compete not with the lighting of the headquarters and contribute to light pollution. Vehicular charging stations also offer an additional sustainable element in the structure's design.

**STRUCTURAL FRAMING SYSTEM**

The garage utilized a small palette of materials, and expressed the grace and strength of a reinforced concrete structural system, as well as the transparency of the curtain wall. Verticality, again reminiscent of the adjacent pergola and other historic tower elements, is found in corner stair towers. The elevators are placed interior to the garage, allowing these “glass cubes” to be distinctive, finely detailed beacons to promote way finding and security during evening hours. Upturned post-tensioned beams cap the structure and double as vehicle barriers at the upper floor. The typical structural floor is comprised of a 1-way post-tensioned concrete system with moment frames providing lateral resistance. This effectively opened the structure to outside light.

**UNIQUE STRUCTURAL AND/OR ARCHITECTURAL DESIGN FEATURES**

Unique 2-way cast-in-place post tensioned slabs form the two stair tower roofs, with the southwest roof cantilevering more than seven feet in all directions from a central concrete core wall. The precast sections cantilever off the concrete core wall to reduce visual impairments in the exterior cladding. A 20-foot tall white precast concrete trellis on the building’s west side mirrors the iconic trellis featured across the street. The garage is topped with a continuous concrete band surrounding the building and cantilevering at the corners, which visually ties the building together.

Another innovative feature of the parking garage is the use of a “green screen” on two sides of the 5-story structure. The green walls add 7,000sf of living, growing vines. The vine walls help filter direct sunlight and shield views of the cars from the street and adjacent buildings.

**Special Environmental Requirements.** Extreme cold, dry to hot and humid weather is common in this part of the country and parking garages are susceptible to freezing, heat, precipitation, and de-icing salts. To address these issues, a process was implemented to maximize building life. It included: higher performance concrete, post-tension tendon and anchorage protection, higher prestress levels to reduce cracking, and epoxy-coated reinforcing steel (rebar) combined with admixtures and sealers to inhibit corrosion.