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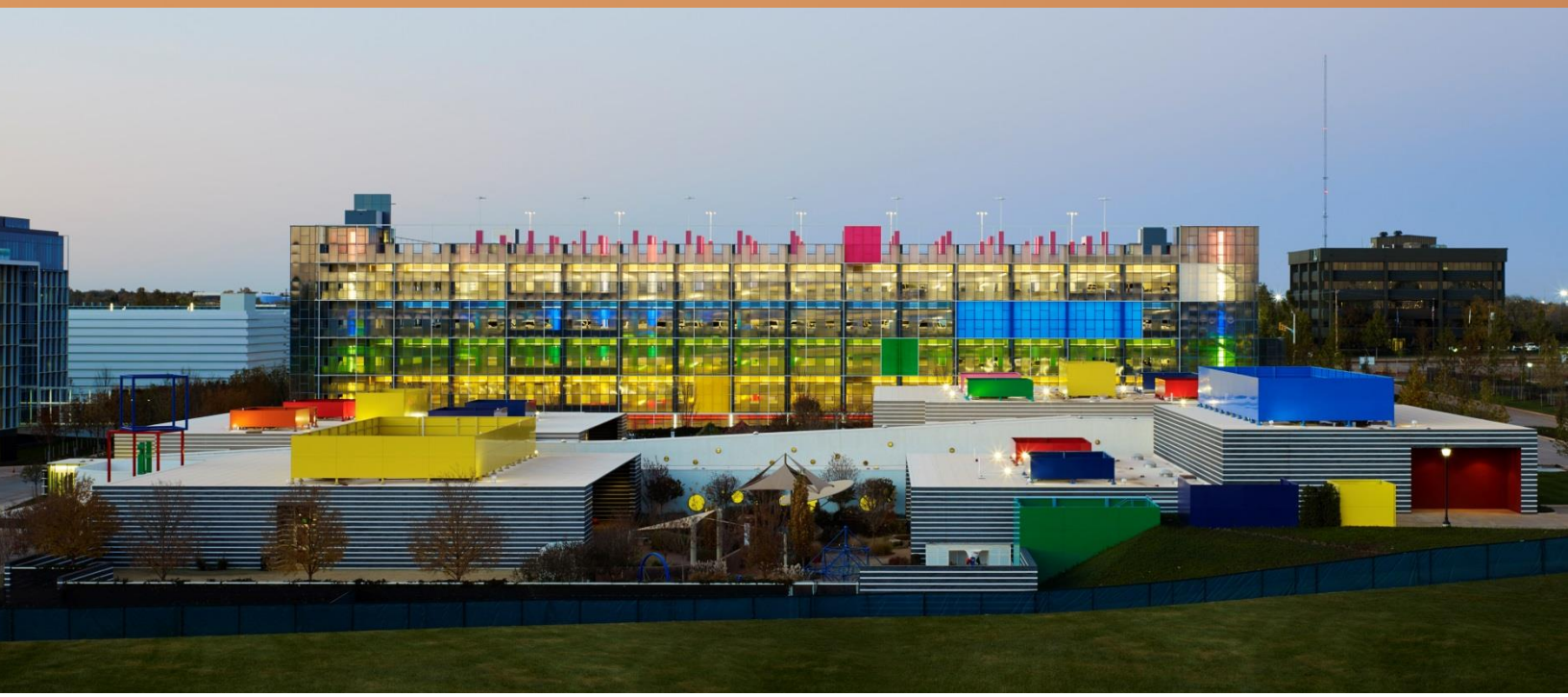
CHESAPEAKE ENERGY'S CAR PARK 3



Reinventing the Parking Experience: Duo-Gard Industries and Elliott + Associates Collaborate to Create Chesapeake Energy's Car Park 3

Forget for a moment the typical perception of a parking garage: dark, dirty, full of fumes and downright scary. Imagine instead a massive, seven-story structure flooded with natural light by day and encircled by glowing, multi-colored bands by night, resembling a landmark lantern. Welcome to Car Park 3, built on the Chesapeake Energy Corporate campus in Oklahoma City.

The structure was designed by the team at Elliott + Associates Architects in Oklahoma City. It covers 546,922 square feet with stalls for 1,439 vehicles. Car Park 3 features a 130,000-square-foot façade of translucent polycarbonate – the largest in North America – engineered by Duo-Gard Industries in Canton, Michigan. The company is a leader in high-performance glazing systems.

"Duo-Gard's system for the façade was completely customized and is different from anything we've done before," said David Miller, president. "It was driven by the architects' vision to create a structure that complements the campus. It's very gratifying and inspiring to be part of the team. The entire process was exciting."

The vision revolved around "reinventing the parking experience," according to Rand Elliott, FAIA, principal and founder. "In this corporate setting, an employee's day starts and ends in a parking structure. We wanted it to feel like an extension of their office. We wanted it to be uplifting and motivational," he said.

He also wanted it to be architecturally compatible with adjacent buildings and challenged Duo-Gard to match that existing glass with multiwall polycarbonate. The result was custom-extruded glazing in a blue-gray tint that reflects its surroundings during the day. "Duo-Gard did a tremendous job matching to existing design, thus allowing the buildings to visually connect," said Elliott.

Duo-Gard's team achieved this with what Miller calls the company's "focused design" approach. "With each project – and each one's different – we evaluate and integrate the most effective materials and the most advanced technologies to realize the goals for that specific design," he said. For Car Park 3, the system included 25mm triplewall polycarbonate glazing panels modified to meet Duo-Gard's structural requirements. The system spans 12'6" between floors and attaches to the poured-in-place concrete.

The 300-foot-long curtain walls were glazed in 12’6” x 12’6” grids, framed in a new aluminum extrusion specifically engineered to support the modified polycarbonate while maintaining the low-profile look the architect specified. A single expansion joint runs through the building, allowing 8” – 10” inches. And multiwall polycarbonate has a higher co-efficient of expansion than glass, requiring specific framing to accommodate greater movement. Gasketing must allow for this. For Car Park 3, even the gasketing was custom, because the architects didn’t want typical black. To meet the 25 per cent ventilation requirement, every 36 square feet includes nine square feet of open space. Duo-Gard’s system also glazed the barrier railing around the perimeter of the building’s walkways, as well as the elevator enclosures and canopies at entrances and exits.

Obviously, polycarbonate was the central element in this design. Elliott said the architects considered a wide variety of other glazing materials, including laminated glass and corrugated fiberglass. “Polycarbonate is a very sophisticated material, as well as being economical,” he said. Miller added that the material is stronger yet lighter in weight than glass, enabling engineers to achieve the structural strength desired with less metal.

The 25mm in Duo-Gard’s system presents a high degree of visual clarity that architect Elliott considers close to transparent. It allows 34 percent visible light transmittance. That was critical in creating daylighting for the interior environment he envisioned.

“Daylighting is important. People prefer natural light. Studies have proven this to be true. And this is Oklahoma – weather is a concern for people here. They need to be able to look out and see what’s happening, so we wanted something as close to transparent as possible,” he added.

At night, the effect of Duo-Gard’s polycarbonate system allows the building to glow like a giant lantern. A rainbow of colors, one for each of the seven floors, is created with a combination of fluorescent and cold cathode lighting covered with various gels, intentionally resulting in a theatrical effect. Color is another primary element in the architectural team’s concept and not just for aesthetics.

“Wayfinding is important and people often get lost in parking structures,” Elliott said. “By using a different color for each floor, matching everything connected to that floor with the same color and reinforcing it with light means you don’t forget where you parked. All you have to remember is the color.”

Car Park 3 sits north of Chesapeake’s childcare center, and it would have been easy for the massive structure to be overbearing. So along the south elevation, the glazing system incorporates separate color blocks of red, blue and yellow to reflect the center’s playful approach. “The kids see these glowing objects across the street as parts of a cool toy,” Elliott said.

Car Park 3 is the second collaboration of Duo-Gard and Elliott + Associates. The highly complex project took three years from start to finish in December 2013. The architect describes the result and the reaction as “spectacular.” He sees polycarbonate as a great solution for today’s architecture and design community: “Looking at all the things going on with high-tech plastics, I think this is just the beginning of unimaginable products to come.”

Duo-Gard’s 30 years of experience and evolution with polycarbonate technology bear this out. The material and its possibilities are becoming more prevalent as architects and designers realize the benefits.

“I believe this project elevates the use of polycarbonate as a dynamic building material in the right application,” said Duo-Gard’s Miller. “It saves money. It contributes to sustainability. It offers unlimited design flexibility. It can be recycled. And best of all, it enables us to enhance the human experience inside and outside the buildings we create.”

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