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From the exterior, the dual-toned red and beige brick of Drayton Mills Elementary School in Spartanburg, South Carolina, feels fresh and inviting. On the interior, a limitless world of creativity and education awaits. From color-coded and grade-specific collaboration areas, to a high-tech media room and responsive classrooms, this 125,000 square-foot elementary school utilizes cutting-edge technology to produce an innovative learning space. With construction completed summer of 2018, the school was awarded the prestigious Green Globes architectural sustainability certification.

Green Globes distinguishes projects which advance sustainable design, conserve energy, reduce water consumption and promote responsible use of materials. Southeast-based architecture, planning, and interior design firm McMillan Pazdan Smith is responsible for the keen design of the project. Project Manager Donnie Love, A.I.A., along with Justin Offut, A.I.A., and interior designer Lynne Wilson worked together closely on the project. “One of the main design qualifications for Green Globes is that each classroom has a window,” Offutt notes. Designer Lynne Wilson adds, “Natural daylighting is important. This is why high-performance shades and glazing play an integral part in the general wellbeing and productivity of the students, as well as in the project receiving the Green Globes credential.”
Multiple studies have illustrated that student performance improves with access to natural light and views. Architects and designers are responding to these findings by creating learning environments that capitalize on daylight via open spaces and innovative design elements that pull natural light deeper into interiors and allow views to the outdoors. Furthermore, school leadership desired to source building materials as locally as possible, due to economic and environmental concerns. In response to these items, McMillian focused on developing a fenestration package complete with South-Carolina based fabric and glass manufacturers, Mermet USA and Guardian Glass. Guardian’s SunGuard® SNX 51/23 coated glass and Mermet’s E Screen™ in 3% openness and Avila Twilight™ 100% blackout fabrics in the color charcoal were specified. Dark color fabrics were chosen so they would seamlessly blend with the inherent color of the glass and minimize the appearance of the shades from the exterior.

Triple-silver, high performance, low-emissivity coated glass products such as Guardian SunGuard® SNX 51/23 coated glass offer a very high light-to-solar gain ratio, which translates to students, teachers and staff enjoying the benefits of light without disruptive glare or uncomfortable solar heat. By integrating light diffusing shade fabrics such as Mermet's 3% openness E Screen, shading gives teachers and students control over their environment. They are able to bring in as much daylight as possible, or they may lower the shades for increased performance and glare control. Window shades build on the performance of glass, allowing buildings to exceed performance goals, while delivering on precise interior and exterior design intent.

At first, façade aesthetics was a secondary concern to the project, until the school superintendent voiced a request to maintain uniformity of the building's many exterior street-side windows. The goal was to avoid a distracting appearance, often caused by manually operated and light colored, street-facing fabrics. Achieving aesthetic uniformity while meeting differing solar control needs was a tall order. However, it was accomplished when McMillan Pazdan Smith interior designer Lynne Wilson used several different shade fabrics in order to address differing solar control needs in various parts of the building.

Drayton Mills Elementary faces south, where high amounts of solar energy enter the building. To combat this, E Screen fabric was installed on all windows. However, in specialty areas, like the school's library, or rooms facing the distracting, high-traffic central courtyard, the ability for complete light blockage was needed. McMillan Pazdan Smith architects met this challenge by incorporating dual-shading systems that also maintained exterior aesthetic uniformity and matched the interior's modern color palette and design. “One of the most interesting parts of the project was finding a way to incorporate multiple visions and needs at once,” project architect Justin Offutt observed. “There are lots of stakeholders.”

The need for strong solar control solutions is even more apparent when analyzing school spending. School districts spend $6 billion each year on energy – second only to salaries. Of that, 19 percent goes toward lighting. Only water heating and space heating cost more. More and more, architects and designers are understanding that carefully crafted glass + solar shade solution for a school façade can increase daylighting, help reduce artificial light and energy costs, and increase occupant control over glare while maintaining exterior views.
considering the right glass for a school façade can increase daylighting and help reduce artificial light and electricity costs without increasing heating and cooling costs. Making a significant cut in these costs can amount to substantial savings that can be applied to other school expenses.

Guardian SunGuard® SNX 51/23 coated glass and Mermet’s E Screen fabrics helped deliver those savings without sacrificing appearance. They maximize thermal control because together they provide controlled and abundant natural light that reach interiors while managing solar heat gain, keeping indoor temperatures comfortable in all seasons. By evaluating E Screen 3% with SunGuard SNX 51/23 coated glass, the complex glazing system improved from a Solar Heat Gain Coefficient (SHGC) of 0.23 to 0.19 – an improvement of 14.2%.

Achieving Green Globes Certification is no easy task. Amidst normal design specifications and considerations, project managers were challenged to also select sustainable, energy-efficient materials. “One of the top priorities was to create a facility that fulfills its duties as educator, community ambassador and protector of children’s welfare simultaneously,” states McMillan Pazdan Smith. In order to achieve these goals, Green Globes Certification became a steady objective of the project. The Green Globes slogan reads, “Do good by always doing better.” In order to receive Green Globes Certification, the project’s architectural team had to consider four areas when designing and choosing materials: sustainable management, social/economic impact, cultural heritage, and environmental impact. Each category further specifies detailed requirements - many of which would not have been possible to meet without the right solar control solution.

Utilizing Mermet and Guardian Glass fenestration materials, Drayton Mills Elementary was able to pass the Green Globes environmental and social impact ranks. Occupant productivity and wellbeing contribute to the social impact of a structure. Drayton Elementary solves for this by combining dark color Mermet E Screen and Avila Twilight shade fabrics with automated and manual solar control systems. This allows maximum occupant control over the environment’s lighting: making it easy to minimize glare, control heat, set lighting levels to enhance productivity, and more. As this combination solution solves for occupant comfort, it also solves for environmental sustainability by regulating internal temperatures even at the hottest points of the day: decreasing energy usage and increasing efficiency.

Nearly 800 students will explore, learn, and create in this advanced space every year. Designed to foster collaboration, Drayton Elementary School features design excellence at every level. Natural daylight empowers each classroom without overwhelming occupant’s comfort levels. This led the McMillian architects to choose Mermet USA fabrics for the elementary school in order to solve for the needs of occupant comfort, aesthetic uniformity, efficient performance, and sustainable design. “There’s so much about this school that’s exciting. From the abundance of natural light at every turn, to the innovative and flexible learning spaces you’ll see throughout the building, this is an optimal environment for teaching and learning,” observed Superintendent Dr. Russell Booker. The partnership of Mermet, Guardian Glass, and McMillan Pazdan Smith made possible the sustainability, durability, and creativity of this project: opening the door for thousands of young minds to pursue knowledge comfortably and responsibly for years to come.