

Project Overview

Calvert High School
Prince Frederick, MD



Lutron Sivoia® QS meet-in-the-middle shades provide dramatic effects in school addition

Challenge

The beautiful, new addition to Calvert High School in Prince Frederick, Maryland celebrates the sun, inviting daylight into virtually every corner of its multi-use media center. The addition features huge skylights, each more than 35 feet in length, pitched at a 16-degree angle. Smolen, Emr, Ilkovitch Architects (SEI) in Rockville, Maryland appreciates that daylight enhances the educational environment, but also understands the potential pitfalls of glare and thermal heat gain.

Lutron “meet-in-the-middle” tensioned roller shades are able to make the most of all the beneficial daylight in the space, while overcoming the design challenges presented by the skylights. The Lutron system offers five preset configurations that can be quickly recalled at the touch of a button, allowing the right amount of daylight into the space for any situation or activity.

“It’s awe-inspiring. The area is large and dramatic, and when the shades move you completely change the experience of the space.”

*Ran Ilkovitch,
Principal in Charge
SEI Architects*

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Architects, additional
photos © TC Motion.





Opening the shades allows daylight to light the space



Easily recall five different scenes

Solution

The skylights in Calvert High School are not only 35 feet in length, they are also 31 to 41 feet above the floor, span 17,000 square feet, are steeply pitched, and provide limited space for shades. Lutron tensioned roller shades feature a low-profile frame (4.75") that fits within the available opening.

The shade system was custom-designed to fit into the assembly which accommodates four independent components: the skylight structure itself, sprinkler piping, sprinkler enclosure, and the shade frames. Avitecture, Inc. in Sterling, Virginia installed all components, assisted in the design of the systems and worked with Lutron engineers throughout the entire process to successfully complete the design and installation of this challenging project.

The end result is dramatic in its subtlety. The system looks seamless and simple, and the structure is virtually invisible to occupants in the space, until the shades are opened or closed.

Bill Coutz, Manager of Shading and Lighting at Avitecture, explains the project goals. "School administrators require a system that is simple and easy to operate, allows independent control of the skylights and the vertical shades, and most of all, saves energy."

Ran Ilkovitch, AIA, NCARB and Principal in Charge at SEI, describes the opening and closing of the shades as an event, akin to opening the roof of a stadium. "The shades open and close silently, and move in total unison. It's awe-inspiring. The area is large and dramatic, and when the shades move you completely change the experience of the space."

In addition to the skylight shades, Lutron vertical shades are installed on the 10-foot tall windows around the perimeter of the facility, and daylight-harvesting controls are used to further reduce electric light levels when daylight is able to illuminate the space. Wall controls enable easy access to five preset shade levels, ensuring that teachers or other people using the space can operate the shades efficiently and without any special training. Aliante® pendant fixtures from the Lutron Ivalo® Collection provide accent lighting in the multi-use space.

Lutron wireless shade and light control solutions help Calvert High School meet both design and energy-saving goals.



- **Sivoia® QS Wireless meet-in-the middle skylight shades**



- **Sivoia QS wireless tensioned roller shades**



Shades can be adjusted to just the right setting



Closing shades minimizes heat gain and glare

Results

Student, faculty, and visitor comfort was the main concern of administrators as they pored over building plans. Their experience with skylights in the public school system was that they typically generated a great deal of heat, significantly increasing demand on HVAC systems, and making occupants uncomfortable, and unproductive.

One of greatest benefits of the school's shades installation comes in the form of energy savings. The Lutron meet-in-the-middle skylight shades allow for varying openness levels to control heat and reduce operating costs. In the closed position the shades increase space flexibility, enabling the space to be used as a media center and projection facility at any time during the day.

By using thermal imaging, Avitecture estimates that closing the skylight shades in the summer will reduce heat gain by 10 - 30%, and subsequently reduce air conditioning costs. Alternately, by opening the shades in colder months, the school can take advantage of the thermal heat gain to reduce heating costs.

Bill Coutz summarizes the effect of the completed installation. "To see the system work on a day-to-day basis and to meet the objectives that were originally defined by the architects – that is total satisfaction."

Thermal imaging illustrates the shades, energy-saving benefits.



A meter reading taken as the shades close, shows how shades can reduce heat gain on a hot summer day.



A meter reading taken as the shades open, shows how shades can be used to increase thermal heat gain and reduce the required heating load.

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