

Transparent Noise Barriers from Evonik Cyro Help Woodrow Wilson Memorial Bridge Project Run Smoothly

Application Profile:
PARAGLAS SOUNDSTOP® GS CC noise barrier sheet

During the reconstruction of the historic Woodrow Wilson Memorial Bridge outside of Washington, D.C., designers and engineers were faced with a major hurdle. The \$2.5- billion project originally included an opaque sound wall that would span more than 1,500 feet in length on the mile- long bridge that stretches over the Potomac River. However, local residents' qualms about the lack of aesthetic appeal of the opaque walls brought the project to a screeching halt. Without the approvals for the wall, the project could not move forward. Enter PARAGLAS SOUNDSTOP® GS CC noise barrier sheet, a unique transparent sound barrier that met the divergent needs of the engineers and general public, and made the project move smoothly.

A New Design

The Woodrow Wilson Bridge is a major hub of traffic between Maryland and Virginia on the Capital Beltway — I- 95 and I- 495. After its original construction finished in 1961, the bridge was meant to hold around 75,000 automobiles a day. However, a mere eight years later, it reached that maximum and today, nearly 200,000 cars cross daily. With that many tires screeching, horns honking, and tempers flaring, a considerable amount of noise pollution is created.

To suppress the less than desirable sounds from highways, contractors have usually used walls made of concrete. When the public responded negatively to the idea of their view of the Potomac River south of the Capitol being blocked by a 17 foot high, 1,500 foot long concrete barrier, the Woodrow Wilson design team went with the more aesthetically pleasing, transparent noise barriers manufactured by Evonik Cyro LLC. That decision came after extensive evaluation, according to Kevin Hughes, senior engineer, RK&K Engineers, the firm contracted for the project.

Hughes knew concrete barriers were not aesthetically pleasing but they were durable and held up fairly well at the end of the day. A transparent system may have been appealing to the public but it still had to pass the engineers' examination, explained Hughes.



PARAGLAS SOUNDSTOP GS CC is the Answer

Hughes and his team performed tests and analyses to establish the necessary height, length and thickness of the wall. Once determined, a material had to be found that would meet the requirements of the design as well as be acceptable to both the public and Virginia Department of Transportation (VDOT).

VDOT visited a site in New Jersey that had installed the transparent sound barrier more than ten years prior. They discovered that the sound barrier had held up to the elements remarkably well. Comfortable with the durability, Ronaldo “Nick” Nicholson, the VDOT Woodrow Wilson Bridge project manager, continued his evaluation and discovered PARAGLAS SOUNDSTOP GS CC sheet had unique properties that made the product an ideal choice for the project.

Both Hughes and Nicholson found that the transparent barrier was a highly competent noise barrier. VDOT only installs noise barriers that can achieve a minimum noise level reduction of 5 dB. The transparent noise barrier easily met this guideline, which is remarkable considering the ultra- lightweight noise barrier sheet weighs as little as 3.7 psf. Using the Federal Highway Administration’s traffic noise model, RK&K Engineers began working on the Woodrow Wilson Bridge.

“When we were creating the model for the new barrier, Evonik Cyro was very helpful because they provided samples when we needed them as well as support,” said Hughes. “We calculated necessary factors when creating the model such as height, width, length, wind resistance, and how much steel. Once we finished the new design, it was up to Evonik Cyro to meet the specifications.”

Evonik Cyro was responsible for fabricating the transparent sheet according to the demands of the design. Beyond its primary use as a noise barrier, the sheets had to serve additional functions. Designed as a divider between vehicles and the public walkway, the sound barriers also had to be able to protect passersby from debris caused by traffic and not easily break. To combat the latter concern, the sheets are fitted with black threads that serve dual purposes. They prevent any free- falling fragments, if a vehicle crashes into the transparent panels and breaks them. They also have a subtle contrast that reduces the chance of birds accidentally crashing into the sheet.

Able to Withstand the Elements

PARAGLAS SOUNDSTOP GS CC sheet has proven to be beneficial in dealing with the harsh elements ¼ both manmade and natural. Road structures are constantly under attack by varying forces. Graffiti artists incessantly apply their “craft” to bridges and highway dividers, as well as buildings and water towers. On concrete, paint can be very difficult and costly to remove. Car and truck exhaust, tire blow outs, litter, and the occasional collision can also wreak havoc on sound barriers.

The other part of the equation ¼ nature ¼ is much more difficult to control. Whether it’s the direct rays of the sun, strong winds, rain damage, or birds, the environment provides its own harsh treatments. Combine the two forces over time, and design teams have a lot to consider when building a modern sound wall, especially when having to buck the traditional method.

Again, the PARAGLAS SOUNDSTOP GS CC sheet passed with flying colors. The transparent sheet is naturally resistant to yellowing from the ultraviolet rays of the sun and rain damage is a non- issue. In fact, rain cleans off road dirt, sand, and de- icing agents from the surface of the transparent sheets, reducing maintenance costs. Graffiti can also be removed quickly and easily using approved cleaners.

The Finished Product

Although they were only responsible for providing the PARAGLAS SOUNSTOP GS CC sheet, Evonik Cyro worked closely with the engineers and construction crews to make sure the installation process went as smoothly as possible.

“Working with Evonik Cyro was great, as they were always ready to help,” said Hughes. “Their on- going involvement was important in developing the frame and posts, as well as the sheets themselves.”

Combining a pleasant aesthetic quality with functionality and safety, the PARAGLAS SOUNDSTOP GS CC noise barrier sheet on the newly redesigned Woodrow Wilson Bridge is a glimpse into the future of noise barriers. That future looks bright, according to Nicholson.

“Since the wall’s completion in June 2008, the public response has been favorable,” said Nicholson. “Usually when a sound wall is built, the public is quick to condemn. There have been no complaints so far and the feedback we have gotten has been positive.”