

PURPOSE-BUILT VIDEO SECURITY FOR AN ENGINEERING MARVEL



CUSTOMER PROFILE:

Chesapeake Bay Bridge-Tunnel
Virginia

INDUSTRY:

State/Local Government, Critical Infrastructure

SOLUTIONS/TECHNOLOGY:

- Optera 180-degree cameras
- Optera 270-degree cameras
- Spectra HD dome cameras
- Sarix Enhanced Mini Dome 3 Series cameras
- Sarix Mini Dome cameras
- Sarix Box cameras
- Esprit Enhanced 1 Series cameras with wiper
- VideoXpert Enterprise video management software (VMS)
- 288TB and 96TB storage appliances

BENEFITS:

- Easily monitor traffic along the CBBT and detect any incidents or potential hazards that could disrupt travelers.
- Improve the response team's productivity by reviewing real-time footage from the Pelco cameras to verify reports of incidents. This helps to confirm if a response effort is needed and what level of support is required. Recorded footage can also be used to implement new road markings and signs that could improve traffic flow.
- Use Pelco security cameras to monitor weather conditions that could impact motorists' journeys and negatively affect traffic flow. The CBBT operations team can then alert motorists before they make the journey.

Ever since the opening of the Chesapeake Bay Bridge-Tunnel (CBBT) in 1964, it has proven to be a vital link for motorists traveling across the mouth of Chesapeake Bay. The CBBT is an integral part of the transportation system in the Commonwealth of Virginia, spanning 17.6 miles over and under the Chesapeake Bay and connecting more than 4 million travelers to points in Virginia and beyond.

CBBT employs approximately 160 individuals who, together, provide thousands of travelers with a safe, cost-effective and unique journey across the Chesapeake Bay. Despite the harsh environment around the Chesapeake Bay, including strong winds and salty air, the CBBT protects travelers from the elements and enables them to travel safely with the help of the CBBT's operations team and police department.

CHALLENGE

KEEP TRAFFIC FLOWING

With thousands of motorists using the CBBT every day, the operations team must be able to keep track of what is happening across the complex to ensure a safe and efficient journey for all. However, with so many things to look out for, including traffic flow, motor incidents and debris on the road, it can be challenging to stay on top of things.

As a result, CBBT understood that they needed a solution that could provide them with crystal-clear, real-time video of what was happening across the facility. With more than 40 total miles of roadway to monitor and patrol, the CBBT required video security that would help them detect and respond quickly to such things as broken-down vehicles, loose debris in the roadway or bad weather.

MONITOR WEATHER CONDITIONS

It's not only motorists and the highway that the CBBT operations team needs to monitor. The weather conditions along the CBBT can significantly impact driving conditions. Fog, heavy rain and strong winds are just a few weather conditions that can affect the driving experience along the CBBT. Knowing when these conditions have a negative impact is essential for the operations team as they can then implement safety protocols and provide alerts for commuters.

REQUIREMENT FOR NDAA-COMPLIANT VIDEO SECURITY

As a political subdivision of the Commonwealth of Virginia, the CBBT follows strict state and federal guidelines. This applies to the procurement of security hardware and technology. As a result, CBBT can only invest in and install hardware from trusted US Government vendors. These vendors provide technologies that would not cause security or cybersecurity risks while meeting stringent security requirements and compliance with the National Defense Authorization Act (NDAA).

SOLUTION

CBBT chose a suite of cameras from Pelco, a Motorola Solutions company. In total, approximately 140 cameras were installed across the 40 miles of roadway.

To help monitor events along the tunnels, they replaced their older security cameras with Pelco Optera 180-degree and 270-degree cameras. These cameras provide expansive coverage from their four image sensors with up to 12 MP resolution and great zoom capabilities.

The CBBT also installed Pelco Spectra HD, Sarix Mini Dome and Box cameras, as well as Sarix Enhanced Mini Dome 3 Series cameras. The Sarix Enhanced Mini Dome 3 Series cameras are built for difficult lighting conditions with adaptive IR technology and advanced autofocus options. It also features SureVision technology and True Wide Dynamic Range, which allows it to capture excellent detail in low-light conditions 24/7. Coupled with Pelco Smart Compression technologies, the team can minimize their bandwidth and storage needs without sacrificing the quality of the footage.

To provide expansive coverage and enable the team to monitor weather conditions along the 20-mile complex, CBBT procured the Pelco Esprit Enhanced 1 Series cameras. This rugged monitoring solution provides high-speed positioning capabilities, outstanding weather protection, including the defog mode feature, and advanced imaging with up to full HD 1080p.

All Pelco cameras and products are compliant with NDAA requirements. These solutions are assembled in the US, reassuring the organization that the cameras meet the strict guidelines set out by the US government, protecting their investment today and in the future.

But it was not only the cameras that saw a significant change. The operations team also upgraded their video management software (VMS) to Pelco VideoXpert Enterprise, along with the installation of three 288TB storage appliances and four separate 96TB storage appliances. With the easy-to-use VideoXpert VMS, users can review real-time footage from their cameras and seamlessly retrieve recorded footage for forensic investigative purposes.



THE BENEFITS



ENHANCED SITUATIONAL AWARENESS TO DEAL WITH TRAFFIC INCIDENTS

With the implementation of Pelco security cameras, the CBBT operations team has benefitted from increased situational awareness across the facility. Thanks to the Optera 180-degree and 270-degree cameras' panoramic views and zoom features, CBBT video security operators can now detect and respond to events as well as verify reports of other potential security issues.

Now, operators can monitor vehicles along each of their two one-mile-long tunnels with fewer cameras. "It's now easier to investigate incidents as there are only seven cameras to review, which is half the number of cameras compared to before," said Ray Wood, Director of Management Information Systems at CBBT. "We've also seen a 100% improvement in coverage area along with much better imaging."

The footage captured by the Optera and Sarix Enhanced Mini Dome 3 Series cameras can also help to manage traffic on the back of an incident. If the incident results in the closure or partial closure of a road along the CBBT, the operations team can pass this information on to travelers as traffic alerts so they can make alternate travel arrangements, saving motorists from finding themselves in heavy traffic.



ANALYSIS THAT HELPS DRIVE EFFICIENCIES

Using Pelco VideoXpert Enterprise VMS, the operator can now investigate all types of incidents by analyzing the recordings captured by the security cameras. This helps them to see what happened and what caused the incident, and then used these findings to make changes to help prevent future incidents and improve responses. "The investigation feature of the VideoXpert system allows us to string the camera images together into a single playlist for review and documentation," said Ray Wood.

In the event of a vehicular accident, the footage captured can be used to assess what the appropriate response to the incident is. By reviewing live and recorded footage, the team can understand the severity of the accident and its location. The same process is also applied to verifying reports of incidents. This helps to determine whether personnel and equipment need to be dispatched to the site of the incident while pinpointing its location. This helps save time and improve productivity while eliminating any guesswork that can lead to unnecessary interventions.

Other learnings that can be obtained from reviewing footage is whether to implement additional road markings and signs to provide motorists with the information they need to travel safely along the CBBT. This helps to streamline traffic flow and provides additional information that can be used to justify new road improvements.



KEEPING A WEATHER EYE ON THE HORIZON

Expansive coverage across 40 miles of roadway is a must, and that is precisely what the four Esprit Enhanced 1 Series cameras delivered. Installed on 30ft camera poles, which were tested against strong winds of up to 70mph, these rugged cameras allow video security operators to view approximately 15 miles of the CBBT. With exceptional zoom, the team is able to monitor traffic flow easily and, of equal importance, track the ever-changing weather conditions along the complex.

"The coverage we've achieved using Pelco cameras has allowed us to shorten our response times to incidents. When an event occurs, we can pinpoint exactly where to send our crews and help arrives at the scene sooner. A few minutes can have a huge impact on the outcome."

– Ray Wood, Director of Management Information Systems at CBBT



"We frequently assist the local county and state police with investigations for incidents in the surrounding area. A previous case involved a hit-and-run approximately 20 miles north of our facility. The video we shared from our Pelco video security system was used to positively identify the suspect and prove his involvement resulting in his conviction."

– Ray Wood, Director of Management Information Systems at CBBT



Now when a report of bad weather or an incident is received, the operations team can effortlessly utilize the coverage provided by the Esprit Enhanced 1 Series cameras to verify what happened. In the case of bad weather conditions, such as dense fog or strong winds, the team can implement safety protocols and issue alerts to commuters warning them of the conditions so that they can prepare in advance or change their travel plans.

CONCLUSION

Today, the CBBT team continues to provide a safe and efficient way to travel for thousands of motorists. With the new, powerful video security solutions from Pelco, the operations team can rely on its technology to provide the extensive coverage they need to perform their duties. Feedback from CBBT has been overwhelmingly positive, in particular around the significant improvement in the coverage area, imagery and ease of use.

Looking ahead, the CBBT team plans to continue to replace their older video security solutions, including the cameras in the toll booths, with cutting-edge cameras from Pelco. Plans are already underway to integrate additional technologies from Motorola Solutions with their video security system to enhance safety and security across their bridge-tunnel complex and provide a better experience for commuters.

