Improving Security by Improving Design

Designing more efficient, more resilient border stations means more protection for America’s citizens.

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In the post-9/11 world and as violent outbursts continue along America’s national borders, homeland security cannot be ignored. A major component of the Department of Homeland Security’s (DHS) infrastructure is the 167 land ports of entry (LPOE) along the country’s northern and southern borders.

According to the General Services Administration (GSA), on an average day about $2 billion in trade crosses these 167 LPOE into the United States, along with more than 350,000 vehicles, 135,000 pedestrians and 30,000 trucks. Protecting the nation’s trade services and, more importantly, its citizens, has never been more crucial.

Border stations and LPOE are critical checkpoints for monitoring national security. More frequent, more violent outbursts continue to occur, especially on the U.S.-Mexico border. In June 2012, a video recorded the beheading of five men in Rio Bravo, Mexico, just south of McAllen, Texas. In March 2010, a Mexican gang seeking to smuggle illegal drugs across the border killed three U.S. citizens. The list goes on. DHS has worked diligently to ensure that the U.S. side of our borders remains a safe place to live and visit. Together with GSA, contracted architects, engineers and general contractors are devising how border stations must be enhanced to protect the nation’s citizens while maintaining a welcoming environment and an efficient flow of traffic for law-abiding visitors.

DESIGNING A PLAN

Protecting borders begins with proper planning. DHS and GSA along with U.S. Customs and Border Protection (CBP) and the Department of State all must agree on the location for each LPOE. Once a site is selected, architects, engineers and general contractors begin the design and construction process.

Government safety standards have increased dramatically and become much more complex since 9/11. These demands are evident in new border stations. The new land port at Donna, Texas—which borders Rio Bravo—has been dubbed the “Land Port of the Future.” Several new safety measures and protocols were implemented to set the tone and direction for future LPOEs across the nation. Clean site lines were designed so officers could maintain visual contact with other officers at various functional locations, increasing safety and operational efficiency. On-site facilities are situated so that officers have the clearest possible view of the queue of vehicles entering the port from foreign soil. In addition, large canopies cover the inspection areas. The shade they provide offers a more comfortable work environment for port officers and their narcotics dogs. By protecting them from heat and sun, the canopy design helps eliminate fatigue due to heat and sun exposure.

FOCUSING ON DETAILS

The Donna LPOE inspection booths also are designed to optimize ergonomics, which increases port efficiency and safety by further decreasing officer fatigue. Fixtures and equipment are placed to offer ease of motion. Inspection booth windows are placed on a 45° angle so that officers working in the booths do not look directly south but instead look southeast. This significantly reduces glare. These booths also incorporate a carbon monoxide filtering HVAC system to reduce exposure to vehicle pollutants.

Improving traffic flow is equally as critical. New border stations feature winding or curved entry roads to force drivers to travel slowly as they approach inspection checkpoints. This helps protect officers at...
The land port of entry at Donna, Texas, features an elaborate technological security checkpoint as well as other design measures intended to improve security and efficiency of screening travelers.

the inspection points while preventing vehicles carrying illegal substances or weaponry from speeding through. If a driver attempts to cross the checkpoint illegally, he or she will be forced off the road and caught by inspection officers.

HARNESSING TECHNOLOGY

According to GSA, approximately 23 million U.S. citizens cross our land borders into Canada and Mexico nearly 130 million times each year. Of the 23 million citizens who cross, about one-half are frequent users, traveling across at least once a year. LPOE projects must develop an effective plan for alleviating pedestrian and traffic congestion while maintaining optimal safety conditions. GSA and CBP are leveraging state-of-the-art technologies to maintain efficient operations despite increased port volume and to better protect the nation’s citizens.

One such technology push is the installation of dynamic light-emitting diode (LED) signage to direct visitors through the ports. With this technology, CBP officers can customize signs for current traffic conditions and security threat levels. The flexibility afforded by LED signs enables lanes to be re-assigned for different functions to assist in alleviating congestion.

Another innovation is radio frequency identification (RFID) that complies with the Western Hemisphere Travel Initiative (WHTI). The new Donna LPOE features RFID that automatically recognizes a frequent traveler’s document—whether a passport, driver’s license, license plate number, or other approved document that complies with WHTI. The use of these electronic identification processes significantly reduces the wait time for travelers to cross the border.

In 2011, the Donna border station incorporated a new “ready lane,” which is used exclusively for travelers with RFID-enabled documents. Since its opening, the lane has a 91 percent compliance rate and has saved eight seconds per vehicle in processing time. While eight seconds for one vehicle may sound minimal, when multiplied over the course of the day it significantly improves efficiency.

To improve traffic flow while maintaining a thorough screening process, radiation monitors were installed. These monitors detect radiation on individuals, vehicles, cargo and all other freight. Not just a faster way to move individuals through, it is more importantly a superior way to detect and prevent terrorist attacks.

Other innovations further enhance border stations capabilities. By using the U.S. Visitor and Immigrant Status Indicator Technology program to deploy biometric systems, CBP officers can verify the identity of anyone entering the country.

At the Donna LPOE, an inkless fingerprint scanner known as the Traveler Enforcement and Compliance System (TECS) can access biographical information, quickly interacting with existing criminal databases to determine if an individual has a suspect history or a terrorist connection. TECS can screen travelers more thoroughly and share any red flags with other border stations.

And beginning in the design phase for the current facilities, these border stations already are being prepared for the future. In addition to being designed with room for them to be physically expanded in the future, several of the new LPOEs were constructed to allow for incorporating future technology enhancements with minimal interruption to operations.

PROTECTING THE FUTURE

New border stations also are being enhanced with sustainable features to strengthen their resilience to potential catastrophic events, natural or manmade. The climate along the southern U.S. border is conducive to alternative forms of energy, including wind and solar power. LPOEs located in more temperate climates are being designed as Net Zero energy facilities. The functional independence afforded by energy efficiency and on-site energy production makes border stations more responsive during natural disasters and acts of terrorism.

The collaboration of GSA, CBP, and engineers, architects and contractors from industry to build functional and aesthetically pleasing border stations may be challenging. Current efforts on display at newly constructed and renovated facilities, however, suggest that with proper planning, border stations can efficiently move millions of people across America’s borders, display hospitality toward visitors, and counter the threat posed by criminals and terrorists.