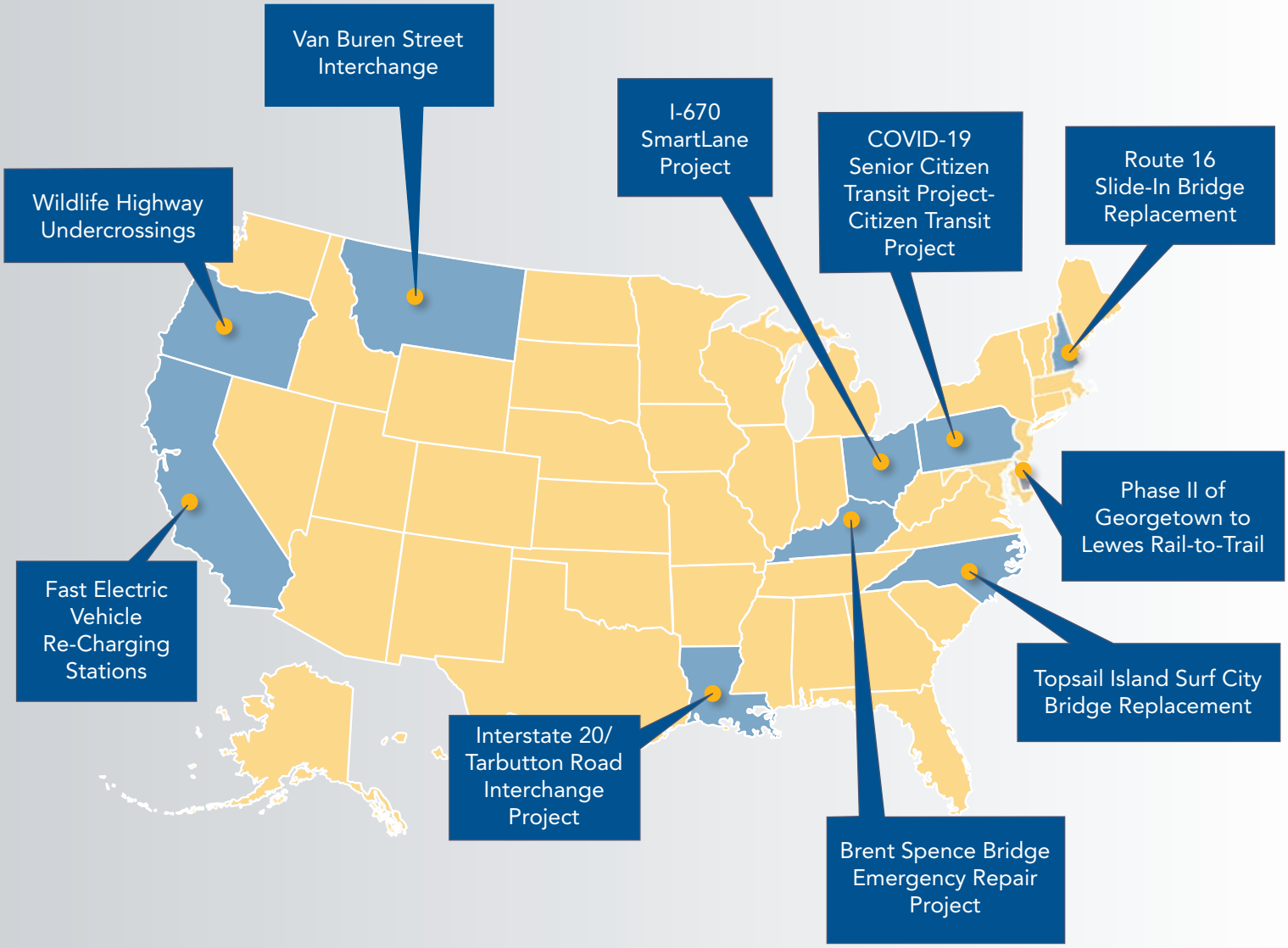
THE BENEFITS OF TRANSPORTATION

The 2021 Round-Up of State DOT Solutions that Deliver Benefits to Communities and Citizens

American Association of State Highway and Transportation Officials
AASHTO

EXAMPLES OF STATE DOT PROJECTS FROM AROUND THE COUNTRY

The selection of state DOT projects below – covering everything from highways to rail and environmental mitigation efforts – showcases just some of the quality of life and economic benefits transportation investment provides to American communities large and small.



More examples from every state are available online at **benefits.transportation.org.**

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The mobility solutions supported by state departments of transportation are key to promoting economic growth and improving quality of life.

The argument for transportation investment is often based on a financial return on investment. Granted, public investment in transportation infrastructure delivers both short- and long-term economic growth.

From the very beginning of America's founding, upgrading and expanding transportation infrastructure represented a key national policy goal. Starting with rivers, harbors, and post roads, then later with the construction of canals, the transcontinental railroad, and the Interstate Highway System, transportation infrastructure proved a critical lynchpin for increasing economic growth, resulting in a steadily improving quality of life for the people who live here.

This report highlights several examples that show how ongoing investment in the nation's transportation network continues delivering those benefits in modern times, too – generating more business for companies and economic well-being for Americans.

Still, the numbers remain important. A recent macroeconomic analysis compiled by the Florida Department of Transportation laid out all of the positive benefits of infrastructure investment can deliver – especially at the state level.

The Florida DOT's analysis found that state's transportation projects should yield an average $4 of benefits for every dollar invested in all transportation modes, including highway, transit, rail, airports, seaports and waterways, and spaceports. That translates into $164 billion worth of economic benefits over the next 30 years – roughly $5.4 billion per year – in terms of economic value as measured by gross state product over the next three decades ($61 billion), increased personal income ($72 billion), and increased industry output ($99 billion).

The Florida DOT also determined via its analysis that the $4 return per transportation infrastructure dollar invested held steady despite the impact of the COVID-19 pandemic – reinforcing the durable nature of economic gains of transportation system investments.

Those monetary benefits come from a variety of time-saving and efficiency gains for both individuals and businesses alike, including travel time improvements, vehicle operating cost reductions, plus lower business costs due to faster and more efficient delivery of goods, among others.

One of the central missions of state departments of transportation across the country is to deliver the most safe and efficient multimodal surface transportation system possible.

For it is through the states, which serve as the principal owners and operators of the country's interconnected transportation infrastructure system, that the nation's mobility networks continue to help businesses to grow and thrive while improving Americans' quality of life.

Want to know how state DOTs are benefiting your state? Visit **benefits.transportation.org**.

Pennsylvania Transit Project Keeps Seniors Connected During COVID-19

Cost: **N/A** | Date Completed: **Ongoing**

The Situation: Beginning in May 2020, Pennsylvania residents began limiting travel and staying home to help stop the spread of COVID-19. As a result, transit agencies statewide witnessed ridership drop as much as 80 percent and cut back on service as a result. Yet many senior citizens across Pennsylvania – especially in the western part of the state – rely on local transit service to get to doctor's appointments, to the grocery store, to the post office, and perform many other daily tasks. That lack of transportation also created scenarios of greater isolation and loneliness for senior citizens.

The Solution: The Pennsylvania Department of Transportation worked with ACCESS, a shared-ride services company, to expand its transportation offerings in a "non-traditional way" to improve service to their senior citizen clientele during the pandemic.

The program demonstrates how transportation remained the ultimate connector for people both during and beyond the COVID-19 pandemic.

With funding and administrative help from PennDOT, ACCESS was able to change its day-to-day services evolved to fit specific ridership needs. Instead of having to call and make reservations ahead of time, customers were able to request same-day ride service.

In addition, rather than booking two separate trips, riders could safely travel to places like bank ATMs, the post office, or senior centers for grab-and-go meals and return home in one trip.

From May 2020 to mid-February 2021, the program also helped deliver over 140,000 meals and food boxes, more than 8,000 boxes of personal protective equipment or PPE, completed 1,500 wellness/check-in calls, and provided transportation to over 300 people to receive COVID vaccinations since the vaccine became available

All of those efforts are still ongoing, so PennDOT said it expects those numbers to continue increasing.

pennsylvania
DEPARTMENT OF TRANSPORTATION

Phase II of Rail-to-Trail Project Opens up Safer Active Transportation Options

Cost: **$1.3 million** | Date Completed: June 2019

The Situation: Offering more and safer pedestrian and bicycling opportunities for communities dotting a busy stretch of Route 1 in Sussex County proved a challenge for the Delaware Department of Transportation, especially as Route 1 serves as a main access roads for some of the most popular beach resorts in the state.

The Solution: The key to the success of the 10-foot wide, 4.9-mile-long Phase II Georgetown to Lewes Trail project – extending from Savannah Road to Log Cabin Road, built along a state-owned former railroad corridor – is that it is completely separated from motor vehicle traffic. This multi-use hot-mix asphalt trail provides better alternative transportation and recreational opportunities for pedestrians and bicyclists alike but in a "low stress" environment. It also provides a much-needed grade-separated crossing of one of the state's busiest roads, Route 1, as it offers an active transportation connection for communities on the western side of Route 1 with the amenities offered in the towns of Lewes and Rehoboth Beach located on the highway's eastern side.

Since it opened in June 2019, the trail has proven to be one of the most popular in the state, averaging 743 users during weekdays, and more than 2,000 on weekends from June through October, typically the peak times for beach resort activity.

"The trail gives people the option of riding your bike to the store for bread or milk instead of getting into the car and worrying about traffic," noted Ray Quillen, a local resident and bicycling advocate, in an April 2020 letter to the Delaware DOT. "The trail is scenic and pleasant and with lush green canopies and wetlands to view and it is pleasurable way to greet neighbors and strangers as you pass each other on the trail unlike riding in a car."

Phase I of the trail project – opened in October 2016 – constructed a 1.1-mile trail from Gills Neck Road to Savannah Road in Lewes and also included a trailhead at the Lewes Public Library. Now work is underway on Phase III of the project, which, when complete, will extend the Georgetown to Lewes Trail by a total of 17 miles creating the single longest trail in Delaware.

DelDOT

Building Wildlife Highway Undercrossings to Improve Safety and Environmental Sustainability

Cost: **$500,000** | Date Completed: Target date is late 2021

The Situation: Migrating animals, such as mule deer, pose a risk to motorists – and themselves – when trying to cross highways, such as U.S. 97 in Oregon.

The Solution: The Oregon DOT significantly increased safety by reducing the potential for vehicle collisions with wildlife by building a series of three highway undercrossings along U.S. 97 as part of a $12 million passing lane expansion project.

Cidney Bowman, environmental program coordinator Oregon DOT Region 4, explained that such infrastructure projects are key to improving safety for all users, including the four-legged kind.

Bowman noted that a previous undercrossing built along U.S. 97 as part of this expansion lane project reduced wildlife-vehicle crashes by as much as 95 percent.

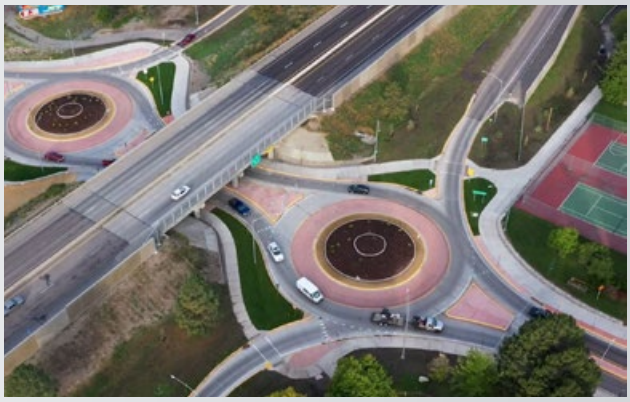
The Oregon Hunters Association, the Oregon Wildlife Foundation, Rocky Mountain Elk Foundation, the Oregon Department of Fish & Wildlife, and other groups, are providing about $500,000 to help make the project a success. Local volunteers are also contributing to this project as these undercrossings include extensive fencing, which needs occasional fixing.

A separate report compiled in 2018 by scientists from the Wildlife Conservation Society and Oregon State University using Wyoming Department of Transportation crash data confirmed a 70 percent reduction in wildlife-vehicle collisions following the installation eight "crossing structures" in combination with eight-foot-high roadway fencing along a nearly 12.5-mile long stretch of U.S. Highway 191 in western Wyoming.

Oregon Department of Transportation

Improving Safety and Mobility via an Interchange Project

Cost: **$13.5 million** | Date Completed: Spring 2019



The Situation: Since the original con-struc-tion of the Van Buren Street Interchange in 1966, the city of Missoula witnessed tre-mendous growth – both in terms of residen-tial population and tourism. Those decades of growth created traffic volumes beyond the capacity of the original interchange design.

The Solution: The Montana Department of Transportation designed an infrastructure solution that not only addressed congestion and safety concerns for interchange – which serves as a "major gateway" connecting the traveling public with services and at-tractions that include the University of Mon-tana, medical facilities, outdoor recreation, and downtown Missoula – but improved its multimodal attributes, aesthetics, and ecosystem impact for the community.

The Van Buren Street Interchange Project started with construction of two four-spoke roundabouts – one each at the eastbound and westbound ramps of Interstate 90. Those roundabouts have reduced congestion, delays and the risk of serious or fatal crashes by promoting continuous traffic flow in the same direction at reduced speeds.

Beyond the roundabouts, the project had another important goal: to improve multimodal transportation infrastructure. The scope included a widened 12-foot shared-use path connect-ing to the existing trail system, Americans with Disabilities Act-compliant access ramps that improved mobility options, and flashing beacons that increased safety for pedestrian crossings and non-motorized trail traffic.

Landscaping improvements included updates to restore the interchange's ecosystem and support sustainable irrigation practices. Installation of new, aesthetic noise walls along Interstate 90 and the beautification of the interchange with a Salish and Kootenai Mural, commissioned by the Missoula Public Art Committee, were included.

As part of those improvements, the agency planted 53 "high-value" trees that are beneficial to the local ecosystem in the interchange area, while it preserved 165 existing trees. The Montana DOT also removed shrubs that created visibility issues for drivers and pedestrians while planting drought-tolerant grasses and native trees to reduce water use and maintenance, ultimately saving money for taxpayers.

VISION ZERO
zero deaths · zero serious injuries
MONTANA DEPARTMENT OF TRANSPORTATION

Installing Fast EV Re-Charging Technology along California Highways

Cost: **$4.5 million** | Date Completed: Target date is late 2021

The Situation: Promoting more sustainable forms of transportation – such as electric vehicles or EVs – requires focusing more on just the mode of transport in question itself. In case of EVs, a recharging network along state highways equivalent to the current network of refueling stations for gasoline- and diesel-powered vehicles could help make EVs a more practical, as well as more sustainable, transportation alternative.

The Solution: The California Department of Transportation made it easier to operate EVs over long distances – assuaging "range anxiety" among both current and potential EV users. Caltrans installed 22 new "fast" EV re-charging stations at nine locations – including at the popular Tejon Pass Rest Area near the Los Angeles/Kern County line on Interstate 5, which is a major north-south route between Northern and Southern California.

According to J.D. Power, "range anxiety" is what EV operators feel when the battery charge is low and the usual sources of electricity are unavailable. It sparks a fear of getting stranded somewhere, which adds time, inconvenience, and stress to a journey. Studies show that driving range and a lack of charging infrastructure are the primary reasons people do not consider EVs when buying a new vehicle.

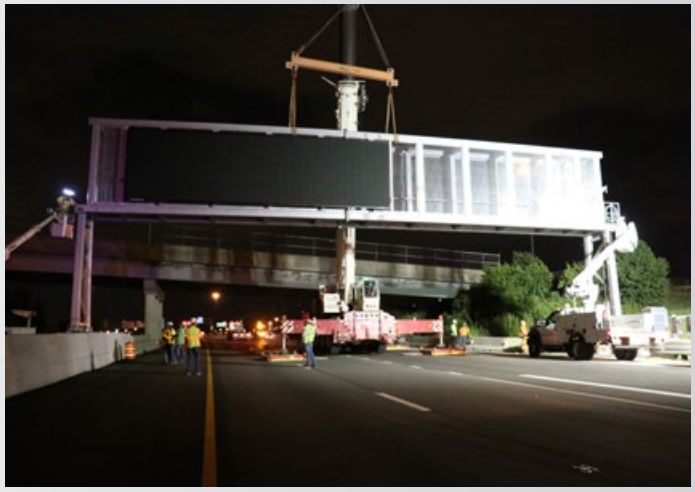
That's why the Level 3 DC fast rechargers installed by Caltrans help allay such fears – they provide an approximate 80 percent charge in 30 minutes to EVs with fast-charging capability. The agency also noted those rechargers feature "universal connectors" so they serve all EVs currently available on the market. Recharging is also free with no time limit.

There is also an environmental benefit as well to encouraging broader EV adoption and use. According to the California Air Resources Board, 70 percent of statewide transportation-related greenhouse gas emissions come from light-duty vehicles, including passenger cars, Sport Utility Vehicles, and light-duty trucks.

"This project is a tremendous example of how public agencies can collaborate with the private sector to fill gaps in the zero emission vehicle (ZEV) market," said Tyson Eckerle, deputy director of ZEV market development for the Office of Business and Economic Development within the administration of Governor Gavin Newsom (D). "More chargers throughout the state will help to incentivize the purchase of EVs, getting us closer to Governor Newsom's goal of 100 percent ZEV sales by 2035."

Making Highway Lanes "Smart" to Improve Safety, Reduce Congestion

Cost: **$12 million** | Date Completed: October 2019



The Situation: By late 2019, traffic delays had become a chronic and major problem along a specific section Interstate 670. Not only did it experience heavy congestion, and average speeds of 25 mph, that "travel time" period also varied on a day-to-day basis, creating significant uncertainty for businesses and motorists. However, a study by the Ohio Department of Transportation found that heavy congestion only affected this section of I-670 for three hours out of any given day. So could there be a way to add extra lanes only when needed?

The Solution: The Ohio DOT improved reliability and convenience for people driving this section of I-670, contributing to the region's economic success.

The Ohio DOT settled on a "SmartLane" solution to address I-670's traffic congestion – the very first such SmartLane highway solution in the state. Using full-color digital signs, cameras, and radar detectors that collect data on traffic speed and density, the agency can now open the left shoulder as an extra eastbound lane during peak travel times or times of heavy congestion. When not needed, the SmartLane closes down – once again reserved only for use by law enforcement, emergency responders, and highway maintenance crews.

Along with the extra capacity, the Ohio DOT obtained authority from the state legislature to change the speed limit on this section of I-670 based on congestion. This option to vary the speed limit is key to the agency's ability to truly manage traffic, not just monitor it – improving roadway safety as well as helping reduce congestion.

The $12 million cost to deploy digital signs, cameras, and radar detectors also represents a fraction of the cost of a traditional highway project would have entailed. Thus the Ohio DOT maximized the use of existing infrastructure and applied technology to improve travel reliability, particularly during evening rush hour. Since the I-670 SmartLane opened in October 2019, average travel speeds increased to 54 mph, with average commute times cut in half. In addition to the time savings, drivers can now rely on a 5-minute commute.

Ohio Department of Transportation

Using Engineering Techniques to Preserve Transportation Efficiency during Highway Construction

Cost: **$16.9 million** | Date Completed: October 2020

The Situation: Route 16 in Ossipee, New Hampshire, is a popular access point carrying up to 18,000 vehicles per day – meaning that a plan to replace its outdated highway bridge would create major travel disruptions for state residents. The best scenario would find a way to keep that road open and handling its daily traffic volume while simultaneously installing a new and safer highway bridge.

The Solution: The New Hampshire Department of Transportation minimized the environmental impacts of bridge construction while saving money and reducing construction inconvenience for people and businesses by using an innovative "slide-in" technique which kept the current road alignment in place and operating while installing a new bridge.

That slide-in technique allowed the new structure to be built on temporary supports right next to the old bridge, then moved completely and quickly to replace the existing structure, allowing the roadway to stay in its current location without the need for extra construction. The bridge slide method is a technique used by many state departments of transportation that moves precast bridges into place via hydraulic jacks; a technique that reduced normal bridge construction project timelines from months to days.

The bridge is also part of a 2,000-foot section of elevated roadway that is located adjacent to businesses in the environmentally sensitive Bearcamp River floodplain. Realigning the roadway to either side would have adversely affected the surrounding ecosystem. Using Slide-in Bridge Construction or SIBC technology allowed the roadway to remain in its existing location, minimizing any environmental impact to the surrounding floodplain while also saving $2 million in construction costs.

The New Hampshire DOT worked together with the local community to determine the best times to perform the work without disrupting traffic; successfully completing the project on time in just under 72 hours while ultimately getting traffic moving again safely.

New Hampshire DOT Department of Transportation

Making Multiple Improvements via a Single Bridge Project

Cost: **$57.75 million** | Date Completed: December 2018

The Situation: The iconic yet structurally insufficient Surf City Bridge serving Topsail Island needed replacing. The design of the original 60-year-old bridge – a steel truss swing span – also required rethinking, as when it opened to allow marine vessels to pass, it created major traffic congestion throughout the area.

The Solution: The North Carolina Department of Transportation improved safety and reduced delays for people driving on a heavily used bridge while offering more active transportation alternatives.

The agency built a 65-foot high bridge that eliminated the need for vessel openings, allowing safe and efficient passage of boats beneath it. Newly constructed roundabouts on both ends of the bridge also improved traffic flow and reduced congestion in and around the structure.

The new bridge also boasts more structural capacity – allowing for better access between the mainland and island in case of emergencies, hurricane evacuation, and other needs.

Then the agency went a step farther – using the opportunity provided by the bridge replacement project to add in new bicycle and pedestrian walkways to the bridge itself as well as along the areas surrounding it. That allows residents and visitors to safely walk and bike along the bridge.

The North Carolina DOT also identified the need for more sidewalks and additional parking to local businesses, helping to boost the local economy. Those changes not only prioritized safety; they helped reshape the entire community, providing more transportation options and allowing for "freer" movement throughout the area.

Using an Interchange Project to Reduce Congestion and Improve Quality of Life

Cost: **$25.5 million** | Date Completed: June 2020

The Situation: The interchange between Interstate 20 and Tarbutton Road in Louisiana proved a problematic chokepoint for traffic – not only leading to congestion but also creating safety concerns for nearby schools and local residents, including students at two local universities.

The Solution: The Louisiana Department of Transportation and Development leveraged the cooperation of local jurisdictions to set the stage for regional economic development and improved access.

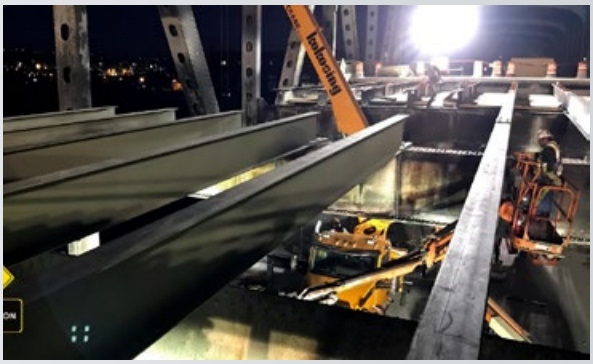
The Louisiana DOTD improved traffic flow while enhancing safety for pedestrians by building a new interstate interchange in addition to a new Tarbutton Road overpass plus a reconstructed Tarbutton Road north and south of the interstate – allowing for improved traffic flow not just I-20 but adjacent service roads as well.

The newly widened Tarbutton Road overpass, as well as the transitioning of the I-20 service roads to one-way traffic to help ease congestion at nearby interchanges. Additionally, Louisiana DOTD reconstructed Tarbutton Road north and south of I-20 on an "adjusted alignment" to help improve traffic flow for nearby schools as well as residential and commercial areas – an alignment also designed to handle increased traffic volume for years into the future.

DOTD
LOUISIANA DEPARTMENT OF TRANSPORTATION & DEVELOPMENT

Repairing a Bridge in Record Time to Reopen a Critical Economic Corridor

Cost: **$5 million** | Date Completed: December 22, 2020



The Situation: On November 11, 2020, a crash involving two commercial vehicles and subsequent fire damaged the double-decker Brent Spence Bridge, which carries Interstates 71 and 75 over the Ohio River between Covington, KY, and Cincinnati, OH. The Kentucky Transportation Cabinet immediately closed the bridge – including, for several days, the navigable waterways underneath it – to conduct safety inspections. Fortunately, those inspections – supported by laboratory testing – indicated that the bridge had suffered "localized" damage from the fire that did not compromise its structural integrity. Given the expectation that the existing bridge will remain in service for many years to come, ensuring the long-term bridge's safety and the routes leading to and from it is of increased significance.

The Solution: TThe KYTC's deliberate speed relieved the transportation choke point that created, in some cases, a 10-mile long detour for people and businesses.

The Brent Spence Bridge – originally built in 1963 – serves as a critical transportation link for the region and the nation: carrying an estimated 160,000 vehicles per day, which includes truck freight shipments. Keeping the bridge closed for repairs also meant rerouting traffic through nearby streets, increasing congestion as they could only handle the volume temporarily. The agency managed to get the bridge repairs done a day ahead of its initial six-week estimate and at more than half the initial cost; $5 million versus $12 million.

Multiple safety inspections took place throughout the course of the repair project, allowing the bridge along with related travel lanes and access ramps to reopen safely.

"We conquered a combination of factors that challenged our ability to complete this project on time, including a global health pandemic and winter weather, and still delivered on our promise to return a safe and sound bridge to the traveling public before the holidays," explained KYTC Secretary Jim Gray in a statement. "Along with repairing the bridge, we also focused our attention on traffic management to maintain reliable connections for travelers."

Repairs to the bridge included: Replacing 16 steel beams damaged by the fire; pouring new upper deck driving surface and concrete barrier wall; pouring new layer of concrete on lower deck and new concrete barrier wall; removing and installing drainage system; installing new overhead lights; and restriping new concrete roadways on its upper and lower decks.

KYTC crews also completed a number of maintenance projects on and around the bridge during the bridge closure – optimizing traffic control expenses and minimizing future traffic interruptions. That work included significant drainage repairs on the northbound side of I-71/75, just south of the bridge; cleaning overhead signs on the lower deck; and repaving and restriping the northbound approach lanes.

KENTUCKY TRANSPORTATION CABINET

AASHTO

American Association of State Highway and Transportation Officials

555 12th St NW, Suite 1000
Washington, DC 20004
202-624-5800 | **transportation.org**