

Bridge

DESIGN & ENGINEERING

STRAIT SPRINT

ALL HANDS ON DECK FOR FINAL
STAGE OF DARDANELLES CROSSING

P3 initiative gains traction in Pennsylvania



The Susquehanna River twin crossings (Penn DOT)

The Pennsylvania Department of Transportation (Penn DOT) has received a record number of responses from a request for information it released in February for the full replacement or rehabilitation of nine candidate bridges in the state.

“We received 23 responses, which is the most we’ve received for any P3 [public-private partnership] planned procurement, so we’re pleased with that,” Michael Bonini, director of the P3 Team at Penn DOT, told *Bd&e*.

The move is the latest under Penn DOT’s Major Bridge P3 Initiative, approved on 12 November last year. The initiative allows the department to use the P3 delivery model for major bridges that require timely intervention and would need significant funds to rehabilitate or replace. The scheme is the first to come out of an ongoing Planning and Environmental Linkages (PEL) study, with eight bridges listed as candidates for full replacement and one for improvement. The bridges earmarked for replacement are I-78 L Lenhartsville Bridge, I-79 Bridgeville Interchange, I-80 Canoe Creek Bridge, I-80 Nescopeck



Lehigh River Bridge was built in 1965 (Penn DOT)

Creek Bridges, I-80 North Fork Bridges, I-80 Over Lehigh River Bridge, I-81 Susquehanna, and I-83 South Bridge. Meanwhile, the I-95 Girard Point Bridge is a candidate for improvement.

Through the PEL study, Penn DOT found bridge tolling to be a viable near-term funding option for these projects; however, this mechanism has never been deployed before in the state, and a variety of studies are in progress to determine how different programmes of works and tolling might affect road users.

“We are now going through all the necessary detailed financial analyses and the environmental studies that our national laws require us to go through,” said Ken McClain, director of the Alternative Funding Programme. “We’re studying traffic numbers and traffic models to quantify how many vehicles at each one of these bridge locations might defer away from tolls onto secondary and tertiary road networks; and trying to quantify what the impacts would be to those networks, as well as smaller communities that lay off system along those roadways.”

Following the successful RFI process, the

department is planning to release a request for qualification in June. “From there, we’ll start to develop a shortlist and work with those shortlisted teams in the issuance of a request for proposal,” said Bonini.

Pennsylvania is responsible for the maintenance of over 25,400 bridges and has the third largest number of state-maintained bridges in the USA, with an average bridge age of 50 years. While the state’s annual highway and bridge budget is US\$6.9 billion, it estimates an annual requirement of US\$15 billion to be able to keep up with general maintenance as well as modest investments in modernisation for its road and bridge network.

“When you look at the number of assets we’re responsible for owning, maintaining and operating, compared to what our budget is, we have a roughly US\$8.1 billion annual shortfall in funding to get our infrastructure back to a necessary state of good repair,” McClain highlighted.

This shortfall is primarily due to the eroding value of federal and state gas taxes, which Penn DOT relies on for 74% of its revenue. With the possession and use of electric vehicles trending upwards exponentially and petrol vehicles becoming more fuel efficient, the state is faced with a revenue challenge that is set to worsen if it does not act.

Looking to address this shortfall, Penn DOT started benchmarking across the country under the PEL to bring some alternative funding strategies to the state for the first time, of which bridge tolling is one. Penn DOT is continuing to look at a wide range of alternative near- and long-term funding options for the state transport system, including a methodology for their evaluation.



FOUNDATIONS FOR NEW BOSTON CROSSING BREAK GROUND

The construction of the drilled shaft foundations to support the piers of the replacement North Washington Street Bridge in Boston, USA is well under way.

The foundation works, which are being carried out by Treviicos, consist of executing 40 1.8m-diameter drilled shafts and 1.7m-diameter rock sockets, with lengths ranging from 19.2m to 28.9m. The drilled shafts are excavated from temporary cofferdams installed

at the location of the five sets of four V-shaped reinforced concrete piers that will be built for the bridge.

The replacement structure will have a main span of 57.9m and a total length of 331.3m. The superstructure will comprise a constant depth trapezoidal steel box

After more than 100 years of service, North Washington Street Bridge – also known as Charlestown Bridge – is being replaced with a new structure that

will accommodate two vehicle lanes in each direction, one inbound dedicated bus lane, separated cycle tracks in each direction, and pavements on both sides, including pedestrian overlooks, seating areas and architectural trellis and planting.

Construction has been under way since August 2018, including the installation of a temporary crossing and the demolition of the old bridge, and will continue into spring 2023.