pennsylvania
DEPARTMENT OF TRANSPORTATION

Route 22/322 Clark's Ferry Improvement Project Description

The Route 22/322 Clark's Ferry Improvement Project includes improvements to US 22/322 and PA 849 in Reed Township, Dauphin County and Penn Township, Perry County. There are three main components of the Clark's Ferry Improvement Project:

- Riverlands Safety Study Implementation (SR 22 Section 075)
- Clark's Ferry Bridge Rehabilitation (SR 22 Section 059)
- SR 849 Market Street Bridge Rehabilitation

The first public meeting for this project was held in October of 2022. Since that time, the design has progressed based on feedback obtained during the public meeting. Some notable changes have occurred as a result of the public's comments:

- A new parking area will be established on the Point near the current PA Fish and Boat Commission access point.
- The frontage lane has been redesigned from its previous off-line location to a parallel configuration.
- The proposed barrier between the Route 22/322 Westbound through lanes and the frontage lane has been removed.
- The Route 147 interchange has been redesigned to allow free-flow left turns from the Route 22/322 Eastbound off-ramp to return to Route 22/322 Westbound without stopping at stop signs.
- A similar improvement has been designed at the Amity Hall exit for Route 22/322 Westbound traffic destined for Routes 11/15 southbound to return to Route 22/322 eastbound.
- The Route 22/322 Westbound off-ramp to Routes 11/15 Southbound will be removed to eliminate a redundancy and traffic will be shifted to the Amity Hall exit where the previously mentioned improvements will occur.
- Finally, the rehabilitation of the Route 849 (Market Street) Bridge has been added to the overall project.

The Riverlands Safety Study Implementation (SR 22 Section 075) portion of the project involves the installation of a continuous median barrier from the Clark's Ferry Bridge over the Susquehanna River to the existing median barrier near the US 11/15 interchange. The removal of the existing US 22/322 center turn lane and left turn lane on westbound US 22/322 onto PA

849 is proposed. Access to businesses along US 22/322 Westbound will be provided via a proposed frontage lane which will serve to separate higher speed through traffic from lower speed local business traffic.

To accommodate the redistribution of traffic due to the median barrier induced turn restrictions, extensive improvements will be constructed at the PA 147 and US 11/15 interchanges. A dedicated lane for a continuous left turn movement will be provided at the PA 147 interchange for US 22/322 Eastbound Traffic destined for businesses along US 22/322 Westbound. A continuous flow right turn lane will be constructed at the Ramp Road (Amity Hall) interchange with US 22/322 and US 11/15 to accommodate traffic destined for Duncannon and other points along PA 849.

The Clark's Ferry Bridge Rehabilitation (SR 22 Section 059) portion of the project consists of a bridge preservation and includes six separate structures. The preservation activities include deck rehabilitation (construction of an overlay), replacing the existing armored compression seals, repairing prestressed beam ends and spalled diaphragms, pier cap concrete rehabilitation, cleaning and repainting the four steel girder bridges including the steel rocker bearings under the existing joints, and replacing tooth expansion dams and drainage down spouting.

During preliminary engineering for the SR 22 sections 059 and 075 Clarks Ferry Improvement Project, it was determined that due to the proximity of the SR 849 bridge to SR 22, the scope of the Route 22/322 Clark's Ferry Improvement Project should be expanded to include rehabilitation work on the SR 849 bridge based on its condition. The existing structure is a five-span, cast-in-place, reinforced concrete, closed spandrel deck arch bridge with sidewalk on the upstream side of the structure. Several piers have undermining of the footing, so grout bags will be placed around the piers and grout will be pumped under the footings. Placement of riprap at the piers may be considered as well.

In addition, the deteriorated concrete of the arches and outside face of the spandrel walls will be repaired. The existing roadway, concrete slab and fill will be removed from over the arches to provide for more watertight repairs to be installed. Repair to the inside face of the spandrel walls and the existing parapets will be performed. The fill and roadway will be replaced. A new sidewalk will be constructed on the downstream side of the structure to match the closest adjoining sidewalks and reduce the number of pedestrian crossings of SR 849. The northwest end section of the existing parapet will be reconstructed to eliminate the current reduction in the roadway width.

Route 22/322 Clark's Ferry Improvement Project Purpose

The purpose of the Route 22/322 Clark's Ferry Improvement Project is to improve safety and mobility for all modes of transportation, including motorists and users of the Appalachian Trail

along US 22/322 in Reed Township, Dauphin County and Penn and Watts Townships, Perry County. Additionally, the project will improve the US 22 /322 bridge over the Susquehanna River and the PA 849 bridge over the Juniata River by reversing the current deterioration and extending the service lives of the structures.

Route 22/322 Clark's Ferry Improvement Project Needs

Currently, there are numerous access points along the corridor that allow for a mix of high speed through traffic and low speed traffic turning into businesses and residences along US 22/322. These speed differentials, closely spaced driveways, and left turns and right turns into and out of the businesses contribute to safety concerns.

There were 173 reportable crashes within the project limits from 2019 to 2023, including 2 fatalities and 5 serious injuries. Since 2011, there have been 9 fatalities within the project limits. The most common types of crashes were Hit Fixed Object (53) and Angle (51), which together represented 60% of the total number of reportable crashes. Rear-end collisions (28) accounted for the third most frequent type of crash (16%). These crashes represent a crash rate of 1.31 crashes per million vehicle miles which exceeds the expected crash rate of 0.81 crashes per million vehicle miles on similarly classified roadways.

Development of a distribution center at the US 11/15 interchange is planned which will bring significant truck traffic to that portion of the project area. This increased truck traffic could negatively impact traffic flow and safety in and around the US 11/15 interchange with US 22/322. Additionally, the two closely spaced existing deceleration lanes from US 22/322 Westbound to US 11/15 are substandard due to the presence of the US 11/15 bridge over US 22/322 (the existing abutments of the US 11/15 bridge over US 22/322 do not provide sufficient lateral clearance to accommodate the existing travel lanes plus a deceleration lane).

The Clark's Ferry Bridge is comprised of 6 separate structures: SR 22/322 westbound (WB) Prestressed concrete beams, SR 22/322 WB Steel girders, SR 22/322 eastbound (EB) Prestressed concrete beams, SR 22/322 EB Steel girders, Ramp A and Ramp B. The Clark's Ferry Bridge carries vehicles as well as the Appalachian Trail over the Susquehanna River. The existing reinforced concrete deck of the bridges (all 6 bridges) has spalling and longitudinal and transverse cracking throughout. Several of the bridge deck joints exhibit damage or missing joint material. Due to joint damage and missing joint material, the ends of some of the prestressed beams have cracks and deterioration. All the abutments on the eastside of the river (mainline and the ramp abutments) have excessive deterioration due to drainage from leaking joints. The abutment on the westside of the river has excessive cracking, and the adjacent masonry wingwall (on the westbound lane side) exhibits scour and undermining. Several of the pier caps have cracked/spalling concrete at the face of columns. The approach slabs of the EB lanes on the east abutment appear to have displaced vertically under load at the interface

of the backwall. The WB approach slab asphalt is cracking and shows signs of distress at the interface to the backwall in a similar manner as the EB slab.

The east approach roadway of the mainline structures exhibits settlement which is depicted in the approximate difference (approximately 2") in the top of median barrier. There appears to be minor settlement in the Mechanically Stabilized Earth (MSE) retaining walls on the mainline structures.

Several bearings have minor misalignment or movement of anchor bolts. At a few bearing locations, the pedestals have deteriorated and have exposed anchor bolts allowing water to penetrate. There is a section of displaced concrete in front and under the bearing.

The bridge does not meet current design criteria. Analysis indicates that the Eastbound mainline steel structure and eastbound ramp (Ramp B) have Inventory Load Rating (ability of structure to carry vehicular loading for indefinite periods) values less than 1.0. This is due to the diaphragm spacing in the girder's negative moment regions.

The PA 849 Market Street Bridge, which carries vehicles and the Appalachian Trail over the Juniata River, has deteriorating conditions. Many of the drainage inlets are blocked and have failed. There is cracking/spalling of the concrete barriers including holes at the base of the left barrier and collision damage to the right barrier in a few locations. Overall, the existing concrete arches exhibit deteriorated areas which include cracking, spalling, delamination, honeycombing, and the presence of efflorescence. Several locations have scaled concrete with exposed aggregate and exposed reinforcing. These locations are primarily in Span 1 and Span 5 of the arches and at the Pier 1 nosing. Additionally, undermining of pier foundations has occurred at Pier 3 and Pier 4. The existing sidewalk provides a substandard width, due to the roadway barrier restricting the walkway to under 4 feet for the majority of the structure. At the western end of the structure the sidewalk width is reduced and the roadway barrier terminated. The sidewalk is very deteriorated with several locations of deep spalls and missing concrete.