
I. INTRODUCTION

A. PURPOSE OF STUDY

A detailed analysis of the project-related impacts to historical and archaeological resources has been conducted as a Technical Study to support the findings of the Environmental Impact Statement. The scope of the proposed project and the potential for a wide range of impacts necessitates a level of analysis that will yield sufficient detail to highlight the varied historical and archaeological resources of the project area and surrounding region. The purpose of the Technical Study is to identify the extent of potential impacts to historical and archaeological resources that may result from the construction and operation of the proposed project, as well as identify specific elements that could result in a constraint on the design, construction, and maintenance of the proposed project. Potentially adverse impacts are identified and discussed in this report.

This Technical Study is one of a series of technical reports which provide detailed supporting documentation for the summary and detailed discussions as presented in the Draft and Final Environmental Impact Statements. This Technical Study has been prepared for the Federal Highway Administration and the Delaware Department of Transportation for the proposed improvements to the Delaware Turnpike, referred to as the Delaware Turnpike Improvements Project, in compliance with the National Environmental Policy Act of 1970, as amended, and the Federal Highway Administration's implementing regulations and guidelines.

B. PROJECT SETTING

The Delaware Turnpike is located in the northern portion of the State of Delaware and extends through New Castle County (Figure I-1). Located to the south and west of the city of Wilmington, the Delaware Turnpike serves as the major east-west corridor through northern Delaware as a segment of Interstate 95 (I-95), which provides interstate travel along the east coast from Florida to Maine. While Interstate 95 provides interstate northbound and southbound travel, the Delaware Turnpike component extends through northern Delaware as an east-west segment between the states of Maryland and Pennsylvania. The entire length of the Delaware Turnpike lies within New Castle County, which is the most populous of the three counties in the state.

New Castle County's location in northern Delaware, combined with its strong infrastructure, affords an ideal location for many types of businesses, particularly trade and manufacturing. New Castle County is located within a one-hour drive of Baltimore and Philadelphia and a two-hour drive of Washington, D.C. and New York. In addition to the Delaware Turnpike and the

I-95 corridor, New Castle County is well served by a variety of county, state and interstate roadways. New Castle County is also a short distance from the easternmost point of I-76 in Pennsylvania, an important east-west arterial route in the local region.

In addition to the existing highway network, the New Castle County area is also served by aviation, shipping and rail services which afford the area opportunities for national and international trade and shipping.

The project area along the Delaware Turnpike corridor is a composite of several distinct physical environments which include densely developed residential areas, emerging residential communities, mixed commercial and light industrial areas and vast regions of open and undeveloped parcels and wetland areas. In addition, a variety of public and semi-public service facilities are dispersed throughout the area. Figure I-2 (Sheets 1 through 4) depicts the project area along with the proposed improvements and right-of-way areas for the Turnpike.

The Delaware Turnpike project area encompasses approximately 11 miles of Interstate 95 in New Castle County, and extends from the Maryland-Delaware line to the I-95/I-295/I-495 Christiana Interchange (Christiana Interchange). The existing Delaware Turnpike is primarily an eight-lane divided expressway, except between the Maryland-Delaware line and Delaware State Route 896, where it is a six-lane divided expressway. Between the Delaware State Route 273 and Route 7 interchanges, a fifth lane is provided both northbound and southbound to accommodate ramp traffic to and from I-295 and I-495.

The Delaware Turnpike includes five interchanges at Delaware State Routes 896, 273, 7, 141 and the Christiana Interchange. In addition, a Turnpike Service Area is located in the Turnpike median between the State Route 896 and State Route 273 interchanges, with median ramps provided to and from the mainline for both northbound and southbound I-95 traffic.

C. PROJECT DESCRIPTION

The Delaware Turnpike Improvements Project (proposed project) involves physical improvements to the mainline portion of the Delaware Turnpike and the introduction of two- and three-lane collector-distributor (C-D) roads along a six-mile portion of the Delaware Turnpike between the Turnpike Service Area and the Christiana Interchange. The proposed Turnpike Improvements design configuration is considered by DelDOT as the ultimate improvements configuration and will be implemented in conjunction with other improvements agreed to with other agencies. The proposed Turnpike Improvements will be considered and implemented only after a determination by DelDOT that an acceptable level of service for future traffic conditions along the Turnpike will not be achieved through the implementation of Transportation Demand Management measures and other non-project related capital and maintenance expenditures for

improving the Turnpike along its existing alignment. The proposed improvements will be implemented if these measures will not achieve the goals of DelDOT to retain the Turnpike as the primary controlled access highway facility in the corridor, and encourage its use through the diversion of traffic from the more congested local road network.

In general, the proposed improvements include: (1) widening the Turnpike mainline within its existing right-of-way from four to five lanes in each direction between the State Route 7/State Route 1 Interchange and the Christiana Interchange, and (2) providing two- and three-lane C-D roads which parallel the Turnpike between the Turnpike Service Area and the Christiana Interchange. These improvements would serve to separate through traffic utilizing the mainline portion of the Turnpike from local traffic which would utilize the C-D roads, thereby effectively accommodating the projected traffic volumes.

The network of collector-distributor roads being proposed along the Turnpike would separate local traffic from through traffic. These roads would be accessible from the main interchanges located to the east of the Turnpike Service Area. To promote safe travel, the C-D roads would be separated from the Turnpike mainline, which would serve as express lanes through the corridor with limited access to the interchanges along this portion of the Turnpike. Slip ramps would be located along the C-D road system to provide access between the mainline and C-D road system, and to provide access for emergency vehicles and incident management.

All of the on-ramps from State Route 273 are proposed to access the C-D roads only and not the Turnpike mainline, except for the connection between north or southbound State Route 273 and northbound I-95, which can access the C-D road as well as the Turnpike mainline.

Although not part of the proposed project, separate improvements are being proposed to the State Route 7/Turnpike interchange. These improvements will include a high-speed freeway-to-freeway connection between the new S.R.-1 (U.S. Route 13 Relief Route) and I-95. The new S.R.-1 interchange will be constructed prior to the proposed Turnpike improvements and will connect to and adjust the interchange ramps with I-95.

Lengthening of the Churchmans Road and State Route 141 bridges over the Turnpike is proposed to accommodate the addition of the C-D roads on both sides of the Turnpike. The C-D road improvements may be extended from the Turnpike Service Area to a proposed interchange with U.S. Route 301 as part of the ongoing U.S. Route 301 improvement project. Improvements to the mainline at the Maryland/Delaware line and a selected U.S. Route 301 interchange are not anticipated to accommodate 2010 design year traffic volumes.

The improvements proposed through the Churchmans Marsh area consist of the addition of one lane to the existing four lanes in each direction on the Turnpike mainline, two 12-foot collector-distributor road lanes along the northbound roadway and three 12 foot collector-distributor road lanes along the southbound roadway. The C-D roads are to be located adjacent to the outside edge of the existing roadway. Inside shoulders on the C-D road will be 4 feet wide and outside shoulders will be 12 feet wide, with a 2-foot offset to a concrete safety barrier. The C-D roads

will be separated from the mainline by a double-faced safety concrete barrier located at the edge of the newly constructed shoulder. To accomplish these improvements and minimize wetland impacts, six design options through the Churchmans Marsh are being considered. These options include:

1. Normal 2:1 Embankment;
2. Modified 1:1 Embankment - Geomembrane Reinforced;
3. Pile Supported Reinforced Concrete Retaining Wall;
4. Sheet Pile Retaining Wall;
5. Proprietary Wall System; and
6. Bridge Structure.

Figure I-2 depicts the proposed improvements and C-D roads along the mainline Turnpike. Figure I-3 depicts typical sections of the existing and proposed mainline and C-D road improvements to the Turnpike, including the Churchmans Marsh area, while Figures I-4 through I-6 depict the six design options through the Churchmans Marsh.

D. REPORT FORMAT

The Technical Study contains a series of sections including appendices which provide supporting data to specific sections of the text.

Following this Section I, "Introduction," is Section II, "Summary of Findings," which provides a summary of the existing (baseline) conditions of the affected environment within the project area, anticipated construction and operational impacts and proposed mitigation measures.

Section III, "Data Sources and Methodology," which identifies and discusses the sources of information, data and the methodology used to identify and quantify the baseline conditions.

Section IV, "Description of the Affected Environment," provides a detailed description of the existing (baseline) conditions for all of the various historical and archaeological resources.

Section V, "Environmental Impacts and Mitigation," identifies and describes the environmental impacts associated with the construction and operation of the proposed improvements, the no-build alternative, and appropriate mitigation measures.

Finally, Sections VI, VII and VIII, respectively, provide a listing of references used in the preparation of the Technical Study, and agencies that were contacted for information and data, and a listing of the individuals who were responsible for the completion of the Technical Report.