

APPENDIX N

CSDE

Mercer County Route 634 (Parkway Avenue), Scotch Road (CR 611) to
Pennington Road (NJ 31) MP 2.20 – MP 4.40

Safety Concept Development Study

Summary of Controlling Substandard Design Elements Memorandum



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I. Introduction

The New Jersey Department of Transportation – Division of Project Management (NJDOT-DPM) has engaged Michael Baker International, Inc. (Michael Baker) to perform a Safety Concept Development Study for Parkway Avenue (CR 634) from Scotch Road (CR 611) to Pennington Road (NJ 31) (MP 2.20 to MP 4.40) in Ewing Township, and the City of Trenton, Mercer County.

Project Study Area

This concept development study focuses on the Parkway Avenue (CR 634) corridor starting at Scotch Road (County Route 611) MP 2.20 in Ewing and ending at Pennington Road (Route 31) MP 4.40 along the border with Ewing and Trenton.

The location map of the study area is shown in Figure 1 – Study Area.

Purpose and Need

The overall goal of this project is to recommend, advance, and implement safety improvements along Parkway Avenue within the project limits. This Safety Concept Development (CD) Study will review and assess existing roadway conditions, identify opportunities and deficiencies, develop and evaluate improvement alternatives, and select a Preliminary Preferred Alternative to advance to design and construction.

The NJDOT identified Parkway Ave as one of the top two candidate locations for a road diet through a data-driven Pilot Program. As a result, this study was initiated through the Federal Highway Administration’s (FHWA) Highway Safety Improvement Program (HSIP). The goal of this program is to achieve a significant reduction in traffic fatalities and serious injuries, on public roadways through a data-driven, strategic approach to improving highway safety. This Safety CD Study will strive to maximize substantive safety along the Parkway Avenue corridor for all roadway users.

Parkway Avenue has numerous sidewalk obstructions, missing ADA curb ramps, faded or missing crosswalks, no bike lanes and lack of bus stop amenities. A Pedestrian Road Safety Audit was conducted on November 9, 2017 to identify deficiencies and areas for safety improvements. There is also a need for geometric, traffic signal and safety improvements that will reduce crashes along the corridor. The study will include an evaluation of traffic calming measures, Complete Streets, pedestrian scale lighting and mid-block crossing locations.

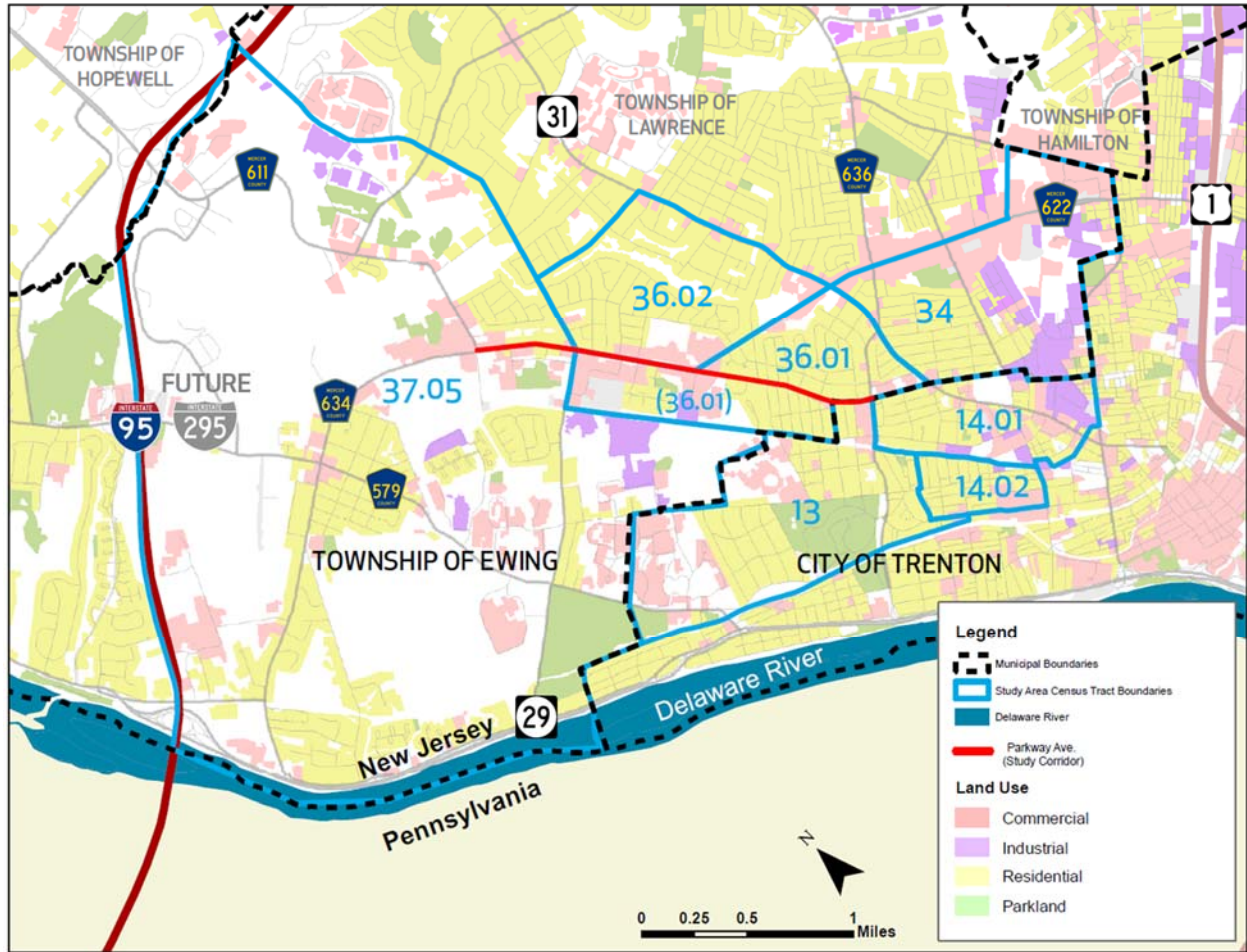


Figure 1 – Study Area

II. Existing Data

An investigation to identify substandard design elements was conducted for Parkway Avenue (CR 634) from Scotch Road (CR 611) to Pennington Road (NJ 31) from MP 2.20 to MP 4.40 in Ewing Township, and the City of Trenton, Mercer County.

Parkway Avenue is classified as Urban Minor Arterial with posted speeds varying between 30 mph to 40 mph. The design speed is typically assumed to be posted speed plus 5 mph.

Controlling Substandard Design Elements

The assessment of the study area identified existing substandard design elements based on the following references:

- NJDOT Straight Line Diagram (SLD), May 2011
- NJDOT Design Exception Manual, 2012
- NJDOT Roadway Design Manual, 2015
- AASHTO A Policy on Geometric Design of Highways and Streets 2011, 6th edition
- FHWA Achieving Multimodal Networks: Applying Design Flexibility and Reducing Conflicts, 2016

The following as-built plans were reviewed:

- Plans of Proposed Resurfacing of Parkway Ave. from Parkside Ave. to Olden Ave., January 7, 1982, City of Trenton and Township of Ewing.
- Proposed Resurfacing of Parkway Ave. from North Olden Ave. to Lower Ferry Rd., June 3, 1980, Ewing Township.
- Plans of Proposed Resurfacing of Parkway Ave. (Rte.634) from STA. 34+40 to STA. 66+25, Township of Ewing.

The identification of the existing Controlling Substandard Design Elements (CSDEs) was limited to the availability of as-built plans and field information. Further review of CSDEs is required during the design phase when detailed survey and mapping will become available.

The following criteria were used to evaluate the existing design elements within the project limits:

- Classification – Urban Minor Arterial
- Posted Speed – Varies between 30 mph and 40 mph (from NJDOT SLD 2011)
- Design Speed – Varies between 35 mph and 45 mph
- Annual Daily Traffic (ADT, 2012) – Varies between 5,667 and 19,161 depending on location (from NJDOT SLD 2011)
- Median – None
- Terrain – Flat

Within the project limits, the following CSDEs were identified:

- Minimum Radius of Curve
- Lane Width
- Shoulder Width

Reasonable assurance of design exception will be requested if the CSDEs cannot be eliminated with the proposed improvements. The location of the CSDEs are described in the following sections.

Minimum Radius of Curve

Per NJDOT Roadway Design Manual Table 4-5, there is one location where the existing radius of curve is less than the minimum value for the design speed as shown in Table 1 below.

Table 1 – Minimum Radius of Curve

Location Number	Location and Direction (Station/Milepost)	Radius (feet) Exist.	Radius (feet) Standard	Design Speed (mph)	Safe Speed (mph)	Posted Speed
1	Parkway Ave EB & WB Sta. 02+84.54 to 03+82.91 (MP 3.86)	474.30	711	45	39	40

Lane Width

Per NJDOT Roadway Design Manual Section 5.3 and Figure 5-B, there is one location where the existing lane widths are less than the minimum value for the design speed as shown in Table 3 below.

Table 3 – Lane Width (Through and Auxiliary)

Location Number	Location and Direction (Milepost)	Existing Width (feet)	Standard Width (feet)
2	N Olden Avenue to Parkside Avenue (MP 3.25 to MP 4.11)	11	12

Shoulder Width

Within the project limits, shoulders do not exist along Parkway Ave. Per NJDOT Roadway Design Manual Section 5.4.2 and Figure 5-B, shoulder width shall be 8 feet absolute minimum.

III. Conclusion and Recommendation

As demonstrated in the previous section, based on available as-built plans and field information, there are existing conditions within the Parkway Avenue project limits where the existing roadway does not meet NJDOT design standards. Although the scope of this study is to develop alternatives to address the purpose and need, the identified substandard design elements should be addressed if impacts (to right of way, access, drainage, the environment, etc.) are anticipated to be minimal. Substandard design element mitigation measures which would create significant impacts will not be recommended. Additionally, the NJDOT Complete Streets Design Guide allows for a flexible approach to design based off the FHWA guidance document “Achieving Multimodal Networks: Applying Design Flexibility and Reducing Conflicts” which focuses on the need and opportunities for design flexibility. As some of the alternatives considered do not address the identified substandard design elements (e.g. retain 11’ lanes, reduce a lane but add in a bicycle lane instead of shoulders) in order to accommodate multi-modal improvements, guidance from this manual is appropriate and relevant.

Additionally, the alternatives should include potential crash mitigation measures if impacts are not significant.

A reasonable assurance of design exception approval will be obtained for substandard design elements not being addressed as part of this concept development study.

Due to the limited availability and absence of information from the as-built plans obtained, it is recommended that the following CSDEs be investigated during the design phase when survey mapping becomes available:

- Stopping Sight Distance (vertical)
- Superelevation
- Grades
- Cross slope