

# MEMORANDUM

**DATE:** 5/2/2019

**SUBJECT:** Kenwood Road & Sycamore Plaza U-Turns (PART 2)

**PREPARED BY:** TEC Engineering, Inc.

**PREPARED FOR:** Sycamore Township

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TEC Engineering, Inc. was retained by Sycamore Township to analyze the implementation of a U-turn movement for the southbound direction at the intersection of Kenwood Road and Sycamore Plaza. The purpose of this study is to analyze the intersection capacity with respect to the U-turn, in addition to the impacts to vehicle safety, pedestrian safety, any necessary improvements for a fully functioning U-turn movement at the intersection.

In the first portion of the U-Turn analysis, TEC used intersection video provided by JEP Consulting, in addition to turning movement counts from those videos to analyze capacity analysis and safety impacts; those findings were summarized in a memo submitted on 1/24/2019. This memo details the proposed improvements to the intersection for implementation of a southbound U-turn.

## Existing Conditions

Currently, a median separates northbound and southbound Kenwood Road between this intersection and the intersection of Kenwood Road and Montgomery Road. This median prevents vehicles on the southbound side of Kenwood Road from accessing businesses on the northbound side of Kenwood Road and vice versa. The median was installed as an access management safety measure and has been effective in significantly reducing crashes on this segment of Kenwood Road. It does, however, force southbound vehicles to turn around to access the businesses on the east side of Kenwood Road.

The first point at which vehicles can turn around on Kenwood Road is at Sycamore Plaza. The intersection is signed to prohibit U-turns which forces vehicles to make either a left or right turn and then complete a U-turn to in order to legally reverse course and proceed north on Kenwood Road.

Surrounding the intersection, the pavement, pavement markings, signs, and traffic signals are all in above average condition and clearly visible. The curb along Kenwood Road on the northeast corner of the intersection has clearly visible tire scuff marks, likely from southbound U-turn vehicles, based on the angle of the markings.

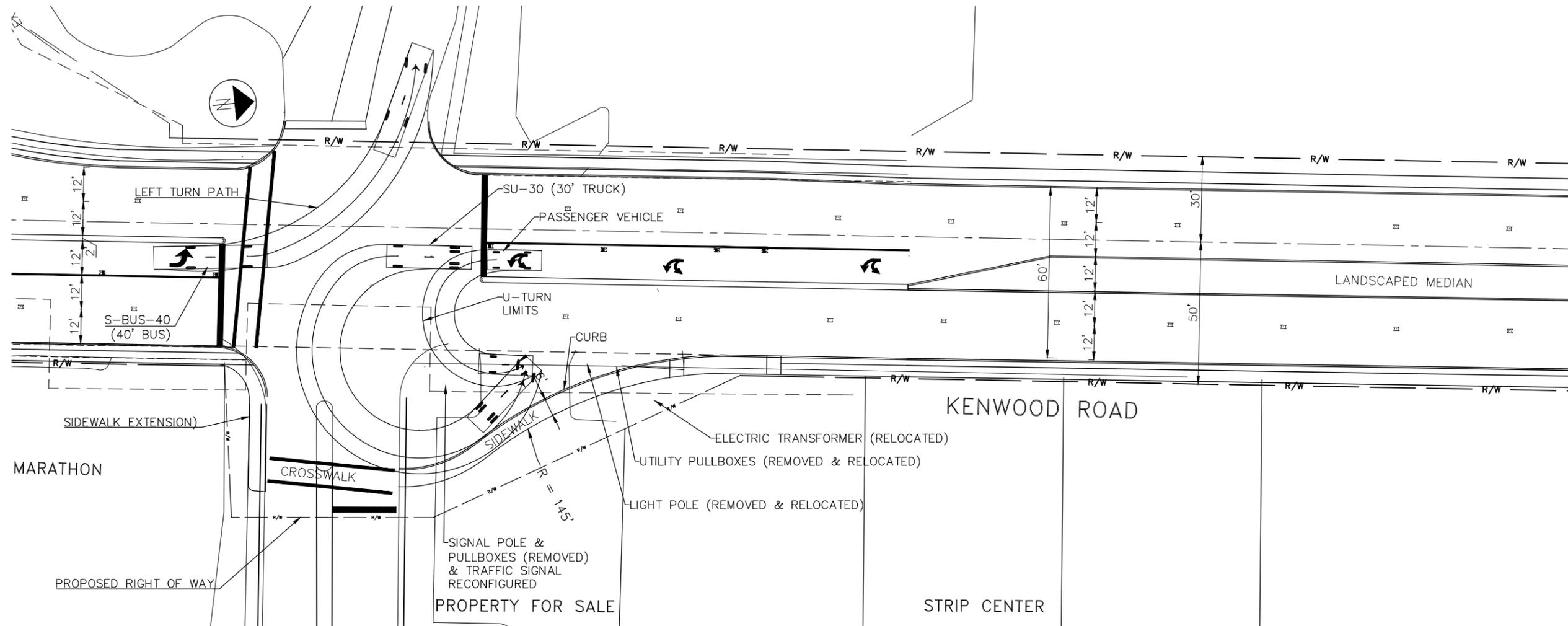


To build the U-turn bump-out as shown in the drawing, the east leg crosswalk and front of curb along Kenwood Road's east side would need moved back 40'. Tapering this bump-out back to the current Kenwood Road front of curb would require right-of-way from 7292 Kenwood Road and also from the Kenwood Plaza. Utilities would need to be relocated and so would traffic signal equipment on the current northeastern corner of the intersection. Pavement markings for new arrows and dotted lines for turning paths through the middle of the intersection would need installed to make sure the turning movements of northbound and southbound vehicles do not overlap.

## Conclusion

The first portion of this U-turn analysis showed that 32 vehicles attempted to make the southbound U-turn and 2/3 of those vehicles were unable to do so without contacting the curb. It also concluded that from a signal phasing perspective, the movement should be a protected only movement. In order to safely accommodate all passenger vehicles for the U-turn, preliminary engineering was completed to design a bump-out, large enough to accommodate an F-550 Crew Cab pickup truck. To provide enough space for a bump-out design, right-of-way would be required from 7292 Kenwood Road and from Kenwood Plaza. So much property would be required of 7292 Kenwood Road, that the whole property would need to be purchased. As part of the design and construction, the sidewalk, traffic signal equipment, and Duke Energy equipment would all have to be relocated.

Previous cost estimates done in 2013 to complete the necessary work totaled over 1 Million dollars. Most of the cost of the roadway improvements are tied to property and right-of-way purchase needed for the U-turn bump-out.



DESIGNED  
KLL  
CHECKED  
BMB

KENWOOD RD U-TURN AT SYCAMORE PLAZA DRIVE  
PRELIMINARY ENGINEERING