

## TECHNICAL MEMORANDUM

**Date:** April 15, 2021

**To:** David De Angelis  
Village of Elm Grove

**From:** Tammi Czewski, P.E., PTOE and John Bieberitz, P.E., PTOE  
Traffic Analysis & Design, Inc.

**Subject:** **Review of the Center Left Turn Lane Option for Watertown Plank Road  
Elm Grove, WI**

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TADI reviewed the schematic for the two-way left turn lane option for Watertown Plank Road prepared by Ayres Associates. The plan (attached) shows the addition of a center left turn lane on Watertown Plank Road between the School Sisters of Notre Dame (SSND) east driveway and Crescent Drive. The center left turn lane would be restriped over the existing pavement area which is about 33 feet wide (excluding curb), creating eastbound, westbound and center lane widths of about 11 feet each.

Properly designed left turn lanes along roadways typically provide for improved traffic operation and safety since slowing and stopped left-turn movements are removed from the through lane traffic flow. For the two-way left turn lane option shown for Watertown Plank Road, however, the additional lane is not expected to result in a benefit to either operations or safety to the roadway system due to the following:

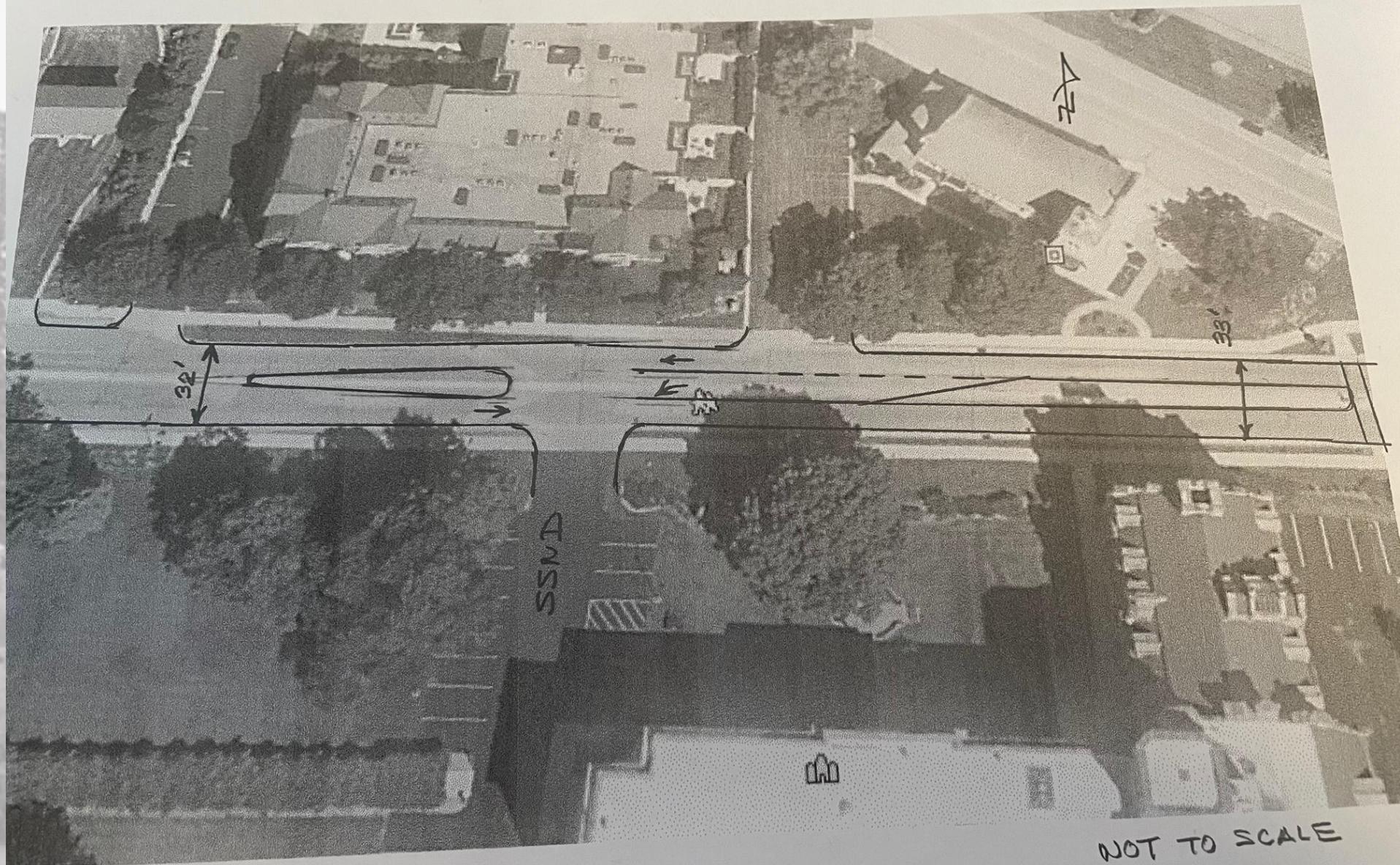
- Based on the evaluation of the Watertown Plank Road intersections with the SSND east driveway, Juneau Boulevard, and Crescent Drive with the additional traffic volumes from the proposed SSND redevelopment, acceptable traffic operations are expected during the peak hours with the existing two-lane cross-section (no left turn lanes) along Watertown Plank Road. Even with the redevelopment of the SSND site, left turn volumes at the SSND east driveway, Juneau Boulevard, and Crescent Drive are expected to be relatively low during the peak hours. In summary, the low number of left turning volumes do not justify the need for separate left turn lanes.
- Based on a review of the crash history for Watertown Plank Road, no crash patterns emerged related to left-turn movements in the existing shared through/left-turn

lanes. The crash history does not support the need for separate left turn lanes through this area.

- Adding in a center lane on Watertown Plank Road would result in narrowed lanes of only 11 feet. A typical center two-way left turn lane in an urban area is typically 14 to 16 feet wide. In this case, the middle left turn lane would only be 11 feet wide, which causes concern for left turning operations. As lane width is a factor in lane capacity, the narrowed lanes could result in reduced capacity through the roadway segment with the center left turn lane.
- The driveway to Watertown Plank Road for the office building just north of the SSND building is offset from the SSND east driveway, resulting in only about 40 feet of storage for left turns if a two-way center left turn lane were striped on Watertown Plank Road. This spacing is inadequate to simultaneously store both a westbound left turn vehicle at the SSND east driveway and an eastbound left turn vehicle at the office driveway. The spacing may also result in safety issues as left turn vehicles for both driveways attempt to enter/drive-through the same space.
- The transition taper between the through lanes in the segment with the center left turn lane to the through lanes in the existing two-lane cross-section on Watertown Plank Road is substandard and is considered inadequate for the design speed of the roadway.

Based on the factors listed above, it is not recommended to restripe Watertown Plank Road between the SSND east driveway and Crescent Drive with a center left-turn lane.

# Two-Way Left Turn Lane



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