



Strand Associates, Inc.[®]
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April 27, 2023

Mr. Brad Marquardt, P.E., Public Works Director
City of Whitewater
312 West Whitewater Street
Whitewater, WI 53190

Re: Review of Proposed Starbucks Traffic Impact
City of Whitewater, Wisconsin (City)

Dear Mr. Marquardt:

Strand Associates, Inc.[®] (Strand) reviewed the traffic impacts of the Starbucks that is proposed to replace the Whitewater Quick Lube (Quick Lube) located at an outlot of Walmart Supercenter on Main Street. This evaluation included a review of Main Street roadway volumes and capacity, an evaluation of anticipated driveway volumes for both Walmart driveways, and potential traffic signal warrant triggers that could require follow-up investigation.

There is an additional redevelopment proposed for the neighboring Hawk Bowl property. The preliminary site plans show that redevelopment using the three existing access points on that property and there is no proposed connection to the Walmart parking lot. No consideration of volumes from that redevelopment was included with this evaluation as it will use separate access points.

Main Street Daily Traffic Evaluation

Average annual daily traffic (AADT) volumes were reviewed for the segment of Main Street in front of Walmart on the Wisconsin Department of Transportation (WisDOT) Traffic Count Map interactive mapping Web site. Data was available back through 2006 with the most recent AADT value of 8,700 vehicles per day (vpd) that was counted in 2022. The data shows a roadway that has fluctuated in volume from a low of 5,500 to 9,400 vpd over the past 16 years. The general growth trend taken for the 16 years shows an annual growth rate of slightly more than 2 percent per year.

Main Street is a four-lane undivided roadway through this area. According to the WisDOT Facilities Development Manual, the range of capacity for a four-lane undivided roadway is 17,500 to 47,000 vpd. The exact capacity is influenced by items such as access density and number of left turns. Given the use of Main Street through this area, it was assumed that the capacity is 20,000 vpd. Even the highest AADT of 9,400 vpd from 2018 is only approximately one-half the capacity of Main Street in this area. Exhibit 1 shows the Main Street AADT volumes from 2006 through 2018.

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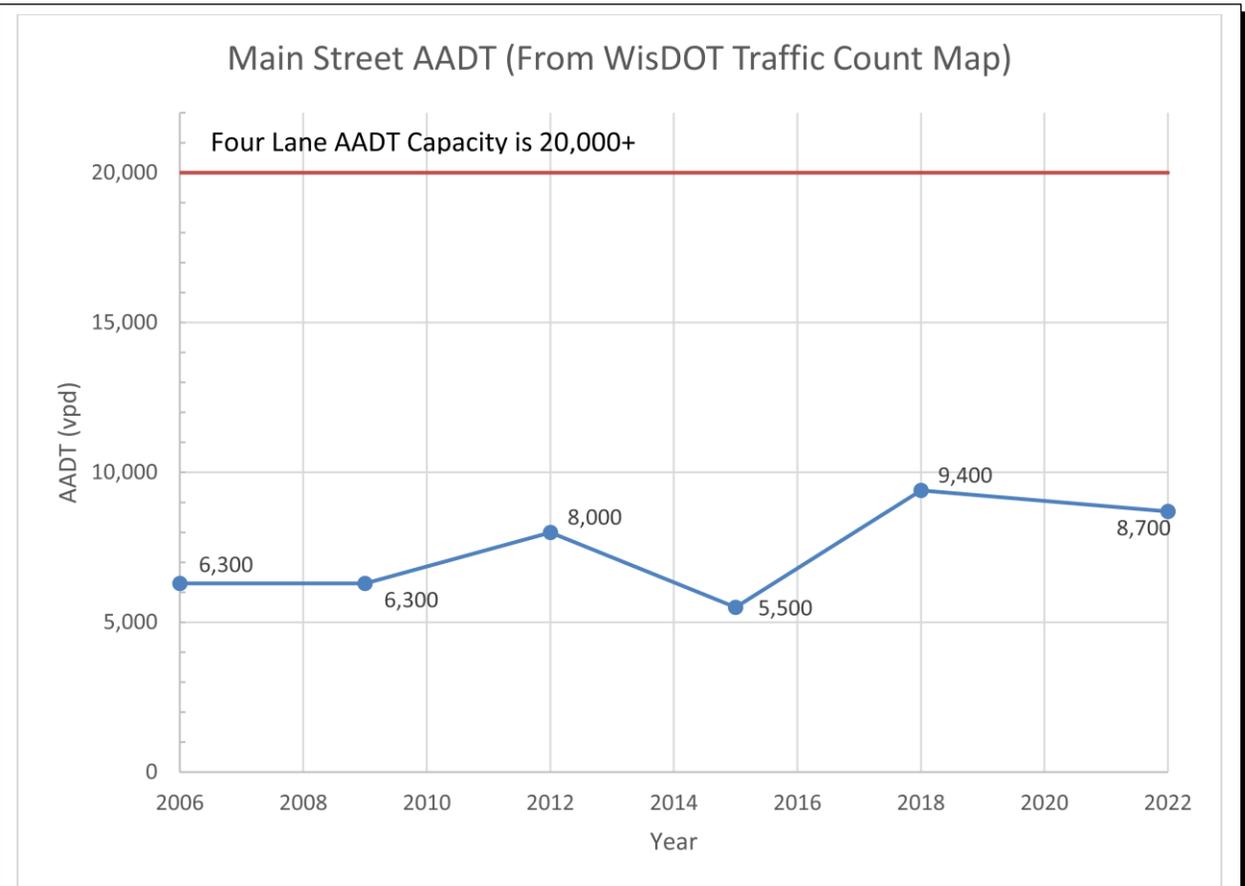


Exhibit 1 Main Street AADT History

ANTICIPATED DRIVEWAY VOLUMES

Strand performed a trip generation using the Institute of Transportation Engineers’ Trip Generation Web-based application based on the *Trip Generation Manual, 11th Edition* to determine the volumes generated by Walmart, the existing Quick Lube, and the proposed Starbucks. Two driveway scenarios were considered. The first is the existing traffic with Walmart and Quick Lube. The second scenario is with Walmart and the proposed Starbucks. Strand also created a comparison summary to show the increase in traffic on the eastern Walmart driveway when Starbucks replaces Quick Lube. The Walmart traffic was assigned to the driveways with 30 percent of the traffic using the west driveway and 70 percent using the east driveway following existing traffic patterns. All traffic from Quick Lube or Starbucks was assigned to the east driveway.

Exhibit 2 shows the driveway volumes in the existing condition.

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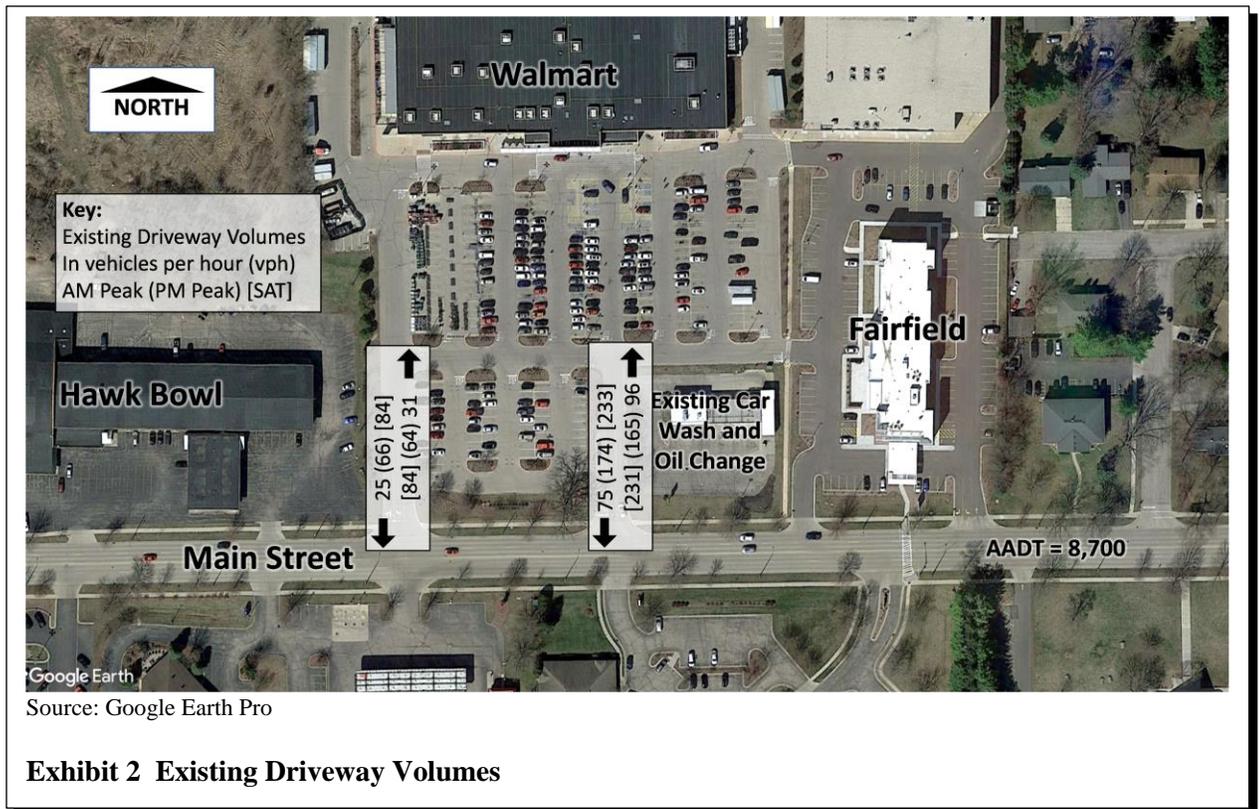


Exhibit 3 shows the driveway volumes with the proposed Starbucks.

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Exhibit 4 shows the change in driveway volumes with Starbucks replacing Quick Lube.

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Traffic increases from Starbucks are minimal with the largest volume increases occurring during the AM peak hour as this is typically the busiest time for them. The volume increases that are observed in the field may be slightly lower for the east driveway. Some existing Walmart traffic may shift to the west driveway when Starbucks is busiest to find shorter wait times at the stop signs, resulting in more modest increases at both driveways.

The proposed Starbucks is compatible with the rest of the site as the busy hours for Starbucks are typically different from Walmart. Starbucks is busiest during the AM peak hours when Walmart use and traffic will be at its lowest. Also, during the PM peak hour when Walmart is experiencing heavier traffic, Starbucks is experiencing lower traffic volumes. Saturdays is when the site will likely be busiest as both land uses will likely see increased traffic volume during the late morning hours. It is on a Saturday when it is most likely that some of the Walmart traffic will shift to the western driveway.

Traffic Signal Warrant Triggers

After review of the potential traffic volumes for the site it does not appear that the intersection will satisfy the 8- or 4-hour traffic signal warrants. When Starbucks first opens, there will likely be additional congestion on the eastern driveway as traffic volumes for new stores is typically high at opening. As the overall Walmart and Starbucks site has two driveways, traffic will find an equilibrium between the two driveways over time.

If pronounced delay occurs on a regular basis after the initial opening demand has passed and traffic has had time to adjust, then it may be necessary to conduct an intersection traffic count to evaluate the hourly

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turning movement volumes throughout the day. If traffic signal warrant thresholds were met at that time, then discussions on potential traffic control improvements could happen.

Conclusion

The proposed Starbucks that will replace the existing Quick Lube on an outlot to Walmart will result in traffic volume increases on the driveways to the site. The eastern driveway is likely to be most impacted, but the increases are anticipated to be minor. The daily travel patterns for a Starbucks are well suited to a Walmart as they tend to be busier at different times of the day. The section of Main Street that this site is located on has substantial excess capacity to support the redevelopment of the area.

Given the results of this analysis it appears that the proposed Starbucks is a good fit for this site.

Please call 608-251-4843 with any questions.

Sincerely,

STRAND ASSOCIATES, INC.®

A handwritten signature in black ink, appearing to read "Kyle Henderson", with a long horizontal flourish extending to the right.

Kyle R. Henderson, P.E.