

LEWIS AVENUE COMMERCIAL DEVELOPMENT
TRAFFIC IMPACT STUDY

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IN

BEDFORD TOWNSHIP, MI

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PREPARED FOR:

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LEWIS AVENUE COMMERCIAL DEVELOPMENT TRAFFIC IMPACT STUDY

6.0 SUMMARY AND CONCLUSIONS

6.1 Summary

The purpose of this study is to evaluate traffic impacts that would result from the proposed retail development in Bedford Township, Michigan. The proposed commercial development is located at the northwest corner of the intersection of Sterns Road and Lewis Avenue.

The proposed project involves a discount superstore with seven (7) outlots. Although there are currently no tenant commitments, the outlots are expected to include fast food and sit down restaurants, a bank with drive-thru, specialty retail, and general office building. Four (4) site drives are proposed to provide access to the site with one (1) drive added on Sterns Road and three (3) drives being added on Lewis Avenue. Drive 2 will provide access exclusively to outlot # 3. Drives 1 (on Sterns Road) and 3 (on Lewis Avenue) will be evaluated in this study for signalization.

The project study area includes the adjacent roadway network of Sterns Road and Lewis Avenue. The study area is comprised of four (4) signalized intersections of Sterns & Lewis, Smith & Lewis, Dean & Lewis and Sterns & Jackman. The intersection of Sterns Road and Lewis Avenue is the most critical in the study area due to heavy traffic volumes and proximity to the proposed site. The intersections of Sterns & Lewis and Smith & Lewis are 4-phased signalized intersections equipped with detection. This study was conducted consistent with the requirements of the Monroe County Road Commission (MCRC).

6.2 Conclusions

It is concluded that several roadway and traffic improvements are required to mitigate the traffic impacts due to the proposed development. These proposed improvements are based on engineering analyses to mitigate no build to build traffic impacts to the roadway network.

Sterns Road & Lewis Avenue Intersection Improvements

For 2009, the capacity analyses indicate that there is a minimal impact at the intersection of Sterns & Lewis for the build condition in both weekday and weekend peak hours. For the 2029 operational analyses, the intersection noted a degrade in weekday operations to LOS F (for both no build and build). The 2029 weekend noted better performance with LOS C (no build) and LOS D (build). It should be noted that the 2029 analyses include a substantial background traffic increase.

To address the long range capacity operations of this intersection in consideration of potential future traffic increase, additional lanes will likely be needed by 2029. The preliminary capacity analyses conducted in that effect revealed that the following intersection advancements will improve the intersection operations to the LOS C:

- Addition of a right turn lanes for all approaches.
- Addition of a through lanes for eastbound and westbound Sterns Road

These improvements should be considered as part of the County and Township long range planning and are not a project mitigation due to the magnitude of the improvement and the larger influence of the background traffic increases that are forcing the improvements.

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Smith Road & Lewis Avenue

The capacity analyses indicate that there are negligible impacts at the intersection of Smith & Lewis for 2009 and 2029 build conditions in both weekday and weekend peak hours. For the 2029 build weekend peak hour condition, the LOS is dropped one level to D from C in the no build condition. However, this involved a borderline condition from "lower LOS C" to a "high LOS D". The increase in delay from the no build to the build condition is minimal at 8 seconds. Also, it was noted that, for 2029 build weekday peak hour condition, the LOS F remains the same for the no build as well as the build condition. The delay associated with the LOS F increases by less than 20% from the no build to the build condition. Hence, it can be asserted that very low impacts occur at this intersection due the proposed development. Signal timing revisions might be considered to address changes in traffic demands.

Dean Road & Lewis Avenue

The capacity analyses indicate that there is negligible traffic impacts at the intersection of Dean & Lewis for 2009 and 2029 build condition in the weekday peak hour. For 2009 weekend peak hour in build condition, the LOS is dropped from B in the no build condition to C in the build condition. However, LOS C with the delay of 29 seconds represents satisfactory operations. For the 2029 build weekend peak hour condition, the LOS is dropped one level to E from D in no build condition. However, the increase in delay from the no build to the build condition is less than 7 seconds, which is a minor increase in delay. Also, it was noted that, for 2029 build weekday peak hour condition, the LOS F remains the same for the no build as well as the build condition. The delay associated with the LOS F increases by less than 20% from no build to build condition. Hence, it can be asserted that very low impacts occur at this intersection due the proposed development. Signal timing revisions might be considered to address changes in traffic demands.

Sterns Road & Jackman Road

Analyses indicate that there is negligible traffic impact at the intersection of Sterns & Jackman due to the proposed development for the years 2009 as well as 2029. There were no changes in LOS between the no build and the build levels of service. The 2029 weekend analysis did identify a LOS D (for both no build and build). For a 2029 analysis, this LOS D would be considered a marginal condition that would not likely justify roadway improvements. Hence, no improvements to the intersections are suggested.

Sterns Road & Site Drive 1

To provide the satisfactory operations at the intersection of Sterns & Site Drive 1, the following intersection provisions are recommended:

- Signalization
- Addition of an eastbound left turn lane and a westbound right turn lane to Sterns Road at the site drive
- Provide two exit lanes (left and right turn lanes) from the site drive at Sterns Road

Evaluation of this site drive under unsignalized condition noted LOS F for both weekday and weekend 2009 traffic. Additionally, the evaluation of the *MMUTCD* signal warrants identified that warrant is met. The addition of the left turn lane for this site drive may precipitate the need to widen Sterns Road to three lanes from Site Drive 1 to Lewis Avenue. This is because the transition tapers from the left turn lane at Site Drive 1 would overlap the transition tapers for the existing intersection widening at Lewis Avenue. Thus, there is insufficient length to reduce Sterns Road

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back to two lanes prior to the existing widening back to three lanes at Lewis Avenue. The signal spacing on Sterns Road between the proposed site drive and Lewis Avenue is approximately 800 feet. This spacing is closer than desirable spacing, however, adequate for the vehicle queues.

Lewis Avenue & Site Drive 3

To provide the satisfactory operations at the intersections of Lewis & Site Drives 3 the following intersection provisions are recommended:

- Signalization
- Addition of a northbound left turn lane and a southbound right turn lane on Lewis at Site Drive 3,
- Provide two exit lanes (left and right turn lanes) from the site drive

Evaluation of this site drive under unsignalized condition noted LOS F for both weekday and weekend 2009 traffic. Additionally, the evaluation of the *MMUTCD* signal warrants identified that warrants was met. Thus, to address the intersection access needs a traffic signal is recommended with the lane addition. Signal spacing on Lewis Avenue between the existing Sterns Road signal and the proposed Site Drive 3 signal is approximately 1,100 feet. IT should be noted that from site drive south to Sterns Road, Lewis Avenue is five (5) lanes. North of Site Drive 3 Lewis Avenue currently narrows to two (2) lanes only to widen to three (3) lanes again at the community college approximately 700 feet north of the proposed Site Drive 3. The addition of the northbound Lewis Avenue left turn lane at Site Drive 3 may precipitate the need to carry the three lane widening northerly to match the existing three (3) lane section at the community college. As with the left turn lane addition on Sterns Road at Site Drive 1, this is an issue of roadway transitions overlaps and maintaining roadway continuity.

Lewis Avenue & Site Drive 2, and 4 Roadway Geometrics

The intersection of Lewis & Site Drive 2 operates at satisfactory LOS. Hence, no roadway improvements are required at that intersection.

Although the peak hour operations shown unsatisfactory LOS at the intersection of Lewis and Site Drive 4, the traffic on Site Drive 4 is anticipated to shift to Site Drive 3, which is warranted for signalization. Also, this represents the worst hour of traffic operations in a day. Hence, no roadway improvements are required at that intersection.