

## **DEFICIENCY ANALYSIS**

As explained in the previous chapter, travel demand modeling of the urban transportation system helps to identify deficiencies in the network capacity as well as where future congestion is likely to occur. The model, which takes into account local traffic and socioeconomic data, aids decision makers in determining what projects, should take place in the area in a given period of time. As a result of the travel demand model, deficient or congested portions of the TwinCATS network have been identified for the base year (2006), as well as the horizon year (2035).

Road segments or corridors are identified as deficient when the projected vehicle volumes approach or exceed the design capacity of the road. Highly congested road segments are those where the volume-to-capacity ratio exceeds 1.2 at a level of service (LOS) D (see Appendix C for additional discussion on LOS). Moderately congested road segments are those where the volume-to-capacity ratio is between 1.0 and 1.2 at LOS D. Segments where the volume-to-capacity ratio is between 0.8 and 1.0 at LOS D are considered to be approaching capacity, and are considered to have low levels of congestion.

Overall, the most recent travel demand model revealed that the TwinCATS road system should sufficiently handle the projected traffic capacities over the next twenty years. There were no highly congested road segments identified by the model. Moderately congested road segments and segments with low congestion are discussed in the section that follows. It should be noted that this model does not assume the completion of the US 31 connection to I-94 at the I-94BL interchange in Benton Harbor.

Each deficiency identified by the model was mapped and discussed by a subcommittee of the TAC at a meeting held on Monday, August 18 at 1:30 p.m. Subcommittee members were asked to study the deficiencies in their communities in the base year as well as the horizon year and to determine whether or not they agreed that the road segment was deficient and if there were any deficiencies not identified by the model. Members were then asked to determine the reasons for the deficiencies and propose possible solutions. Results were presented to the TAC and Policy Committees at their regular September meetings.

It should be noted that the traffic volumes used in the current model are 24-hour averages and do not account for a.m. or p.m. peak travel times. This data will be collected for use in the next travel demand model. See Appendix D for tables with volume-to-capacity ratios for the base and horizon years.

**TwinCATS Deficiencies**

Because of the limited number of deficiencies in the area, the discussion below in **Table 3.0** combines the 2006 and 2035 segment.

| <b>Table 3.0<br/>Location of Deficiency</b>  | <b>Most Likely Cause(s)</b>  | <b>Identified Solution(s)</b>   |
|--|--|---|
| <b>Red Arrow Highway (I-94 BL) – Glenlord to Maiden Lane</b>                                 | Lanes have been reduced from 4 to 3, tourist traffic uses this route, and there has been increased residential development along the lake.   | The lane reductions are preferred by the community, so there are no plans to make changes to this route at this time.   |
| <b>Red Arrow Highway – Livingston to Cook Power Plant Rd.</b>                                | Committee members do not feel that this segment is an issue of concern. The congestion may be a result of a signal by the plant or as a result of an anomaly in the SE data.   | There are no plans to improve this segment.   |
| <b>Lakeshore Drive (I-94 BL) – Maiden to Hilltop, Cleveland to Lakeview, Forres to Hatch</b> | Lanes have been reduced from 4 to 3, and there is a significant amount of tourist traffic here. The lane reduction has made commuting more difficult, since passing is no longer allowed and traffic can move slowly. In addition, there is peak a.m. and p.m. traffic issues due to the nearby high school. | Currently, signals are timed and right-of-way (ROW) is maximized. Most community members seem to prefer the lane reduction. Rear end collisions have decreased and anecdotal evidence indicates that traffic is calmer. The city prefers to explore non-motorized options on this route prior to and additional vehicular traffic improvements. Access management solutions should be investigated, and the area should be monitored closely as Harbor Shores develops. |
| <b>Napier – M-63 to Langley</b>  | Signals are optimized on Napier, but the optimization does not include the signal on Niles. The segment is near the hospital but is residential, and there are a significant number of left turns and rear end collisions.   | A dedicated right turn lane on Napier, constructed in 2008 to allow traffic to turn into the hospital, should alleviate some congestion issues. Additionally, the City of St. Joseph feels that creating a 3 lane roadway with a center turn lane could be a good solution, but there are electric lines, ROW issues, and mature trees that could present obstacles. The city plans to study the corridor to determine the best solution.                               |
| <b>M-139 – Hinchman to M-63</b>  | This is a primary route to travel to Berrien Springs and Niles from the St. Joseph area and vice versa.  | Since the completion of US-31 to Napier, this route is less problematic than in the past. It is anticipated that congestion will lessen even more when the US-31 connection to I-94 is completed. Therefore, there are currently no plans to alter this route.  |

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|--|---|---|
| <p><b>M-63 – Hollywood Rd. to Hilltop</b></p>      | <p>Existing and planned development on Hollywood Road and Palladium Drive attracts a significant amount of traffic to this area. There are intersection issues at the signal by Hollywood. Also, the bridge over I-94 is only 2 lanes, which causes traffic backups to Lincoln, especially during a.m. and p.m. peaks. Signal work has improved the situation, but there are still delays. Furthermore, the bridge over Hickory Creek is only 2 lanes, and there is a hill that would require ROW acquisition and a retaining wall.</p> | <p>There are limitations to improving the congestion in this area, primarily due to the two bridges. However, given the townships' plans to further develop this area, the segment near Hollywood and the bridge over I-94 should be carefully monitored and access management strategies should be employed.</p>   |
| <p><b>Cleveland – Nelson to Hawthorne</b></p>      | <p>Cleveland is likely used to travel northbound to the hospital. Also, it is suspected that drivers use Cleveland as an alternative to Lakeshore Dr.</p>   | <p>The congestion level is not perceived to be significant, and there are no improvement plans for Cleveland at this time.</p>  |
| <p><b>Main St. (I-94 BL) – Paw Paw to Fair</b></p> | <p>The road narrows from 5 lanes to 3 at this point and then widens again to 5 lanes.</p>   | <p>During the summer of 2009, Main St. from M-139/Fair to the St. Joseph River will be reconstructed. Driving lanes will be reduced from 5 to 3 for the extent of the project. The decision to reduce the lanes was made, in part, as a result of a public visioning process in which residents and business owners expressed support for the idea. Congestion levels will be monitored following the reconstruction of the BL.</p> |
| <p><b>I-94 – M-63 to M-139</b></p>                 | <p>This portion of I-94 is frequently used as a local route to access retail locations on M-139. I-94 is one of only a limited number of river crossings. Congestion identified on the M-63 interchange is a result of the signal.</p>  | <p>The segment is already 3 lanes in both directions, so there are no plans to improve the road at this time.</p>   |
| <p><b>I-94 at I-196</b></p>                        | <p>At this point, lanes drop from 3 to 2.</p>   | <p>The problem is being studied by MDOT. Widening I-94 to 3 lanes would be preferred, but funding to complete such a project during the years covered by this plan is lacking.</p>  |

**Future Analysis**

In the future, sufficient traffic data will be gathered to allow for an A.M. and P.M. peak analysis. In addition, the MPO may consider an application for State Planning and Research (SPR) funding to study intersections of concern, including but not limited to the Red Arrow and I-94 interchange (exit 23), and Hollywood and M-63.