

Traffic Report

Summary of Technical Memorandum

Purpose of and Need for Project: The purpose of this study is to identify potential alternatives that: support the safe and efficient movement of goods and people, and that cost effectively support the economic growth of the region and the state, by improving traffic operations within the study corridor. Several factors support the need for potential US-131 improvements within the study corridor, including improving US-131 highway operations, assuring sufficient capacity to accommodate future traffic growth, and improving roadway inefficiencies.

A Draft Environmental Impact Statement is being prepared to evaluate and compare a No-Build Alternative with transportation system management practices and Practical Alternatives (PA) for freeway or non-freeway construction. A traffic analysis exhibit showing all Practical Alternatives including existing US-131 and local roads is available in **Appendix E**.

Traffic Model Data and Forecasts: Traffic volumes (1997 AADT) required to perform this analysis were obtained from the MDOT Statewide and Urban Travel Analysis Section (SUTA) of the Bureau of Transportation Planning (BTP). To determine the base year (2003) volumes for this analysis, 1997 volumes were forecasted to year 2003 by the CTE/WSA Staff using a yearly growth rate of 1.4%. The 1.4% annual average growth rate was calculated by summing the total 1997 US-131 corridor traffic assignments from the MDOT Statewide model and then subtracting that number from the total US-131 2020 corridor No-Build traffic assignments from the MDOT Statewide model then dividing that number by 1997 total volume. The resulting number was then divided by 23 to get an annual growth rate $((2020 \text{ Total} - 1997 \text{ Total})/1997 \text{ Total})/23$. (Refer to Appendix A for all traffic data).

After the required traffic volume data was collected, year 2020 traffic projections were forecasted for each Practical Alternative (PA), utilizing MDOT's statewide model.

As part of the PA-5 amendment process, projected volumes for PA-1 through PA-4 were forecasted for year 2025 utilizing MDOT's statewide model. New 2025 traffic assignments were run for PA-5 and PA-5 MOD. After the initial results were reviewed and approved by the US-131 Steering Committee, a request was made to re-examine the results, because some members of the Steering Committee members felt that the PA-5 2025 forecasted traffic volumes were too high, and did not reflect reasonable traffic growth. CTE/WSA then utilized new network geometry information for the Indiana Toll Road, in consultation with SUTA and the US-131 Traffic Subcommittee to develop revised traffic assignment numbers for PA-5 and the No-Build Alternative. The resulting revised traffic assignments slightly lowered forecasted volumes in the corridor, leading to more reasonable and defensible results. As an added check, CTE/WSA re-ran all of the Build freeway alternatives to see if they were impacted by the No-Build network changes, and reviewed the results with SUTA. All segment forecasts were within 2,500 vehicles per day (vpd), and as a percent of the original forecasted volumes, were deemed thoroughly satisfactory by both the Traffic Subcommittee and the Steering Committee.

Roadway Level of Service Analysis - The Level of Service (LOS) Ratings for each Alternative (No-build, PA-1 thru PA-5 MOD) by segment were evaluated using the Highway Capacity Manual Software (HCS2000), which utilizes standard methodology described in the 2000 Highway Capacity Manual (HCM2000). Below are factors and assumptions used in the analysis:

*Peak Hour Factor = Rural = 0.88 Rural,
Urban Arterial = 0.92
Urban Freeway = 0.90*

Existing Peak Hour % of AADT = 10% from MDOT's 200 Highest Hour Report (the DHV (the 30th highest hour))

Future Peak Hour % of AADT = 9%

Roadway = 6 ft shoulders, 12ft lanes

Directional distribution factor, D = 0.55 Urban, 0.60 Rural

% Commercial in DHV = 10% (Constantine), 9% (Rest of Corridor)

% Recreational Vehicles = 2%

Existing Traffic Conditions: Existing traffic counts on US-131 range from 8,600 daily trips near the State Line to approximately 20,700 within the City of Three Rivers. Currently, roadway segments within the study area are operating at a LOS A, B, or C except for the section through the Village of Constantine, which operates at a LOS D. Contributing to existing and projected congestion along the US-131 corridor are high commercial truck volumes of approximately 13 % of the AADT on most segments of US-131 and 15% of the AADT within the village limits of Constantine. The commercial truck percentage of AADT within the Village of Constantine (15%) is greater than the statewide average of 9.5% for a rural two-lane trunkline. However, during the design hour the commercial vehicle percentage is 10% in the Village of Constantine and 9% elsewhere along US-131.

Currently each signalized and un-signalized intersection that was analyzed operates at an acceptable LOS B or better. However some of the minor roadway approaches operate at LOS F due to excessive delay experienced by vehicular traffic wishing to enter the US-131 traffic stream.

Crash Analysis: Between January 1, 2000 and December 31, 2002, the US-131 study corridor experienced a total of 490 crashes, including an estimated 114 crashes resulting in injury. This represents an 11% overall reduction in crashes, compared to the 548 total crashes in the study corridor during 1997-1999. During the period of 2000-2002, the study corridor experienced a total crash rate of 153.9 crashes per 100 Million Vehicle Miles of Travel (HMVMT) compared to a 1997-1999 crash rate of 303.7 crashes per HMVMT, resulting in a 49% crash rate reduction from 1997-1999 to 2000-2002. During the years 2000-2002, crash rates on US-131 between the northern study limit and M-60, and also between Millers Mill Road and Stears Road, exceeded both the 2002 statewide average crash rates and the 2002 MDOT Southwest Region average crash rates, for state trunkline roadways. **Figure 1.3** shows the rate of crash incidences by segment and facility type* within the corridor.

During 2000-2002, the analysis indicated that injury crash rates from the north study limits to Hoffman Road, and from M-60 to Michigan Avenue, exceeded both the 2002 statewide and the 2002 MDOT Southwest Region average crash rates for state trunkline roadways.

*The state database that compiles average crashes by facility type is no longer available. The average crashes within this region by facility type for 2000 - 2002 were derived based on the averages from 1997 - 1999 that were previously obtained from the database. The percent change in the overall crash rate from the 1997-1999 to 2000-2002 time periods were applied uniformly to the crashes for each facility type from 1997-1999 to arrive at the estimated 2000-2002 average crashes by facility type. These figures are estimates for planning purposes only, and are based on engineering judgment. They should be used only as a rough approximation.

Projected Traffic Conditions: Seven model runs were made for future year 2025, including six Build Alternatives and a No-Build Alternative. The assignment results indicate that traffic volumes for the freeway alternatives not including existing US-131 range from 20,700 to 25,600 for PA-1, 20,700 to 30,600 for PA-2, 18,300 to 27,100 for PA-3, and 17,100 to 24,000 for PA-4. The non-freeway alternatives show volumes ranging from 14,500 to 40,100 for PA-5, 14,400 to 39,800 for PA-5 Modified and 14,400 to 39,600 for the No-Build alternative in year 2025. The range of traffic volumes for the non-freeway alternatives are reflections of two-lane and four-lane roadway volumes.

Projected volumes indicate that roadway LOS will degrade to undesirable levels for some segments in the No-Build Alternative by year 2025. The projected 2025 LOS for each segment based on the existing cross-sections ranges from LOS B to LOS E under the No-Build Alternative. The area of heaviest congestion is expected for the segments of roadway between M-60 and Dickinson Road, which are projected to degrade to LOS E in 2025. The LOS for all Build-Alternatives (PA-1 thru PA-5 MOD) is within the acceptable range of LOS D or better.

In year 2025 all major signalized and un-signalized intersections will operate at an acceptable LOS B or better, except for the US-131 and Coon Hollow Road intersection, which will operate at LOS E, due to excessive delay experienced by vehicular traffic wishing to enter the US-131 traffic stream from Coon Hollow Road.