

THE SOUTHEASTERN INDIANA GATEWAY: US 50 Corridor Transportation and Land Use Plan

*Appendix D: Supplemental Information
- Section 2: Argosy Parkway To SR 28*



Prepared for:



Ohio • Kentucky • Indiana
Regional Council of
Governments

Prepared by:



M-E Companies, Inc.
635 Brookside Boulevard
Westerville, OH 43081
614-818-4900

With Contributing Team Members:
McKenna Associates, Inc.
ENGAGE Communications/Public Affairs, LLC
Land Strategies

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SUPPLEMENTAL INFORMATION - SECTION 2: ARGOSY PARKWAY TO SR 28

US 50 Gateway Study: Downtown Lawrenceburg

There is some concern about the area in downtown Lawrenceburg from Walnut Street/Stadium Lane to Main Street. The concern is with the use of a center median and limitation of left-hand turns in or out of business located along this section.

This section is comprised of five lanes of traffic of which there are two thru lanes and a two way left turn lane (TWLTL) and or dedicated left turn lanes at each intersection. There are three signalized intersections (Walnut/Stadium, Front Street, and Main Street) located along this section. Structures are located close to the edge of the roadway traveled lanes and there are numerous curb cuts. Traffic is very heavy with a large percentage of truck and recreational vehicles. Left turning vehicles find it very difficult to find gaps in the traffic to even allow left turn movements along US 50. The purpose of the US 50 project is to increase safety and increase capacity along this corridor.

There are several changes which will have to occur to help reduce accidents and increase arterial capacity throughout this section. The installation of a raised median will eliminate left turns in and or out of the multiply access points located along this section. The elimination of the left turns reduces the number of conflict points which therefore will reduce the overall accident rate. Also arterial capacity is reduced when vehicles turning left into a midblock drive use the left turn bays and prevents left turn vehicles waiting to turn at the signalized intersection. Intersection capacity will need to be increased in order to reduce delay.

If the raised median was not installed and shared driveways were constructed instead you would not experience a significant decrease in accidents and or an increase in capacity. Therefore the installation of the raised median is recommended.

According to recent literature and studies conducted by the Kentucky Transportation Center University. The implementation of median U-turns reduce crash rates as well as delay when placed on high volume arterials intersecting with low to moderate volume cross streets. The most efficient configuration is that of stop-controlled median U-turns. This has been shown to increase intersection capacity by 20 to 50 percent while decreasing the rate of crashes by up to 30 percent. Allowing U-turns at intersections is not advised when U-turn vehicles encounter with right-on-red vehicles from the cross street. However if the right turn on red is prohibited than U-turns at intersections can be considered. The following are advantages of U-turns movements over left turn movements:

- Shorter travel times, reduced delay times and an enhancement in the roadway capacity are some of the important benefits of U-turn movements

over left turn movements. For distances of less than 0.5 mile the provisions of a U-turn will be more effective, as the travel times of the vehicles in this case will be comparable with the travel times obtained by providing direct left turns. This especially true for heavy arterial volumes.

- High Left turn volumes at a signalized intersection require left turn phase with long green times which may affect the intersection capacity and increase the delays of the through movements. The provision of U-turns in these cases will improve the traffic flow condition by enhancing the vehicle travel time.
- Studies indicate that there has been a tremendous decrease in the crash rates when direct lanes are replaced by directional left turns/U-turn. The reductions ranged from 96 percent for angle crashes to 17 percent for rear end crashes with overall crash reduction of 61 percent.

There are three ways U-turns can be accomplished 1) in advance of the intersection; 2) at the intersection; 3) after the intersection. This treatment is associated with median closures and completion of all turns at a signalized intersection. This treatment requires a protected left turn phase to accommodate left and U-turns at the same time. Also as mentioned earlier the right turn on red should be restricted for the cross street traffic.

The Kentucky study issued a questionnaire for business along corridors in which median closures were constructed and intersection or midblock U-turns were implemented. As a result of the questionnaire one-third of the respondent business owners felt that there was a negative economic impact while about one-fourth felt there was a positive effect on their business. However, this perception may be due to other factors, such as the general economy trends, and thus not directly attributed to the U-turn design.

They are other types of intersection control which also has shown increased benefits to capacity and safety which can be examined in more detail for use in this corridor. Some of these options are described below:

1. Roundabouts – One lane or two lane roundabouts can be installed at the signalized intersection. Roundabouts offer about a 90 percent reduction in fatal and incapacitating crashes. Increase intersection operational capacity and reduce delay. Typically roundabouts reduce the need for left turn lanes and in conjunction with median closures offers an alternative to providing a dedicated phase for U-turns at the intersections. Also the implementation of a roundabout eliminates the need for signalized control and continual signal maintenance.

2. One-Way Street Operations - A One-Way Street networking system could be established to create one-way multilane operations along the intersecting roadways and on the parallel streets within the study area. A one-way system will increase the length of travel but decrease the overall travel time by increasing intersection operational capacity. If intersection turning movements can be eliminated then traffic can move more effectively throughout the system.

Prior to implementation either U-turn operations, Roundabout design and or a One-Way Street System, capacity analysis should be completed in order to effectively measure the benefits and effect of each design on the intersections and the arterial capacity.

Another concern expressed by the public for this corridor is the use of the one-way drive shown on the north side of US 50 between Walnut/Stadium and Front Street. This drive is intended to offer access to multiply business located in this block, which have limited frontage and parking capabilities. A possible alternative to the one-way drive is to purchase a parcel near (within the block or next to) these business and provide off-street surface parking along with a walkway to the business in question.