

Intersection & Study Background

The Beechmont Avenue (State Road 125) and Five Mile Road intersection, in the heart of Anderson Township, is consistently one of the most heavily traveled intersections in Greater Cincinnati, and unfortunately is typically one of the most dangerous intersections in Hamilton County. Over 65,000 cars a day travel through this intersection and it has historically ranked in the top five intersections with regards to the total number of accidents. Coupled with this heavy volume and high accident rate, this intersection operates at a level of service E (nearly failing), with an average peak hour delay of over a minute. There is currently no provision for pedestrian traffic; in fact, there are signs prohibiting pedestrian crossing.

Since the intersection is tightly constrained by surrounding development and limited right of way, a major reconfiguration or grade separated interchange has effectively been ruled out. In addition, with the exception of a planned right turn lane from eastbound Beechmont to southbound Five Mile and the concept of a double left from westbound Beechmont to southbound Five Mile, each leg of the intersection is “maxed out” with two thru lanes, a right turn lane, and a left turn lane; there are few viable options on how to improve the situation of increasing traffic volume, accidents and delay at this intersection.

In 2004, the Hamilton County Engineers Office learned of a Continuous Flow Intersection (CFI) concept, which had been utilized in Mexico, and had been introduced in two areas in the United States (New York and Maryland). CFIs have since been built in several other locations and are being constructed or studied in countless other states. The concept effectively moves the left-turning traffic left of approaching vehicles before the intersection, so as to eliminate one or more cycles from the intersection signal. In addition, through the introduction of divider areas, it also can accommodate pedestrian traffic, even at high volume intersections. A potential application for this concept surfaced at Beechmont and Five Mile Road, on two of the “legs” (those on Five Mile), and the County approached Anderson Township about the project.

In 2004, Woolpert was hired by the County Engineers Office and Township to conduct a study of the potential of this concept for this intersection. The result of this study found that a two legged CFI would improve the level of service to C (average), and cut delay times by more than half. This is important as this intersection is the key bottleneck along Beechmont Avenue (SR 125) in Anderson Township, even with a new closed loop signal system. In addition, it was determined that while some right of way acquisition was needed from several property owners and there were other driveways that needed to be moved or modified as part of the process, it would not serve as a major detriment to adjoining property owners nor hinder the use of their property.

Consequently, with this drastic reduction in congestion and resulting improvement in air quality from the 65,000 cars a day that would have their average delay cut in half or better, the Board of Anderson Township Trustees and Hamilton County Engineers Office believe this would be a strong utilization of Federal Congestion Mitigation and Air Quality (CMAQ) grant funds. An application was therefore submitted and approved by the Ohio Kentucky Indiana Regional Council of Governments for approximately \$2.5 Million of the projected \$3.4 Million project cost (80%).

Current Status of the Project

Engineering commenced in the fall of 2006 and has progressed through the normal Ohio Department of Transportation (ODOT) planning process. It is anticipated that Stage 2 design plans will be finalized by the winter of 2009-2010, to allow right of way acquisition to begin in the summer of 2010 and into 2011. Final design plans will be completed in 2011 to enable the construction of the project to occur in 2012.

The construction of this project will primarily occur along Five Mile Road, up to approximately 1,200 linear feet north and south of this intersection. There will be some minor work along Beechmont Avenue, but this should be confined to within 100' of the intersection. As stated earlier, some minor right of way acquisition, up to 15' in some areas, will be necessary primarily on the northeast and southwest corners of this intersection.

Driveway modifications on the east side of Five Mile Road will also be necessary, which may entail reworking some internal circulation on the subject properties. Anderson Township has been working with these affected property owners and businesses to identify or create alternative means of full access to these properties from nearby traffic signals. It is anticipated that construction of these related improvements will occur prior to CFI construction, likely in 2011.

Relationship of CFI to Goals of the Federal Transportation Administration's Congestion Mitigation and Air Quality (CMAQ) Program

RELATIONSHIP OF PROJECT TO GOALS AND OBJECTIVES OF CMAQ PROGRAM

Goal 1: Improve Travel Safety

The CFI design concept reduces the number of turning conflicts at the intersection, and substantially reduces delay by essentially eliminating one of the four traffic signal phases. The resulting intersection is then projected to have less turning conflicts and fewer possible collisions, typically those resulting in the most severe of crashes. In addition, a reduction in vehicle delay (i.e. stopped traffic) helps to minimize potential rear end accidents with a more productive traffic flow. Finally, pedestrians are currently not permitted within the intersection, they do attempt to cross, and this is always a safety threat because there are no pedestrian signals or crosswalks. The CFI concept will accommodate pedestrian crossings with activated signals, crosswalks, and median areas elevated from traffic.

Goal 2: Improve Accessibility and Mobility Options for People and Goods

The CFI configuration will enable pedestrians to cross this intersection, which is not currently possible. This is critical as this intersection lies at the center of Anderson Township, within very close proximity to intense retail shopping (Anderson Towne Center and surrounding centers), Anderson High School, recreation opportunities (Beech Acres Park, Five Mile Trail and Anderson Lake), Anderson Center Station Park & Ride, and Anderson Center, and many residential neighborhoods. Thus, pedestrians will begin to traverse this area with safety

improvements, and, facilitated by recent new sidewalk projects in this area, to connect to these destinations.

Goal 3: Protect and Enhance the Environment

As alluded to earlier, this project will achieve this goal in two ways. First, it will greatly reduce travel delays (by more than half according to preliminary studies), therefore reducing mobile source emissions. Second, it will enable pedestrians to make this new intersection crossing to travel from neighborhoods to the many attractions in this area, facilitating the greater use of walking rather than automobile use.

Goal 4: Enhance the Integration and Connectivity of the Transportation System

The CFI will enable more efficient traffic flow, for all motorized transportation. In addition, it will successfully integrate pedestrians and motorized traffic into a very dense and congested area.

Goal 5: Promote Efficient System Management and Operation

Short of building an interchange, a very costly and undesired improvement in this area, the CFI represents the best option to maximize the existing transportation network by reconfiguring lane alignments to maximize the operation of the intersection.

Goal 6: Emphasize the Preservation of the Existing Transportation System

The subject intersection already exists, and this is simply a tweak to two “legs” of the intersection that will allow it to operate at a more efficient level. In addition, this request taps Township and County funding sources to improve the operations of a key State Highway in the southeast part of the Cincinnati region.

Goal 7: Support Economic Vitality

The Five Mile and Beechmont intersection has been the center of a rebirth of Anderson Township. This is highlighted by the redevelopment of the Anderson Towne Center, but this economic investment has spread throughout the Five Mile Corridor, including three new office buildings within 1 mile that will add over 225,000 sq. ft. and hundreds of new employees to the community. This private investment, coupled with the Township's investment of over \$25 Million dollars into other enhancements to Five Mile Road, a new park and ride, shared use trail, and Anderson Center in this section of the corridor, seeks to maintain and enhance the economic vitality of this region. With this, improvements to this intersection are critical to this productivity and efficiency.

For More Information:

What is a [Continuous Flow Intersection](#) (CFI)

To be connected to our consultant's parent company's website (ABMB) for more information about CFI's. <http://www.abmb.com/cfi.html>

To view an educational video from the State of Utah Department of Transportation demonstrating how a CFI works (please note that the configuration at Five Mile and Beechmont will be different, with only one turning lane). <http://www.youtube.com/watch?v=oVI3Ledw7mc>

A map of the intersection at [Five Mile and Beechmont](#) in its current configuration.

A map of the intersection at [Five Mile and Beechmont as reconfigured](#) to accommodate a two-legged CFI - on only the Five Mile approaches

Woolpert's [Feasibility Study](#) of CFI for Beechmont & Five Mile Intersection