



SR 37 Mobility Study Allisonville Road at 146th Street

Description of Proposed Project

A Traffic Operation Analysis was conducted for the Study area. The purpose of the Traffic Operation Analysis (TOA) was to evaluate traffic operations at the Study intersections. The TOA focused on performing capacity analysis and providing recommendations for the proposed intersection lane configurations. Table 1 shows a summary of existing (2010) capacity analysis for Allisonville Road and 146th Street:

Intersection	Traffic Control	Peak	West Leg		East Leg		South Leg		North Leg		Overall	
			LOS	Delay (sec)	LOS	Delay (sec)	LOS	Delay (sec)	LOS	Delay (sec)	LOS	Delay (sec)
			146 th Street and Allisonville Road	Signal	AM	C	26.7	B	18.4	D	47.1	D
		PM	C	28.8	C	23.4	D	38.7	D	44.1	C	31.1

Table 2 shows the summary of the capacity analysis for Alternative 1 at Allisonville Road and 146th Street after construction of the recommended improvements:

Intersection	Traffic Control	Peak	West Leg		East Leg		South Leg		North Leg		Overall	
			LOS	Delay (sec)	LOS	Delay (sec)	LOS	Delay (sec)	LOS	Delay (sec)	LOS	Delay (sec)
			146 th Street EB Ramps and Allisonville Road	Roundabout	AM	A	3.0	--	--	A	2.4	A
		PM	A	4.2	--	--	A	9.0	A	2.4	A	5.9
146 th Street WB Ramps and Allisonville Road	Roundabout	AM	--	--	A	3.0	A	2.4	A	4.8	A	3.4
		PM	--	--	A	4.2	A	4.2	A	3.0	A	4.0

Please see the Traffic Operation Analysis (binder labeled Traffic Operation Analysis) to review the Study area results in their entirety.

The two proposed build alternatives were evaluated based on results from the TOA. Results from the TOA were shared with the local stakeholder group during a Stakeholders meeting and afterwards shared with elected officials. During this meeting, the group collectively decided to pursue the alternative which involved reconstructing each of the Study intersections into teardrop roundabout interchanges.



Allisonville Road and 146th Street

The preferred alternate for this intersection is to construct a “teardrop” roundabout interchange on Allisonville Road consisting of two closely spaced roundabouts on either side of 146th Street, which are tied together through the middle to function as one unit. Allisonville Road will overpass 146th Street. 146th Street will be free-flow through this interchange and traffic traveling through on Allisonville Road will drive through the roundabouts with a yield condition on the roundabout approach.

The layout of the ramps will closely resemble a tight diamond interchange with directional entrance and exit ramps in each quadrant. Beyond the back of the gore area, all four ramps will remain directly adjacent to 146th Street maintaining an approximate 22 foot offset from outside edge of the SR 37 travel lane to the inside edge of the ramp lane(s). This offset allows for the minimum outside mainline shoulder, minimum inside ramp shoulder and the wall in between the mainline and the ramps. This wall is necessary to maintain the elevation difference between the mainline and the ramps as they approach 146th Street. Exterior walls will also be necessary in the southwest, northwest, and northeast quadrants to minimize impacts to businesses in these quadrants (See aerial sheets for estimated wall limits).

Allisonville will have two lanes in each direction through the north/south portion of the roundabouts. On both approaches there will be one shared left/through lane, one shared through/right lane. The westbound exit ramp from 146th Street will exit as one lane and develop into two lanes at the roundabout approach, consisting of one shared left/through lane, and one right turn lane. The eastbound exit ramp will exit as one lane and develop into two lanes at the roundabout approach, consisting of one shared left/through lane, and one right turn lane. Both entrance ramps will depart from the roundabout and merge into 146th Street as one lane.

There are many residential parcels with access points along existing 146th Street in the vicinity of the interchange, mainly on the east side of Allisonville Road. 146th Street will widen as it approaches Allisonville because of the development of ramps and auxiliary lanes approaching the roundabouts. Therefore, many of the houses along 146th Street would be damaged or relocated. Also, access may be affected to some residential parcels that aren't otherwise directly impacted. The north end of Willow Drive would need to end in a cul-de-sac and the public road approach would fall in the middle of the eastbound entrance ramp. Access to houses at the north end of Willow Drive would have access from North Lynn Avenue, for which a road approach could be provided to 146th Street. Likewise the south end of Wellington Court would need to end in a cul-de-sac as that public road approach would fall in the westbound exit ramp. Access to houses at the south end of Wellington Court would have access from Chelsea Drive, which has an existing road approach on Allisonville Road north of the interchange.

Because of the length necessary to develop entrance and exit ramp junctions, and gain vertical separation between the mainline and the cross-street, the west side of the interchange is expected to extend well into the existing 146th Street bridge over the White River. This will require widening of this existing bridge to accommodate the width necessary for the tapers and ramp auxiliary lane development.



Allisonville Road over 146th Street Interchange

The bridge will be designed to meet or exceed the current “AASHTO LRFD Bridge Design Specifications” as supplemented by INDOT design standards. The minimum vertical clearance for roadways crossing over 146th Street is 16’-6”.

The proposed bridge over 146th Street at Allisonville Road is anticipated to be a two span, 122’-0” long, prestressed reinforced concrete I beam structure built with a 12 degree skew to the roadway. The bridge will be a four lane roundabout facility with a clear roadway width of 217’-6” and an out to out coping of 221’-0”. The bridge will be designed to span the four lane 146th Street divided highway with the interior pier placed in the median of 146th Street. It is anticipated that the proposed structure will be constructed with integral end bents on piles and a concrete interior wall pier on piles. The structure will also have reinforced concrete approach slabs to provide a smooth transition from the approach roadway to the bridge and to protect the ends of the bridge from settlement and erosion. The proposed bridge will include common height concrete bridge rail with transitions, approach guardrail and end treatments to meet current minimum standards.

Widening of 146th Street Bridge over the White River

The bridge will be designed to meet or exceed the current “AASHTO LRFD Bridge Design Specifications” as supplemented by INDOT design standards.

The existing 146th Street bridge over the White River west of the Allisonville Rd. intersection will require widening in order to facilitate the Allisonville Rd. over 146th Street interchange modifications. The existing bridge is a four span, 530’-2” long, continuous composite prestressed bulb-tee beam bridge with 0 degree skew and is a twin structure. Each structure currently carries two lanes of traffic along with a pedestrian path and each structure has an out to out coping of 38’-9” with a 9’-6” space between. The widening will allow for an additional lane of traffic on each of the twin structures and will flare out with a 14 foot gore on the eastbound structure to allow ramp access to the new Allisonville Rd roundabout. The typical widening to the outside shoulder of each bridge deck structure will be 12’-4” along with removal of approximately 12’-0” of existing concrete bridge deck and the removal of existing bridge railing. The widening will require the placement of one line of new beams along the westbound structure and two lines of new beams along the eastbound structure along with widening of the bridge approaches. In addition, the existing piers and bents will require widening, along with removal and replacement of the wing walls at each bent.



Allisonville Road/146th Street Project Development Cost Summary

SR 37 MOBILITY STUDY

Hamilton County, Town of Fishers and City of Noblesville

SR 37 from South of 126th Street to North of SR 32 / 38

PROJECT ITEMS:			PROJECT COST (IN YEAR OF EXPENDITURE)
1 ALLISONVILLE ROAD			
Engineering Costs	\$	2,234,071	
Construction Costs	\$	21,856,942	
Construction Cost Contingencies	\$	2,185,694	
Construction Inspection Costs	\$	2,891,377	
Utility Relocation Cost	\$	-	
Land Cost	\$	3,612,431	
Subtotal Allisonville Road Interchange			\$32,780,516

* The Allisonville Road Interchange is projected to be constructed in 2019. An inflation factor of 1.267 has been applied to obtain the construction cost shown in this table

TOTAL INTERCHANGE COST: \$32,780,516

