Size of the Roundabout and Right Turn Lane Addition

The design of the proposed roundabout accommodates existing traffic effectively. In the future, traffic is expected to increase and right turn lanes may be needed on the south and east legs. These turn lanes will be constructed when and if the need arises. The design of the roundabout will minimize disruption caused by the construction of the right turn lanes in the future. The cost estimate takes into consideration the construction cost of the future right turn lanes.

Reduce Speed Limits

Speed limits on Illinois state highways are a matter of state law. They are established by the Illinois Vehicle Code and the Department’s Policy on Establishing and Posting Speed Limits on the State Highway System. A link to this document can be found on the project website. The statutory speed limit on a highway like US 20 in this area is 55 mph; however, the posted speed limit is 45 mph. The Illinois Vehicle Code requires that an engineering and traffic investigation be used as the basis for posting any speed limit other than those specified by statute. The purpose of a speed study is to determine the speed limit that is consistent with motorist safety and with the safety of other necessary activities along the highway. Traffic speed observations are made to provide information on the prevailing speed of vehicles traveling along a given stretch of highway. This information is used in conjunction with additional factors such as pedestrian activity, the number of intersecting streets and driveways, parking conditions, crash history, and speed limits posted on adjacent sections of highway, in order to establish the appropriate posted speed limit. A speed study was last performed on this part of US 20 in November of 2009. That study reconfirmed the existing 45 mph speed limit in this area.

Speed enforcement is the responsibility of the local law enforcement agencies. The proposed roundabout will be posted with an advisory speed limit of 20 mph. Speed limits on US 20 will remain 45 mph and 55 mph. Roundabouts have been found to be effective in reducing speeds. The approach treatments and the raised central island encourage drivers to slow down as they approach, enter, and circulate in the roundabout.

Next Steps

Design approval of the roundabout will conclude Phase I activities for this project. The engineering and environmental studies (Phase I) are estimated to be completed by the end of 2015. After completion of Phase I, the Department will reinitiate the land acquisition process, update the contract plans, and prepare the project for construction (Phase II); followed by the construction of the roundabout (Phase III). As roundabouts are relatively new to this area, the Department is committed to continued outreach and education to ensure that residents and officials have access to the latest information about the project through the end of the construction phase.

Funding and Construction Cost

The estimated construction cost of the Preferred Alternative is $5,212,000. This improvement is included in the Department’s FY 2016-2023 Proposed Highway Improvement Program. The current engineering efforts are targeted to enable a contract letting in the middle years of our current multi-year program contingent upon plan readiness, land acquisition, and funding availability through future annual legislative appropriations.

Thank you for your attendance at the second public hearing held on August 5, 2015 for the Illinois Department of Transportation’s (Department) proposed improvements of US 20 at Harmony Road in McHenry County. Your comments have become part of the official public hearing record and will be included in the final project report. A total of thirty-three (33) comments were received during the three week comment period. Of the comments received, approximately twenty-seven percent (27) supported the roundabout and the need for a safety improvement. Forty-six percent (46) supported the roundabout plus a traffic signal. As many comments received concerned similar issues, this newsletter has been prepared to address your concerns as well as provide you with an overview of other topics. Information and materials from the public hearing can be viewed on the project website at www.us20atharmony.com.

Selection of Preferred Alternative

The Department uses Context Sensitive Solutions (CSS) as an approach to plan and design transportation projects that fit into their surroundings. Public participation is an integral part of the transportation planning process which helps to ensure that decisions are made in consideration of and to benefit public needs and preferences. Early and continuous public involvement brings diverse viewpoints and values into the decision-making process. The Department is the agency responsible for the safety and integrity of the state highway system and local agency routes built or improved with state or federal funds. There can be many different stakeholders, such as local elected officials, environmentalists, other agencies, special interest groups, property owners and the general public. Each stakeholder can have different views and interests. Although conflict resolution is a tool to resolve these differences, the Department is held ultimately responsible and therefore makes the final decision in the selection of the preferred alternative with concurrence from the Federal Highway Administration.

The technical analysis shows that the roundabout proposed at the intersection of US 20 and Harmony Road has better safety performance, requires less right-of-way, has a lower cost, and provides better overall congestion relief as compared to traffic signals. Therefore, in consideration of all the information gathered for the project, the Department has selected the roundabout as the Preferred Alternative.
Roundabouts

Roundabouts are circular intersections where traffic flows around a center island. They are designed to promote safe and efficient traffic flow and use yield signs at entry to control traffic, instead of traffic signals or stop signs. Modern roundabouts are not neighborhood traffic circles that are used to slow traffic. Roundabouts also are not the old large traffic circles, sometimes called rotaries, which are common in England and the northeastern United States.

How to Enter a Roundabout

When approaching a roundabout, you should slow down and obey the traffic signs, yield to any pedestrians within or about to enter the crosswalk, then yield to traffic from the left that is already in the roundabout. When a safe gap appears, you should enter the roundabout and proceed in a counterclockwise direction. Once you are in the roundabout, you should not pass other vehicles or switch lanes. As you approach your exit, turn on your right turn signal.

Level of Service

Level of service is a concept developed to grade congestion as perceived by motorists, pedestrians, and bicyclists. This concept has been divided into letter descriptors, A through F. The letter descriptors are linked to quantitative measures based on the delay experienced on a roadway segment or at an intersection. Level A represents the best conditions and level F the worst. The proposed roundabout intersection is predicted to operate under a level of service C compared to the traffic signal intersection predicted to operate at a level of service D.

Safety Benefits of Roundabouts

Studies from the Insurance Institute for Highway Safety show that roundabouts can provide a 90% reduction in fatal crashes and a 76% reduction in injury crashes. Roundabouts reduce the occurrence of severe crashes by slowing traffic as it enters the circulating intersection and by reducing the number of conflict points between vehicles. Crashes involving vehicles at a stop sign that fail to yield to through traffic, some of the deadliest types of crashes, are not prevented by the installation of traffic signals. Drivers can and do ignore traffic signals. However, with the installation of a roundabout, drivers are forced to slow and maneuver their vehicles prior to entering the intersection. This reduction in speed and the requirement to turn right to enter the intersection reduces crash severity and results in significantly reduced fatalities and injuries at these intersection types.

In addition, roundabouts do not require any new driving skills. In fact, they simplify the driver decision-making process resulting in a safer and more efficient intersection. In addition to safety and traffic flow improvements, roundabouts can also reduce vehicle emissions and fuel consumption because vehicles are not idling at signalized intersections.

Operational Benefits of a Roundabout

Roundabouts are a very efficient means of traffic control. They move traffic through intersections more quickly and with less congestion as compared to a traffic signal, by allowing continuous flow of traffic from all approaches. Even though drivers must lower their speeds to enter, traffic moves efficiently because yielding at an entry point takes place while the plow vehicle is clearing the snow from the truck apron, and keeping circulating in a spiral outward with each revolution until the whole circle is cleared. Then the plow vehicle will clear the snow from the approaches and exits.

Traffic Signal Alternative

The installation of traffic signals without substantial roadway improvements would not address the major safety concerns at this intersection. The existing roadway has relatively sharp curves, hills, and a skewed intersection angle. This creates poor sight lines that are a major contributor to the crashes occurring at this location. Further, the signalized intersection option must be designed to account for instances when vehicles on Harmony Road would pass through the intersection on a green light without a reduction in speed. In order to accommodate this condition a major realignment and reconstruction would be needed to eliminate the banked curve on US 20. This, in combination with the need to avoid the Harmony School property and add turn lanes, results in greater impacts and costs.

US 20 at Big Timber Road

The Department installed temporary traffic signals at US 20 and Big Timber Road in July 2012. The roadway layout, or geometry, of the intersection at US 20 has several deficiencies that are not found at US 20 at Big Timber Road. First, the angle of intersection at US 20 at Big Timber Road is 88 degrees, which is very close to the ideal 90 degree angle to maximize vehicle sight distance. US 20, however, crosses Harmony Road at an undesirable angle of 55 degrees. The awkward angle of the intersection makes it difficult for drivers to see oncoming vehicles. Second, although both intersections are on horizontal curves, US 20 at Big Timber Road does not have hills that prevent approaching drivers from seeing the intersection. Third, the intersection of US 20 at Big Timber Road already had the necessary left turn lanes to store turning vehicles out of the through traffic lanes, decreasing the potential for rear end crashes. Therefore, as the US 20 at Big Timber Road intersection has better sight lines for approaching traffic as well as left turn lanes, traffic signals could be installed without additional roadway improvements.

Effects on Getty Road

The US 20 at Harmony Road project will not affect traffic operations on Getty Road during construction. However, there is a separate project by the Department near this intersection of Getty Road and US 20 that involves the replacement of an existing culvert. The construction of both projects will be coordinated in order to minimize motorists’ delays.

Roundabout Landscaping

In general, roundabouts contain landscaped center islands as they enhance the safety of the intersection by making the intersection a focal point. Any landscaping provided will be designed to minimize roadside hazards to maintain adequate stopping and intersection sight distance throughout the roundabout.

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