

Roundabout Feasibility Initial Screening Tool

Muscatine, Iowa. Intersection of Logan and Cedar Streets

5/2/2013

The intent of this screening tool is to provide a relatively quick assessment of the feasibility of a modern roundabout at a particular intersection in comparison to other appropriate forms of traffic control or road improvements. The intended outcome is to provide information to assist staff in deciding whether the safety and operational benefits of a roundabout outweigh potential limitation to freight.

1. Intersection Location.
 - a. Intersection of Logan and Cedar Streets in Muscatine, Iowa.
2. Project Description and the purpose and need for this project (ie. Add capacity, correct safety problem, pavement replacement, etc.)
 - a. This intersection is part of the current project STP-U-5330(617)—70-70 to be bid through IDOT in September 2013. It is planned as a tee intersection. The tee configuration leads to significant delay for left turns from Logan at peak hour. Currently, cross traffic on Cedar Street does not stop. The design intent is to not stop through traffic at 35 mph on Cedar (ie. no stop signs or traffic signals). The roundabout would improve the traffic safety for the left turn out of Logan and onto Cedar as well as slow the traffic in an area where there is significant pedestrian activity that corresponds with the peak traffic. Pedestrian traffic must cross from Logan to the north side of Cedar. CMAT shows 19 vehicle accidents at this intersection from 2003 to 2013. With proper design, number and severity of accidents should be reduced.
3. Adjacent land use and access
 - a. The adjacent land use to the northwest is agricultural fields with no access within the roundabout location. The northeast quadrant is a residential subdivision separated by privacy fence. The southeast quadrant is a wooded area with creek owned by the Muscatine Community Y. No new access is anticipated for this area. The southwest quadrant is All American Care Center, a senior living facility with access off of Logan away from the roundabout. This driveway apron may need to be reconstructed due to Logan profile changes necessary for the roundabout.
4. Contact the Motor Vehicle Division to determine the number of oversized/overweight vehicles routed through this location annually and their opinion of this route's importance to freight movement.
 - a. This is a city jurisdiction street. The City has control and can route special loads and super loads away from this roundabout on alternate routes. Pavement design for the entire Cedar corridor including the roundabout is 9" PCC over 6" modified subbase. A truck apron sufficient for WB67 and local ladder fire truck will be provided.
5. Attach sketches of the current configuration and of the proposed configurations showing:
 - Intersection control – alignments and splitter islands
 - Number of legs(3)
 - Lanes on each leg(2)

- Existing and projected traffic volumes for each movement including percentage of trucks (HV)
 - Cedar west leg existing AADT/2=3450 2033 AADT/2=4900
 - Cedar east leg existing AADT/2= 3650 2033 AADT/2= 4200
 - Logan south leg existing AADT/2=1770 2033 AADT/2= 2420
 - Percent trucks on Cedar is 2%
- Estimated costs for each presented option

Initial additional roundabout construction cost vs Tee intersection = \$38,500.00

Future traffic signal elimination savings = \$ (100,000.00)

Net construction cost benefit = \$61,500.00

6. At this location, what advantages will the roundabout option provide over other options?
 - a. Traffic roundabout will minimize delays at this intersection especially on Logan at the peak hour traffic when the High School starts in the AM and is over in the PM. This will make the road safer for motorists and eliminate the need/desire for traffic signals.
7. How will nearby properties be impacted, including internal circulation routes within the property?
 - a. There is no significant impact to any nearby or adjacent properties. No access exists within the area of the roundabout. No future development will be restricted as they could have access elsewhere.
8. What design vehicle will be used for the roundabout?
 - a. The design vehicle will be a WB-67 and a custom template for the largest fire department vehicle as this is a major emergency access route for the main fire station.
9. Describe whether any accommodations of super loads were considered (i.e. use a parallel route, close traffic temporarily and allow vehicles to use exit lanes for left turn movements, etc.).
 - a. No super loads were considered because these are city streets and special and or super loads can be routed around this intersection in the permitting process. US Highway 61 Bypass around the north and west side of Muscatine as well as IA 92 through downtown Muscatine and south end provide through routes and access to local industrial areas.
10. What type of non-motorized vehicles are expected (pedestrians, bicycles, horse and buggy, etc) and will there be any special accommodations?
 - a. Pedestrians and bicycles are expected at this intersection. A new 10' wide trail will parallel Cedar Street on the north side. There are no bike lanes on the roadway. Pedestrian crossing(s) with islands will be provided for crossing Cedar Street to Logan.

