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Revised 2007 March 30 to update internet links

Mr. Carl Hilling, Superintendent of Schools
Gaylord Community Schools
615 S. Elm Street
Gaylord, MI 49735

Dear Carl:

Re: Traffic Flow at Old 27 and Livingston Blvd.

My recommendation is a roundabout at the intersection of Old 27 and Livingston Blvd. I know, it's new to Gaylord, but it is not new in other locations in Michigan, and in many other states. It is better in all respects: capacity, travel time through the roundabout, safety, pedestrian convenience and safety, cost, flexibility, appearance, and the list goes on. But the implementation has to be right; a competent traffic engineering design study is required.

The reasons for the benefits are fundamental in the geometry and design. Traffic is "funneled" into the circulating roadway by the use of lane splitters. Head-on and left-tern conflicts are eliminated. No waiting at red lights. Traffic is slowed by the geometry. The simple rules are that the traffic yields to the vehicles in the circulating roadway and to pedestrians. Pedestrian crossings are away from the circulating roadway with center "landing" spaces in the traffic splitters so that pedestrians cross only one direction of traffic at a time.

The appendices to this letter provide answers to some of the fundamental questions. First and foremost is public acceptance. Because roundabouts are new for many people, they are concerned about whether or not they can learn how to use them. There have already been two letters to the H–T editor expressing this view. The most important observation is that the acceptance changes from 70% unfavorable before installation to 70% favorable after use. See the DLZ [1]* and ABNA Engineering [2]. An interesting web site is one for the City of Clive, Iowa, which recently installed a roundabout. They have an animated demonstration for drivers and pedestrians on how to use the roundabout [3]. DLZ traffic engineers have published a paper on the many aspects of roundabouts available on the web [1]. Finally, ABNA Engineering [2] has published a general paper on roundabouts. Many of the references contain pictures of various roundabouts around the country and the world. Much other information is available on the web. Books are also available. Appendix A provides conditions for successful roundabouts [4].

Michigan has joined the change. One of the featured roundabouts in the literature is the one in Okemos at Hamilton and Marsh Roads [5], just south of the Meijer's Store. {Memo addition: See Access Board Research Okemos [URL is http://www.access-board.gov/research/roundabouts/bulletin.htm].} It is a slanted "T" intersection. The pictures for this roundabout can easily be visualized as how a roundabout at Old 27 and Livingston Blvd. would appear. See Appendix B for the pictures and explanation. I have viewed the traffic there, and have some pictures. Works well. Okemos is planning another roundabout.

Another very interesting roundabout is in Dimondale at East Road and Creyts Road. {Memo addition: See RoundaboutsUSA [URL is http://www.roundaboutsusa.com/minis.html.] and then click on the "Mini-Roundabout Michigan" picture.} It is a mini-roundabout (small center circular island with climbing ramp for trucks and busses). I also have pictures of this one. It also works well. Likely, school busses use both of these roundabouts.

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* Numbers in [ ] designate references listed on page two.

Michigan State University has converted some of their circles into roundabouts by adding splitters and other geometry features to obtain the benefits. Recently, the City of Brighton converted the Main and Fourth Streets intersection in the downtown area into a roundabout. That has been covered by the Detroit News.

The major one occurring is Michigan is in Farmington Hills and West Bloomfield with roundabouts approved for construction along both 14 Mile and Maple (15 Mile) Roads. DLZ is the consulting engineer. Their paper [1] describes some of the status, progress and projections.

Appendix C includes a 2002 article from Wisconsin Traffic Safety Reporter on two roundabouts installed in the Village of Howard near Green Bay and near three different schools [6]. The article includes traffic results which are favorable. You could check with the schools there to determine how well the busses handle the roundabouts. The roundabouts have to be designed to accommodate the busses, and they can be. Note in the picture the concentric circles in the center island. The annulus is likely an sloped apron which allows the rear wheels of trucks and busses to climb a low curb onto the apron if needed to negotiate the circular roadway. Also note the lane splitters and pedestrian crosswalks

After traveling in the UK, other countries in Europe and New Zealand, observing some of the roundabouts in Michigan and reviewing much literature available on the web, I believe that roundabouts are a superior road design over traffic lights for many reasons for most intersections. It is unfortunate that the renovation of the intersection at Dickerson and West Otsego Roads wasn't done with a roundabout. Had that been done, we would now have a good example in our community.

You are welcome to my longer list of web references. Extensive pictures from around the country are available. Good luck in getting the traffic improvements at Old 27 and Livingston Blvd.

Sincerely,

Donald L Nordeen

Donald L. Nordeen

cc: Ms. Christine Grosser, Gaylord H-T
Mr. Michael Roper, Otsego Road Commission

Appendices

A — Where to Use Roundabouts

B — Roundabout in Okemos, Michigan, at Hamilton and Marsh Roads with Adaptation to Old 27 and Livingston Blvd.

C — Wisconsin Traffic Safety Reporter, Vol. 5, No. 2, 2002, Page 5

Added: 2007 March 30 — Internet links were checked and updated. A few notes were added to the references. If you are reading this letter from a pdf file using Adobe Reader software, you may be able to click on the URL (the alpha-numeric characters beginning "http//") to access the references.

References

[1] DLZ Engineering, "Use of Modern Roundabouts for Congestion and Safety Improvements" at <http://www.otecohio.org/otec%20presentations/tuesday3pm/Metzer-2002%20OTEC.pdf>

[2] ABNA Engineering, "Roundabouts and Traffic Circles" at <http://www.abnaengineering.com/abna/>

[3] Clive, Iowa, Roundabout at <http://www.cityofclive.com/departments/public-works/traffic/Roundabouts.php>, click on "ROUNDABOUT NAVIGATIONAL DEMONSTRATION" and follow instructions to interact with the demonstration. Memo: The graphics also illustrate the road types and features of a well-designed roundabout: divided four-lane road left and right; divided two-lane road at the top; undivided two-lane road at the bottom; lane splitters to direct the vehicles into the circulating roadway; two-lane circulating roadway; pedestrian crossings back from the circulating roadway with center 'safe zones'; requires essentially the same real estate as a traffic-light controlled intersection with separate turn lanes; and the landscaping.

[4] Reference for Appendix A — RoundaboutsUSA "Design of Roundabouts" at <http://www.roundaboutsusa.com/design.html>.

[5] Reference for Appendix B — Okemos, Michigan, roundabout. Pictures at <http://www.portlandonline.com/transportation/index.cfm?c=dfjdc&a=gceii> and many other web sites. Review the pictures of various roundabouts. The pictures of the Okemos roundabout are near the bottom. As you scroll down, note the roundabout at University Place, Washington, which shows that roundabouts do not require more land than the conventional intersection. Most of the above websites also have pictures, search on the internet for "roundabouts." Or use the search/find command on your browser to find "okemos".

[6] Reference for Appendix C — Wisconsin Traffic Safety Reporter, at <http://www.dot.wisconsin.gov/library/publications/format/newsletters/safety.htm>. Then click on "Vol. 5, No. 2, 2002", and then go to page 5.

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Where to Use Roundabouts Appendix A

====copied on 2004 Oct 25 from <http://www.roundaboutsusa.com/design.html>===

Appropriate conditions for roundabout installation:

- Locations with high delays
- Locations where traffic signals are not warranted
- Four-way stop intersections
- Intersections with more than four legs
- Intersections with high left-turn flows
- Intersections with unusual geometry
- Intersections with changing traffic patterns
- Locations where storage capacities for signalized intersections are restricted
- Intersections that are important from an urban design or visual point of view

The following conditions require special design attention and hiring an experienced designer:

- Locations where there is insufficient space for an acceptable outside diameter.
- Locations where it would be difficult to provide flat (2% or less) entries into the roundabout.
- Maximum grade greater than 4% around the circle,
- A high number of pedestrians, a high percentage of large trucks, intersection junction at the top or bottom of a grade, and the close proximity of adjacent signals

DLN Memo: Based on other existing roundabout designs, a good roundabout design for Old 27 and Livingston Blvd. will meet the objectives in the first group above, and will address applicable conditions in the second group.

Roundabout in Okemos, Michigan, at Hamilton and Marsh Roads with Adaptation to Old 27 and Livingston Blvd. **Appendix B**

Roundabout Description

This is a "slanted" "T" intersection with Hamilton through E-W and Marsh at somewhat different than a right angle. It should be viewed as a right-angle "T" intersection to visualize the geometry at Old 27 and Livingston Blvd.

Marsh Road Looking Southwest

<u>Adaptation to Old 27 and Livingston Blvd.</u>

View this picture as Livingston Blvd. looking west with Old 27 going south to north from left to right in the picture.

- The number of lanes for Livingston can be as desired for the blvd.
- Note the pedestrian crosswalk with the center island "safe" location. Pedestrians cross only one direction of traffic at a time. The location is moved away from the circle. At the crosswalks, drivers are not distracted by intersecting traffic.
- Also note the lane splitters which properly channel the traffic for the roadways.
- The geometry can be specifically designed to accommodate busses.
- The center island should be offset to the east as best shown in the second picture.

Hamilton Road Looking West

View this picture as Old 27 looking north with Livingston Blvd. going east to the right. (Sorry for the tree)

- The number of lanes for Old 27 can be as desired. It could continue as one lane each way.
- Note the pedestrian crosswalk with the center island "safe" location. Pedestrians cross only one direction of traffic at a time. The location is moved away from the circle. See above picture to see how the walks are connected.
- The geometry can be specifically designed to accommodate busses.
- Note the turn to the right for the through traffic going north which will reduce speeds.
- Similarly, the southbound traffic must reduce speed to go around the left-right curve at the entrance.

Hamilton Road Looking East

View this picture as Old 27 looking south with Livingston Blvd. going east to the left.

- The number of lanes for Old 27 can be as desired. This shows two lanes entering the roundabout with separate lanes for left turn and through traffic.
- To best accommodate the busses, the circulating roadway within the roundabout would likely be wider. The center island would likely be designed with a slight curb and then sloping upward to allow the rear wheels of the busses to climb the center island.
- Note the pedestrian crosswalk with the center island "safe" location. Pedestrians cross only one direction of traffic at a time. The location is moved away from the circle.
- The left, then right, turns at the entry from off the picture at the bottom slow the through traffic.

Roundabout in Howard at Lineville Road and Cardinal Lane

Roundabouts

Direct to improved safety

In the Village of Howard, near Green Bay, two modern roundabouts—the first in Wisconsin—are improving safety for motorists, pedestrians and bicyclists.

A campus which includes Forest Glen Elementary School, Lineville Intermediate, and Bay Port High School is bounded to the south by a county highway (Lineville Road) with a 45 mph speed limit. People tend to drive at speeds that feel comfortable to them, and prior to 1999 many motorists sped through the 15 mph school zone. The Brown County Sheriff's Department designated the highway as a hazardous area and the school district had to bus students across the road.

The best way to reduce speeding is to design streets that make drivers feel comfortable not speeding. In 1999 this was accomplished in Howard by constructing roundabouts which require drivers to slow down when approaching and traveling through the two campus intersections. Bicycle lanes and sidewalks were also added.

Modern roundabouts are often confused with traffic circles (or rotaries).

Roundabouts have greater traffic capacity than signalized intersections because there is no stopping for red lights, and they typically cost less to build and maintain. A November 2001 study of the Lineville Road roundabouts by the Brown County Planning Commission found:

- Significantly reduced vehicle speeds
- Crashes virtually disappeared and injuries have been eliminated
- Students are now allowed to walk and bike to school.

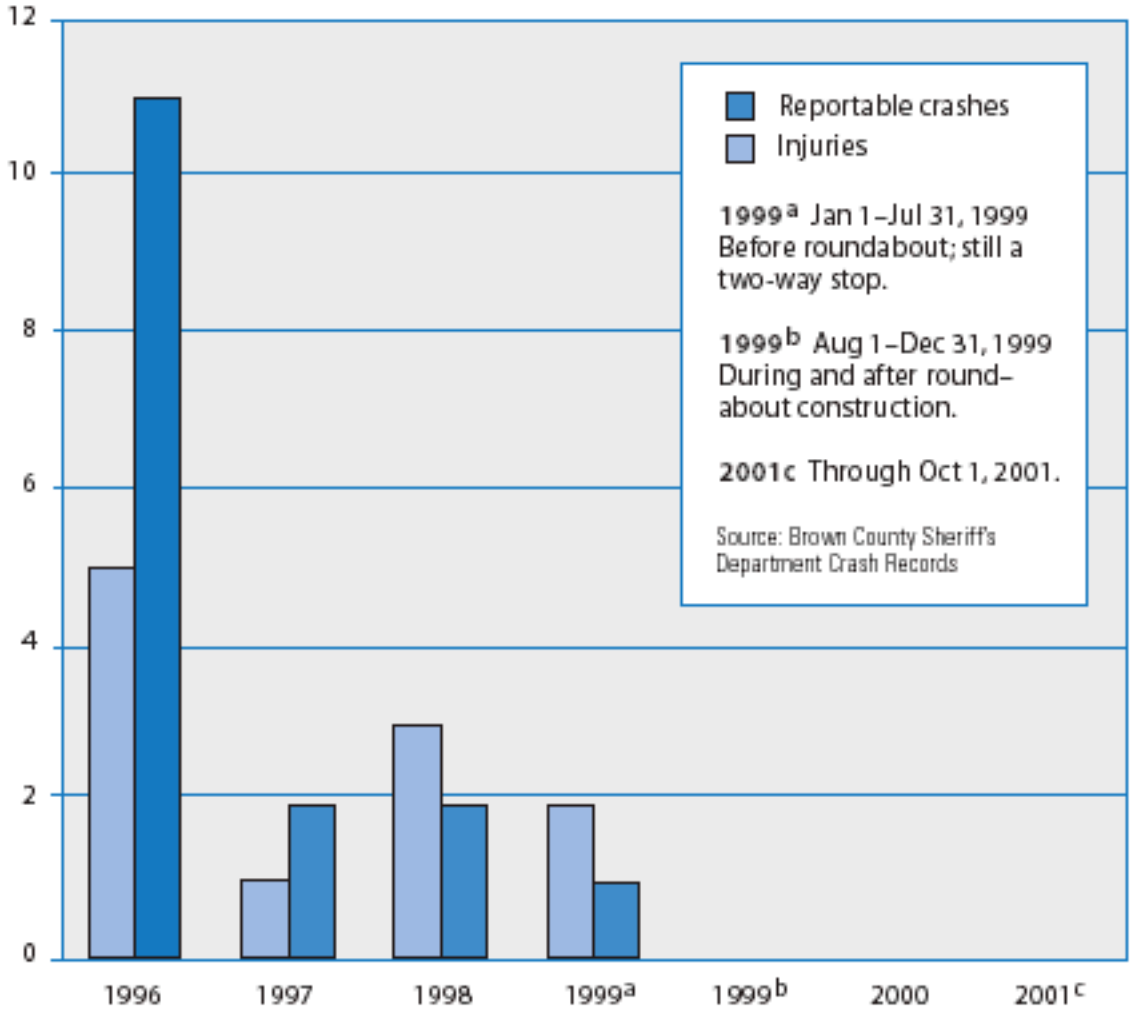
Howard now has a third roundabout, and the City of DePere also has three. In Milwaukee a new roundabout at the 6th Street viaduct opens in August.

For a copy of the study and other information, contact Cole Runge, Brown County Planning Commission, at (920) 448-3400 or coleru@ci.green-bay.wi.us.

Resources

Modern Roundabout Practice in the United States (1998)
Transportation Research Board *www.nas.edu/trb/*
Roundabouts: An Informational Guide (2000)
Federal Highway Administration *www.tfhrc.gov*

Reportable crashes and injuries
Lineville Road/Cardinal Lane Intersection



Modern roundabouts vs. traffic circles

	Modern roundabouts (like those on Lineville Road)	**Traffic circles**
Central island diameter	Approximately 70 feet (includes truck apron)	300+ feet
Design speed	15–18 mph	40+ mph
Right-of-way	Vehicles in the roundabout	Vehicles entering the circle