

# Memo

To: Craig Hupy

From: Raymond Hess, Cynthia Redinger, PE

Date: May 13, 2019

Re: Analysis of Road Diet on Earhart Road

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The City's 2013 update of the Non-Motorized Plan included several recommendations for vehicular lane conversions to create space in the street cross-section for bicycle lanes. Although some of the recommended road diets have been implemented, several of the recommended segments have not been implemented to date. City staff have worked to determine if Earhart Road between US-23 and S. Waldenwood Drive would be viable for conversion.

The following analysis provides the results for this road segment and suggested next steps. Analysis of the lane reduction was performed with the guidance from the [Federal Highway Administration Road Diet Information Guide](#) and the [Michigan Department of Transportation Road Diet Checklist](#).

The considerations from FHWA's guide used for this analysis were:

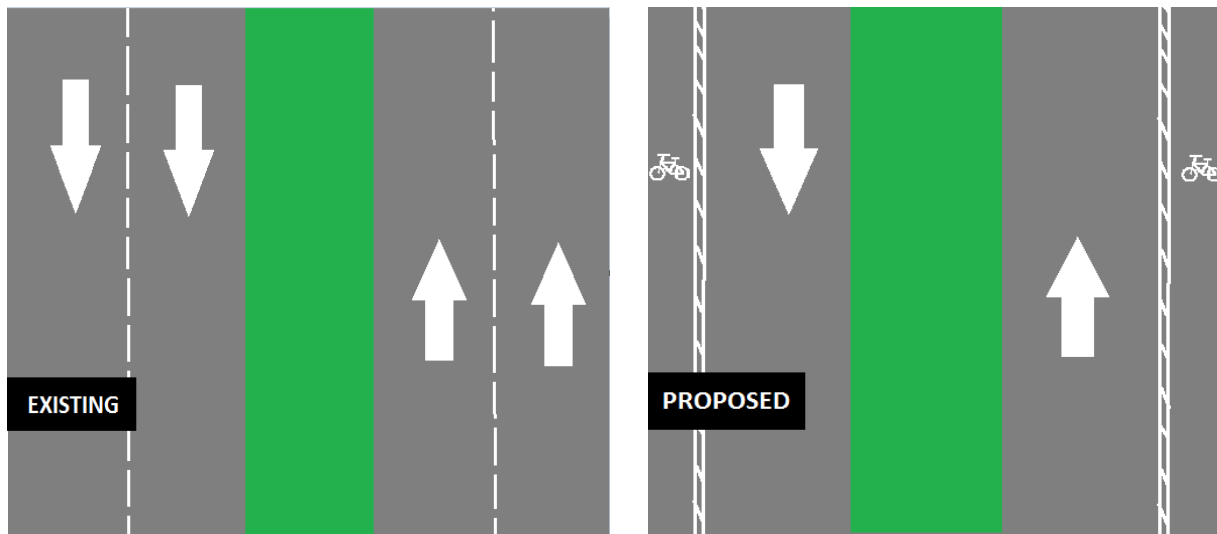
- ADT (<20,000)
- Peak Hour (<1750)
- Traffic signal density
- Peak hour directional volume (<750)
- Speed
- Transit usage
- Pedestrian and bike traffic
- Parking usage
- Effect on parallel routes
- Road width
- Railroad crossings
- Driveway/intersection conflicts
- Crash history

MDOT concerns not being reviewed are:

- Road segment status as a Freeway Emergency Route.
- Road segment status as CMAQ nonattainment or maintenance area status.
- Use of federal funds for road diet implementation.

The proposed changes will be implemented with paint and signing along with flexible post delineators. The proposed project is not intended to require extensive redesign of the roadway or intersections.

The current lane configuration of Earhart Rd. is two north bound lanes and two south bound lanes with intermittent left turn lanes and extremely large intersections. The segment was analyzed to determine if a reconfiguration to one north bound lane, one south bound lane, and two protected bike lanes would be feasible.



The characteristics of the road segment that support the implementation of a road diet and the installation of roundabouts include:

- The daily, peak hour, and directional peak hour traffic volumes are within the acceptable ranges to maintain a reasonable level of service.
- There is no potential for railway conflicts.
- There are no signalized intersections within the road segment that would cause design conflicts.
- The lane reduction would not have an impact on a parallel route.
- The prominent crash types involve a turning movement at driveways and side streets. A lane reduction would decrease the conflict points for turning traffic mitigating this issue.
- The lane reduction will aid in reducing the excessive speed patterns along road segment.
- The intersection of Glazier Way and Earhart Rd. is a high crash location on this segment with most crashes involving turning movements. Staff have reviewed the intersection and found that the lane reduction would provide an opportunity to install a roundabout. Conversion to this intersection control type would address the crash pattern as well as the speeding concern on the corridor.

- The intersection of Waldenwood Dr. and Earhart Rd. is another location with safety concerns. The current intersection configuration is unusual and would become more awkward with the lane reduction. Staff have also explored the opportunity to install a roundabout at this location. Conversion to this intersection control type would address driver confusion and documented crash history as well as citizen concerns about pedestrian safety and speeding along the segment.
- All approaches during AM peak and both Earhart approaches during PM Peak had a level of service of A or B at the intersection of Glazier Way and Earhart Rd. when a roundabout delay analysis was performed.
- The surrounding area consists of residential land uses, multi-family and single-family, and elder care/living facilities whose residents would benefit from the increased safety for bicyclists and pedestrians.
- There are two schools located within a mile of the road segment. Non-vehicular commuters would benefit from the road diet and roundabouts, and vehicular commuters would benefit from the roundabouts.

The characteristics of the road segment that discourage the implementation of a road diet are listed below.

- The Glazier Way approach at the intersection of Glazier Way and Earhart Rd. has a level of service of E/F during the peak 15 minutes of the day and a level of service of D for the remainder of the peak hour when a roundabout delay analysis was performed. The existing conditions have a level of service of D during the peak hour as well.

Based on the analysis of the road segment it is staff's recommendation to implement the lane reduction and install the roundabouts. The lane reduction and roundabouts would increase transportation options and safety on the road segment, while the potential negative results are minor.

This lane reduction would provide benefits for cyclists in the form of dedicated lanes, pedestrians in the form of reduced width of conflict zones with vehicles, and for motorists as the new cross-section will provide the opportunity to improve intersection operations.

Along with the lane reduction a roundabout is being installed at the intersection of Earhart Rd. and Glazier Way, and Earhart Rd. and Waldenwood Dr. These roundabouts are being installed to improve the turning movement safety.

The following project plan was implemented to ensure the lane reduction plan is successful:

- An open house was held on April 11<sup>th</sup> 2019.
- A presentation was held at Glacier Hills Senior Living Community on April 17<sup>th</sup> 2019.
- An online survey was available in spring 2019.
- The Transportation Commission reviewed the solution in spring 2019.
- Implementation of the lane reduction will be in summer 2019.
- An evaluation of the lane reduction will be conducted in fall 2020.

Analysis Guide: Earhart Road, between US-23 and S. Waldenwood Drive

Guidelines	Site information *Collected by Grace Crowe (2018)	Comments
ADT <20000	7246	
Peak Hour <1750	1046	
Peak Hour Directional <750	D1:478 D2: 568	
LOS	<p>Approach: Glazier Way AM:</p> <ul style="list-style-type: none"> <li>• Current: C</li> <li>• After: A</li> </ul> <p>PM:</p> <ul style="list-style-type: none"> <li>• Current: D</li> <li>• After: E/F</li> </ul> <p>Approach: Earhart Rd (NB) AM:</p> <ul style="list-style-type: none"> <li>• Current: A</li> <li>• After: A</li> </ul> <p>PM:</p> <ul style="list-style-type: none"> <li>• Current: B</li> <li>• After: A</li> </ul> <p>Approach: Earhart Rd (SB) AM:</p> <ul style="list-style-type: none"> <li>• Current: -</li> <li>• After: A</li> </ul> <p>PM:</p> <ul style="list-style-type: none"> <li>• Current: -</li> <li>• After: B</li> </ul>	<p>The “After” value is calculated for peak 15-minutes. During the remainder of the PM peak for Glazier Way approach the LOS is D.</p> <p>Earhart has uninterrupted flow currently, so left turning traffic is the only traffic with delay.</p>
Delay (s/v)	<p>Approach: Glazier Way AM:</p> <ul style="list-style-type: none"> <li>• Current: 16.6</li> <li>• After: 4.9</li> </ul> <p>PM:</p> <ul style="list-style-type: none"> <li>• Current: 32.9</li> <li>• After: 49.6</li> </ul> <p>Approach: Earhart Rd (NB) AM:</p> <ul style="list-style-type: none"> <li>• Current: 4.0</li> <li>• After: 8.5</li> </ul>	<p>The “After” value is calculated for peak 15-minutes. During the remainder of the PM peak for Glazier Way approach the delay is 28.96.</p> <p>Earhart has uninterrupted flow currently, so left turning traffic is the only traffic with delay.</p>

## Analysis Guide: Earhart Road, between US-23 and S. Waldenwood Drive

	<p>PM:</p> <ul style="list-style-type: none"> <li>• Current: 5.0</li> <li>• After: 5.53</li> </ul> <p>Approach: Earhart Rd (SB)</p> <p>AM:</p> <ul style="list-style-type: none"> <li>• Current: -</li> <li>• After: 7.1</li> </ul> <p>PM:</p> <ul style="list-style-type: none"> <li>• Current: -</li> <li>• After: 11.44</li> </ul>	
Volume/Capacity (highest)	<p>Approach: Glazier Way</p> <p>AM:</p> <ul style="list-style-type: none"> <li>• Current: 0.34</li> <li>• After: 0.19</li> </ul> <p>PM:</p> <ul style="list-style-type: none"> <li>• Current: 0.81</li> <li>• After: 0.96</li> </ul> <p>Approach: Earhart Rd (NB)</p> <p>AM:</p> <ul style="list-style-type: none"> <li>• Current: 0.25</li> <li>• After: 0.52</li> </ul> <p>PM:</p> <ul style="list-style-type: none"> <li>• Current: 0.17</li> <li>• After: 0.25</li> </ul> <p>Approach: Earhart Rd (SB)</p> <p>AM:</p> <ul style="list-style-type: none"> <li>• Current: 0.13</li> <li>• After: 0.34</li> </ul> <p>PM:</p> <ul style="list-style-type: none"> <li>• Current: 0.26</li> <li>• After: 0.64</li> </ul>	The "After" value is calculated for peak 15-minutes. During the remainder of the PM peak for Glazier Way approach the v/c is 0.85.
Speed	<p>NB 85<sup>th</sup> Percentile: 38mph</p> <p>SB 85<sup>th</sup> Percentile: 42mph</p> <p>Speed Limit: 35mph</p>	<p>Problematic speeding patterns on both sides of blvd. installation of a road diet and roundabouts would aid in alleviating this problem.</p> <p>*Included due to citizen concerns</p>
Transit Info	No bus stops	
Segment Signals	No signalized intersections in road segment	
Freight Info	No locations that require loading.	

## Analysis Guide: Earhart Road, between US-23 and S. Waldenwood Drive

Pedestrian and Bike traffic	Surrounded by neighborhoods, apartments, and schools. Creating high potential for bike and pedestrian traffic.	Pedestrian and bike traffic comfort levels are expected to improve.
Parking Info	No parking on road segment	
Parallel Routes that might be effected	No major roads	
Road Width	<p>Current: ~22ft (one side)                      Plan: 17ft (one side)</p> <ul style="list-style-type: none"> <li>• 12ft lanes</li> <li>• 5ft bike lanes</li> <li>• Roundabout at Glazier Way and Earhart</li> <li>• Roundabout at Waldenwood (north) and Earhart</li> </ul>	Lane widths are not finalized.
Railroad Info	None	
Driveway/Intersection Conflicts	No apparent conflicts	
Crashes	<p>Highest volume of crash types involve turning onto side streets or private drives.                      One of the more problematic locations is at Glazier Way.</p>	<p>Reducing lanes would not have an adverse effect on road safety due to the low volume of rear ends.                      Installation of roundabout will aid in reducing crashes.</p>