

Memo

To: Nick Hutchinson

From: Grace Crowe, Cynthia Redinger

cc: Raymond Hess

Date: February 15, 2019

Re: Analysis of Outstanding Road Diets from 2013 Non-Motorized Plan Update

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 the locations from the plan, as well as others, would be viable for conversion. The list of locations in this review includes:

- Earhart Road, US-23 to S. Waldenwood Drive
- Green Road, Burbank to Plymouth Road
- Liberty Street, Maple Road to Stadium Boulevard
- Oakbrook Drive, Ann Arbor Saline Road to Main Street
- Platt Road, Huron Parkway to Packard Street
- South Industrial, Stadium Boulevard to south of Stimson Street
- Traverwood Drive, Huron Parkway to Plymouth

The following analysis provides the results of an updated analysis for each of these segments and suggested next steps from staff. Analysis of the lane reductions 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

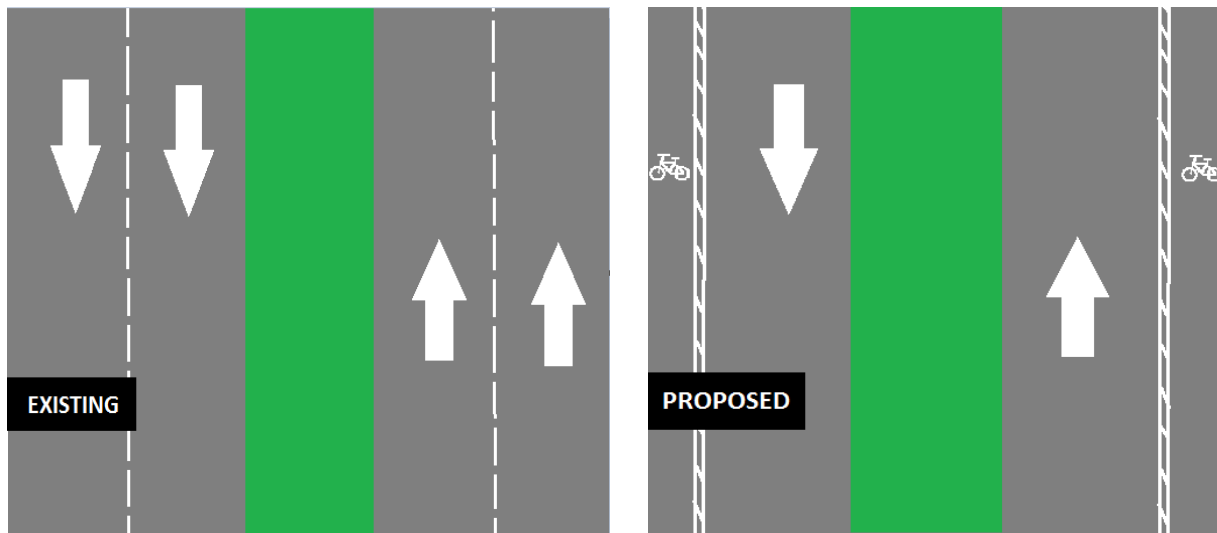
MDOT concerns not being reviewed are:

- 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 in some locations. The proposed projects are not intended to require extensive redesign of the roadways or intersections.

Earhart Road - Recommended

The current lane configuration 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 steps will be pursued to ensure the lane reduction plan is successful:

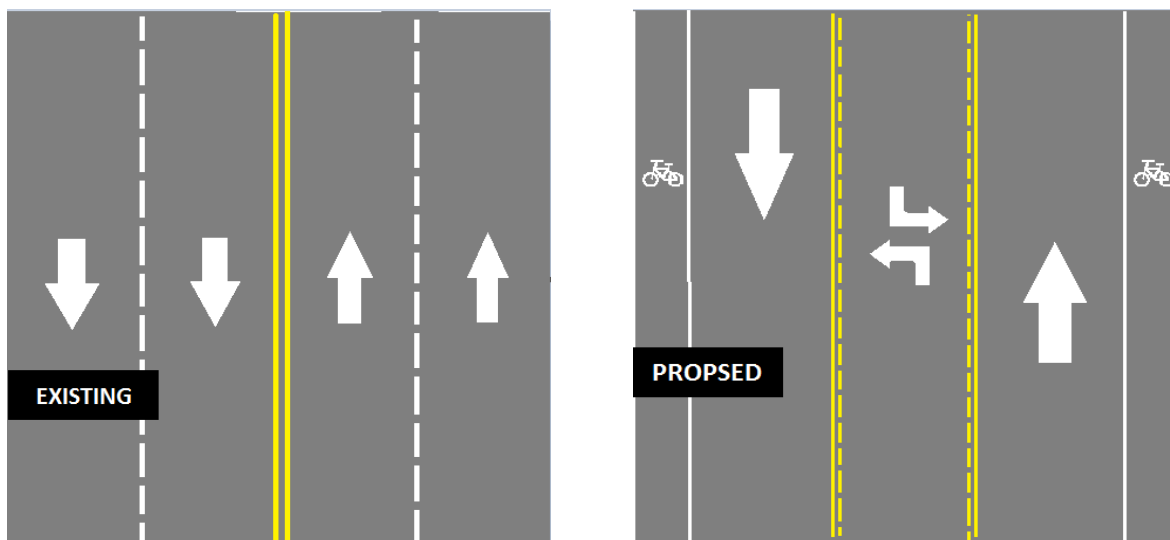
- Conduct a public a public engagement process with residents, families of students, and others who frequently use this corridor.
- Draft final plans for the design, including the roundabouts.
- Select delineators for the roundabout installation.

Green Road - Recommended

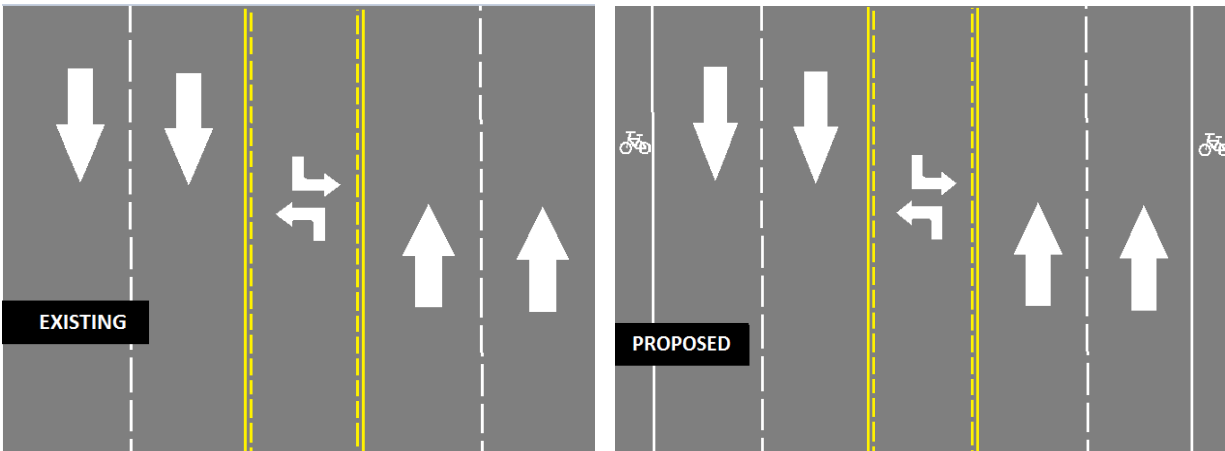
Green Rd. north of Commonwealth Blvd. currently has a four lane cross-section, two southbound lanes and two northbound lanes. The segment was analyzed to determine if a reconfiguration to one north bound lane, one south bound lane, one two-way left turn lane, and bike lanes would be feasible. Green Rd. south of Commonwealth Blvd. currently has a five lane cross-section, two southbound lanes, two north bound lanes, and one two-way left turn lane. This segment was analyzed with narrower lane widths along with bike lanes. At the intersection of Green Rd. and Plymouth Rd. the designated right turn lane will be eliminated to allow space for bike lanes.

These lane reductions are being implemented in order to increase non-vehicular road user's perceived level of comfort.

North of Commonwealth Blvd:



South of Commonwealth Blvd:



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

- The daily, peak hour, and directional peak hour traffic volumes are within the acceptable ranges to maintain a reasonable level of service.
- Side street approaches at the intersections of Burbank Dr. and Commonwealth Blvd. maintained or improved level of service of in a Synchro analysis with the proposed lane changes. With no level of services exceeding a C.
- The south bound approach at Green Rd and Plymouth Rd maintained the same level of service of E during both peak hours with delay increasing by no more than 7.4% or 4.5 seconds/vehicle in a Synchro analysis with the proposed lane changes.
- There is no potential for parking conflicts due to the lack of street parking.
- There is no potential for railway conflicts.
- There are no signalized intersections within the road segment that would cause design conflicts.
- The surrounding area consists of retail and office spaces with a residential area on the north end of the road segment. The residents to the north would benefit from the northern lane reduction; while employee, customer, and resident bicyclists would benefit from the installation of bike lanes throughout the road segment.

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

- The retail and office spaces have multiple driveways leading to the road segment causing less consistency with vehicle speeds. This could become problematic if a lane reduction were implemented.
- The abundance of retail stores surrounding the road segment ensure a high volume of freight traffic. If lanes are reduced a passenger car driver's perceived level of comfort will be decreased.
- There are seven bus stops within the road segment. Their frequent stopping can cause problems with traffic flow if lanes are reduced.

- There is a high concentration of rear-end crashes at the Plymouth Rd. intersection and CVS parking lot, indicating reducing lanes would be problematic and potentially worsen the situation.
- Nixon Road could be effected by vehicles avoiding the new lane configuration.

Other characteristics that were noted during the study are listed below.

- The left turning traffic from Green Rd. at the intersection of Green Rd. and Plymouth Rd. requires two left turn lanes per guidance from the Federal Highway Administration.

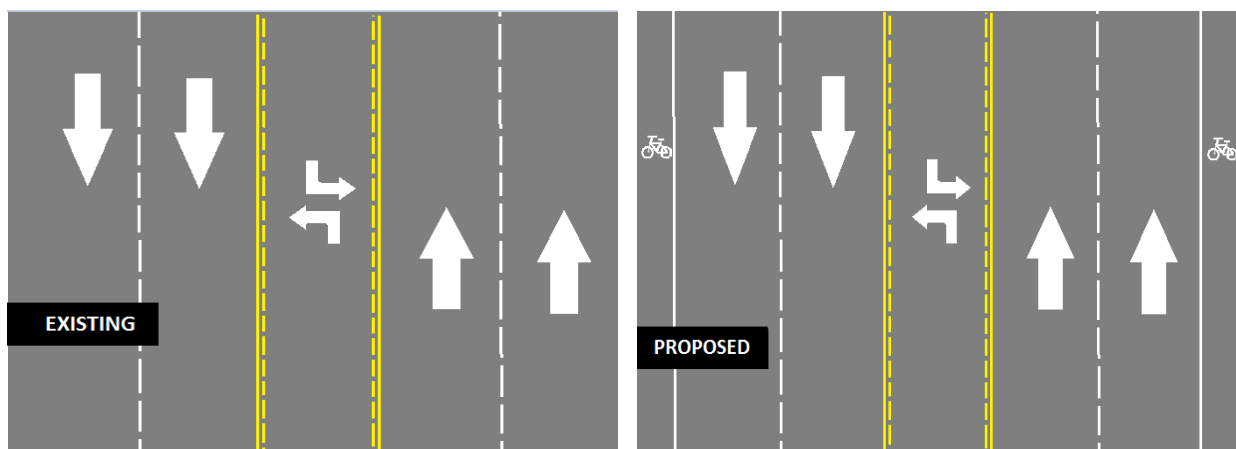
Based on the analysis of the road segment it is recommended to implement the two part lane reduction. North of Commonwealth Blvd., the lane reduction would increase the quality of life of citizens surrounding the road segment, while the potential negative results are minor. South of Commonwealth Blvd., the lanes will simply be narrowed in order to implement bike lanes while maintaining the current lane number. This is to minimize the negative effects that would be more predominate in this region of the road segment while still implementing aspects that would benefit citizens that utilize this road segment.

The following steps will be pursued to ensure the lane reduction plan is successful:

- Organize a public meeting in order to inform and receive feedback from residents, business owners, and commuters that would be affected by the road diet.
- Finalize the new pavement marking and signing design.
- Conduct a signal optimization at the signalized intersection of Green Rd. and Plymouth Rd.

Liberty Street – Alternate Design Recommended

The current lane configuration of two west bound lanes, two east bound lanes, and one two-way left turn lane will be maintained while the lane widths will be decreased to allow two bike lanes. This lane reduction is being implemented in order to increase non-vehicular road user’s perceived level of comfort.



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

- The daily, peak hour, and directional peak hour traffic volumes are within the acceptable ranges to maintain a reasonable level of service.
- All significant approaches maintained the same level of service in a Synchro analysis of the proposed lane width changes. With delay increasing no more than 13.5%, while delay increases up to 304% when lane number is decreased.
- There is no potential for parking conflicts due to the lack of street parking.
- There is no potential for railway conflicts.
- There are no signalized intersections within the road segment that would cause design conflicts.
- There are no parallel routes that would be effected by the road diet.
- The surrounding area consists of retail stores, while either end of the road segment has single-family and multi-family residential areas. The residents, consumers, and employees that utilize this road segment would benefit from the increased perceived level of comfort for bicyclists and pedestrians.

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

- The abundance of retail stores surrounding the road segment ensure a high volume of freight traffic. If lanes are reduced a passenger car driver's perceived level of comfort will be decreased.
- Two bus stops are located on either side of the road segment. Their frequent stopping can cause problems with traffic flow if lanes are reduced.
- The retail spaces have multiple driveways leading to the road segment causing less consistency with vehicle speeds. This could become problematic if a lane reduction were implemented.
- There is a high concentration of rear end crashes at both signalized intersection and turning movement crashes at the southern retail centers. Implementing lane reductions would improve the turning crash pattern but the rear end crashes are prominent enough that it wouldn't be feasible.

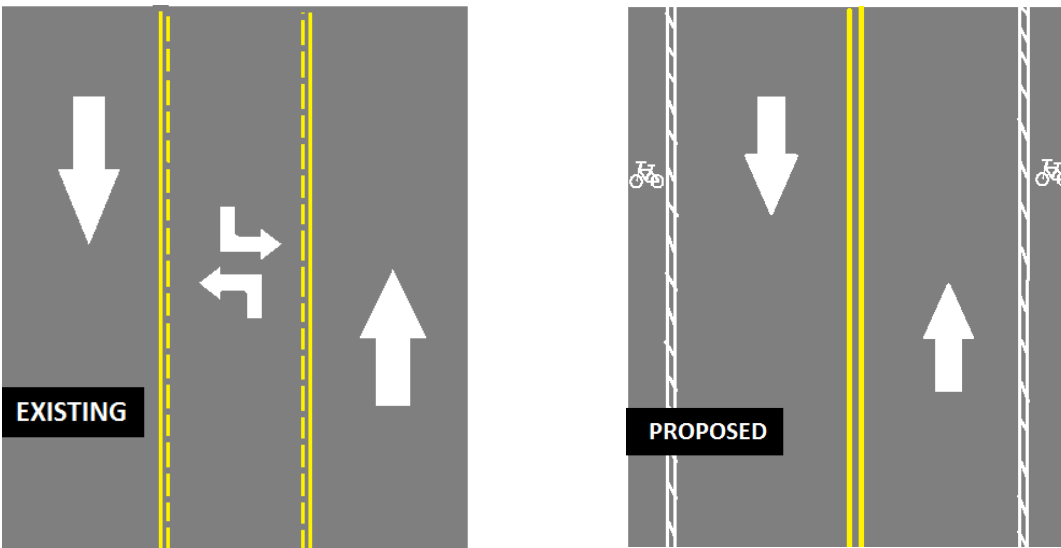
Based on the analysis of the road segment it is recommended to implement the lane reduction. The lane reduction would increase the quality of life of citizens surrounding the road segment, while the potential negative results are mitigated by only decreasing lane widths not lane amount.

The following steps will be pursued to ensure the lane reduction plan is successful:

- Organize a public meeting in order to inform and receive feedback from residents, business owners, and commuters that would be affected by the road diet.
- Finalize the new pavement marking and signing design.
- Conduct a signal optimization at the signalized intersections of Maple Rd. and Stadium Blvd.

Oakbrook Drive - Recommended

The current lane configuration of one west bound lane, one east bound lane, and one two-way left turn lane will be reconfigured to one west bound lane, one east bound lane, and protected bike lanes. This lane reduction is being implemented in order to increase non-vehicular road user's perceived level of comfort.



The characteristics of the road segment that support the implementation of a road diet are listed below:

- The daily, peak hourly, and peak hour directional traffic counts are below the acceptable ranges to maintain a reasonable level of service.
- All approaches maintained the same level of service in a Synchro analysis of proposed lane changes. All consisting of either an A, B, or C.
- There is no potential for parking conflicts due to the lack of street parking.
- There is no potential for railway conflicts.
- There is little potential for intersection conflicts because of the low turning volumes at the only non-signalized intersection in the road segment.
- There are no signalized intersections within the road segment that would cause design conflicts.
- There are no parallel routes that would be effected by the road diet.
- The surrounding area consists of apartments and retail stores whose residents and employees would benefit from the increased safety for bicyclists and pedestrians.

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

- There are retail store loading areas connected to the roadway, ensuring a high volume of freight traffic. If lanes are reduced a passenger car driver's perceived level of comfort will be decreased.
- Two bus stops are located on either side of the road segment. Their frequent stopping can cause problems with traffic flow if lanes are reduced.

Other characteristics that were noted during the study are listed below:

- No prevalent crash problem on the road segment that would be improved or worsened by reducing lanes.

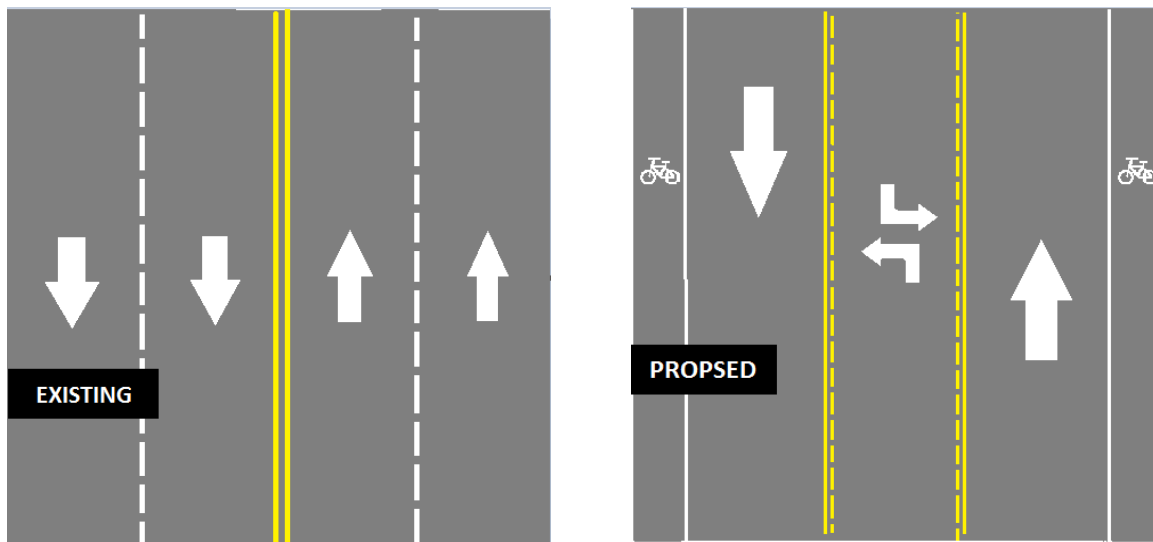
Based on the analysis of the road segment it is recommended to implement the lane reduction. The lane reduction would increase the quality of life of citizens surrounding the road segment, while the potential negative results are minor.

The following steps will be pursued to ensure the lane reduction plan is successful:

- Organize a public meeting in order to inform and receive feedback from residents, business owners, and commuters that would be affected by the road diet.
- Finalize the new pavement marking and signing design.

Platt Road – Not Recommended

The current lane configuration of two south bound lanes and two north bound lanes is proposed to be reconfigured to one south bound lane, one north bound lane, one two-way left turn lane, and two bike lanes. This lane reduction would be implemented in order to increase non-vehicular road user's perceived level of comfort.



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

- The daily, peak hourly, and peak hour directional traffic counts are within the acceptable ranges, excluding north bound peak directional traffic.
- There is no potential for parking conflicts due to the lack of street parking.
- There is no potential for railway conflicts.
- There are no signalized intersections within the road segment that would cause design conflicts.
- There are no parallel routes that would be effected by the road diet.
- Considerable freight traffic not expected.
- There is a high concentration of angle crashes at driveways and side roads which a road diet would aid in reducing.

- One non-fatal pedestrian crash and one non-fatal bicyclist crash occurred in the past five years, indicating safety on the road segment should be addressed.
- The surrounding area consists primarily of residential land uses with destinations, park and commercial, at either end of the corridor. Local travelers on the corridor would benefit from providing additional facilities and increasing safety for bicyclists and pedestrians.

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

- The level of service for the southbound approach at the intersection of Platt Rd. and Packard St. decreased from a level E to level F for both AM and PM peak hours in a Synchro analysis of the proposed lane changes. Delay during the PM peak almost quadrupled when the lane reduction was implemented.
- There is a high concentration of rear end crashes at both signalized intersections on either end of the road segment and a reduction in lanes would worsen the problem.
- Northbound peak directional traffic counts exceed the acceptable threshold to reasonably implement a road diet.
- Two bus stops are located on either side of the road segment. This has the potential to cause collisions if motorists attempted to move around them in the two-way left turn lane.

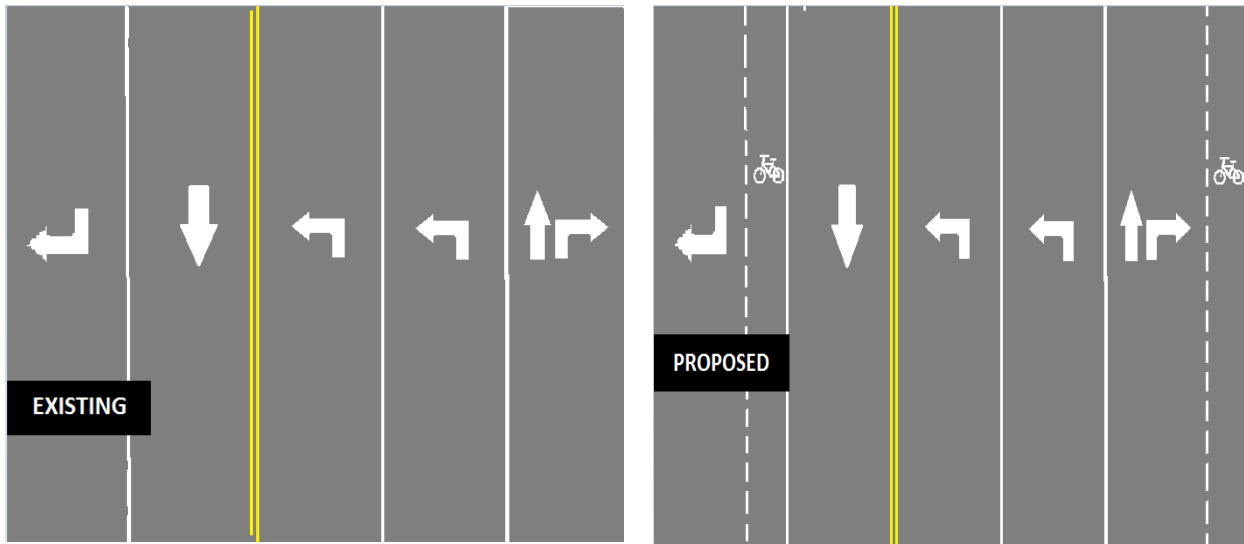
Based on the analysis of the road segment it is not recommended to implement the lane reduction. Though a lane reduction would aid in increasing pedestrian and bicycle level of comfort on the corridor the negative effects of the lane reduction are too prevalent.

Next steps for improving pedestrian and cycling experiences on this corridor include exploring improvements to mid-block pedestrian facilities and improving the parallel bicycle route on Elmwood Ave., as identified in the non-motorized plan.

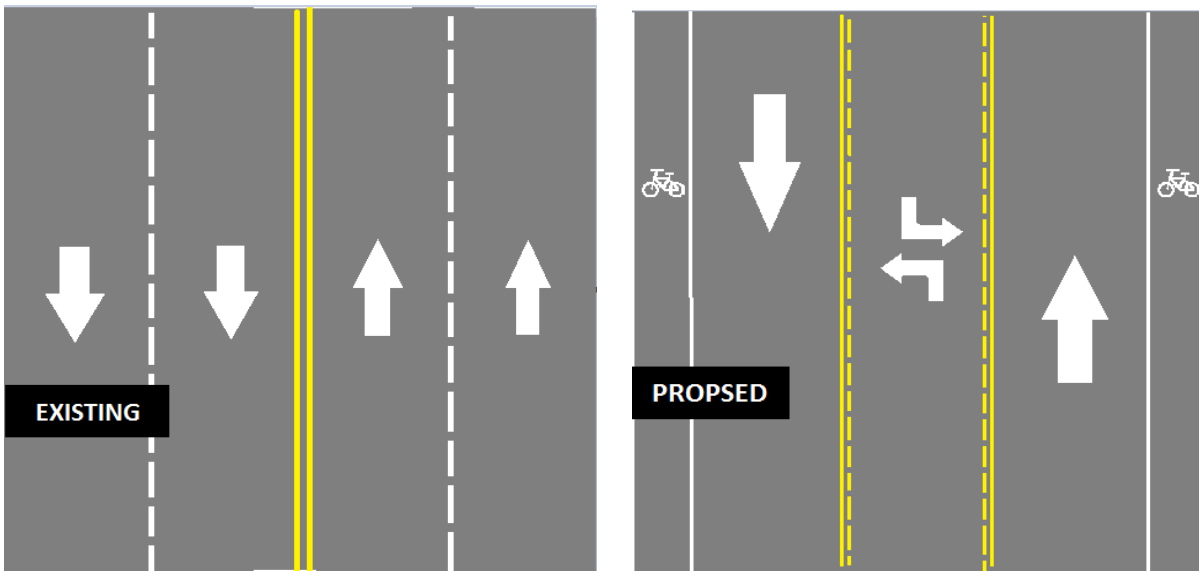
South Industrial – Modified Design Recommended

The current lane configuration of three north bound lanes and two south bound lanes will be maintained but with advisory bike lanes, north of Stimson St. The current lane configuration of two south bound lanes and two north bound lanes will be reconfigured to one south bound lane, one north bound lane, one two way left turn lane, and bike lanes, south of Stimson St. These lane reductions are being implemented in order to increase non-vehicular road user's perceived level of comfort.

North of Stimson St.



South of Stimson St:



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

- The daily, peak hour, and directional peak hour traffic volumes are within the acceptable ranges to maintain a reasonable level of service.
- The level of service of approaches at the intersection of S Industrial Hwy and Stadium St would not be effected by the installation of advisory bike lanes.
- All approaches at the intersection of S Industrial and Stimson maintained the same level of service in a Synchro simulation of the proposed lane change. All levels of service consisted of an A or B.

- There is no potential for parking conflicts due to the lack of street parking.
- There is no potential for railway conflicts.
- The major driveway entrance on the road segment is controlled by the signal reducing potential driveway conflicts.
- A predominate amount of the crashes on the road segment occur outside the CVS from turning traffic and the installation of an extended two way left turn lane would aid in reducing these types of crashes.
- The corridor is lined with destination commercial uses and limited residential with additional residential land uses surrounding the road segment. The residents, consumers, and employees that utilize the road segment will benefit from the improved perceived level of comfort for pedestrians and bikers from the lane reduction and advisory bike lanes.

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

- The signalized intersection at Stimson St. could cause design conflicts.
- The retail and entertainment centers have multiple driveways leading to the road segment resulting in many locations where motorists could slow for driveways. This could become problematic if a lane reduction where implemented.
- There are two bus stops within the road segment. Frequent service could cause minor additional delays.
- There is potential for Packard St. and S State St. to be impacted by vehicles avoiding the lane reduction.

Other characteristics that were noted during the study are listed below.

- The left turning traffic from S Industrial Hwy at the intersection of S Industrial Hwy and Stadium Blvd requires two left turn lanes per guidance from the Federal Highway Administration. Reduction of northbound lanes at this location would reduce the level of service for this intersection from E to F, increasing delay up to 113.1 seconds/vehicle.

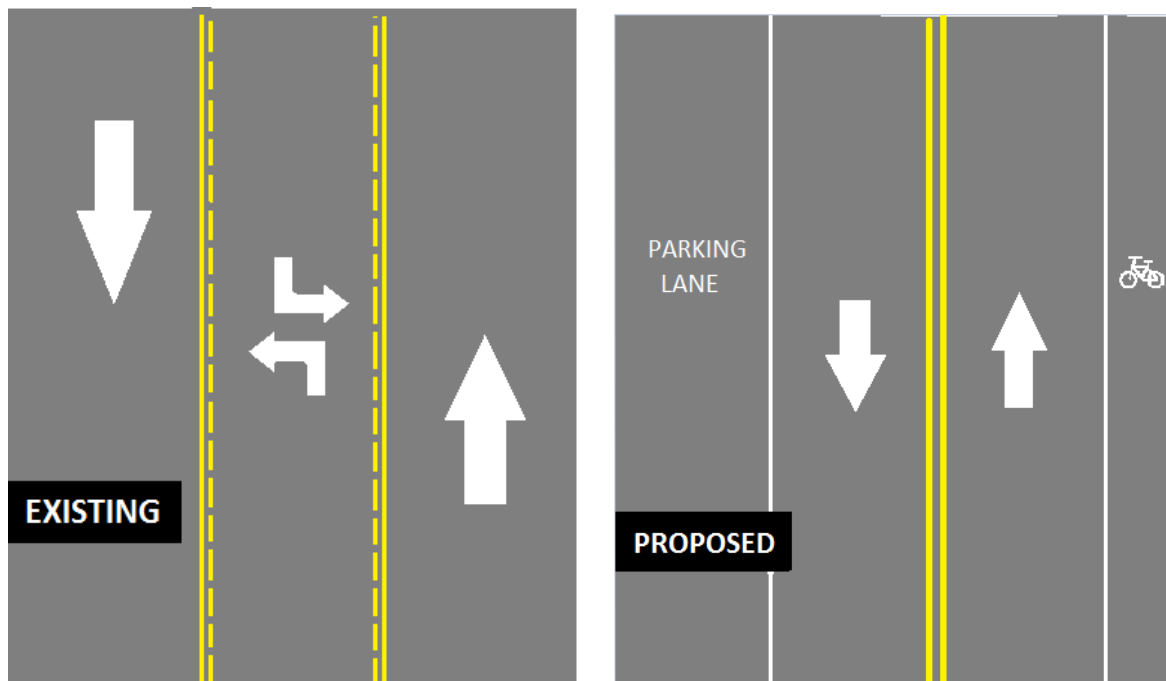
Based on the analysis of the road segment it is recommended to implement a lane conversion on S. Industrial Hwy. south of the intersection with Stimson St. and an advisory bike lane on the northern section. The advisory bike lane would result in raised motorist awareness of the shared road condition but would provide a high stress facility. Staff will continue to explore opportunities to pursue a lower stress parallel bicycling facility.

The following steps will be pursued to ensure the lane reduction plan is successful:

- Implement public engagement in order to inform and receive feedback from residents, business owners, and commuters that would be affected by the changes.
- Finalize the new pavement marking and signing design.
- Conduct a signal performance review at the signalized intersections of S Industrial Hwy Stadium Blvd. and Stimson St.

Traverwood Drive - Recommended

The current lane configuration of one north bound lanes, one south bound lanes, and one two way left turn lane will be reconfigured to one north bound lane, one west bound lane, one bike lane on the east side of the road and one parking lane on the west side of the road. This lane conversion is being implemented in order to increase non-vehicular road user's perceived level of comfort.



Components of the road segment that were taken into consideration are presented for reference.

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

- The daily, peak hour, and directional peak hour traffic volumes are within the acceptable ranges to maintain a reasonable level of service.
- All approaches at the intersection of Traverwood Dr. and Huron Pkwy. maintained at the level of service of A in a Synchro simulation of the proposed lane changes.
- In a Synchro analysis of the proposed lane changes all approaches at the intersection of Traverwood Dr. and Plymouth Rd., excluding the turning approaches from Plymouth Rd during the PM peak, maintained the same level of service during both PM and AM peak hours with none exceeding a C. Turning approaches from Plymouth Rd. decreased from an A to a B during the PM peak.
- There is no potential for railway conflicts.
- There are no signalized intersections within the road segment that would cause design conflicts.
- There are no parallel routes that would be affected by the road diet.
- The surrounding area consists of mostly apartments, condos, and office buildings, as well as a library, whose residents and employees would benefit from the increased safety for bicyclists and pedestrians. The residents will also benefit from the additional parking.

There are no prevalent characteristics of the road segment that discourage the implementation of a road diet along this road segment.

Other characteristics that were noted during the study are listed below.

- No prevalent crash problem on the road segment that would be improved or worsened by reducing lanes.

Based on the analysis of the road segment it is recommended to implement the lane reduction. The lane reduction would increase the quality of life of citizens surrounding the road segment, while the potential negative results are minor.

The following steps will be pursued to ensure the lane reduction plan is successful:

- Organize a public meeting in order to inform and receive feedback from residents, business owners, and commuters that would be affected by the road diet.
- Finalize the new pavement marking and signing design.
- Conduct a signal optimization at the signalized intersection of Traverwood Rd. and Plymouth Rd.