



TABLE 9: 2-Way Moore at Pontiac at Longshore Roundabout (Option D) Analysis

	2040 LOS	
	AM Peak	PM Peak
Pontiac Trail SB	D	A
Longshore EB	A	A
Moore WB	A	C
Overall	C	C

OHM Recommendation

We recommend the City implement Short Term Option 2 at the earliest opportunity. Regarding the longer-term improvements, each of the alternatives represents compromises in terms of cost, improving safety, restricting movements and the resultant changes to travel patterns. With all this considered, OHM endorses Option C or D depending on whether Moore remains one-way or is converted to two-way traffic. These represent the best balance between the competing interests. We recommend that an opinion of probable cost be developed for Option C for inclusion in the City’s Capital Improvement Plan.

C. Barton Dr / Pontiac Trail



Figure 21: Barton Dr at Pontiac Trail

Existing Characteristics

Barton Dr and Pontiac Trail is a signalized intersection. Both roads are generally two-lanes, but Pontiac Trail has left turn lanes provided at the intersection. On-street bike lanes exist on Barton Dr east of Pontiac Trail, but not to the west. Rather, on-street parking is allowed on Barton to the west of Pontiac Trail. Bike lanes are provided north and south along Pontiac Trail but are eliminated through the intersection where the left turn lanes are developed. As a standard configuration intersection, there are the usual 24 pedestrian conflict points and the 32 vehicle conflicts, of which 16 are vehicle crossing paths, eight are merging and eight are diverging movements.

Traffic counts (capacity calculations) and direct field observations have pointed to congestion issues during the commuter peak periods, especially in the morning. In the a.m. period, significant backups occur for both eastbound and southbound approaches.



Existing Configuration Pro

The configuration is traditional, so drivers and non-motorized users are well familiar with navigating it. Pedestrians seeking to cross have a positive guidance by way of pedestrian signal heads. North and southbound left turns are relatively heavy and can utilize dedicated left turn lanes on their approaches.

Existing Configuration Con

There are not on-street bike lanes available for three of the four intersection approaches. Though the east-west left turn volumes are not particularly heavy, they do not have dedicated left turn lanes to improve the safety of their turning movements. Providing such a feature would require either the elimination of the on-street bike lanes on Barton within the intersection or widening the intersection resulting in the need for additional road right-of-way (ROW) and reconstructing the traffic signal. A particularly heavy turning movement, the eastbound right turns, also merits but does not have access to, a dedicated right turn lane. This again would require additional ROW. The presence of pedestrian signal heads does not completely mitigate the inherent conflicts of vehicles turning on green across their crossing paths.

Basis for Developing Alternate Layouts

There are competing interests at this intersection that tend to be mutually exclusive with conventional measures due to the limited road ROW that is available. Three of the options that have been developed may be viewed as prioritizing the needs of one mode of travel over others. The roundabout option attempts to provide benefits for both motorized and non-motorized users.

Option A Characteristics

This option favors improvement for motorists by seeking to reduce congestion delays. It removes the on-street parking along the south side of Barton from Chandler Rd to Pontiac Trail. It then uses the extra space to provide an eastbound right turn lane. The number and types of conflict points will not be altered with this modification.

Option A Pro

This option is relatively easy to implement, requiring only changes to traffic signs and pavement markings. Delays to eastbound traffic would be reduced by about one half.

Option A Con

This option eliminates on-street parking for the residents along this block of Barton. As the parking lane(s) are not fully used, this option could be considered a loss to bicyclists as they would have to directly share the road with moving traffic instead of skirting it by riding in the parking lane. This option also does nothing to reduce pedestrian or motorist conflict points.

Option B Characteristics

This option favors improvement for non-motorists on Barton Dr by seeking to provide additional bike facilities. It removes the on-street parking along Barton from Chandler Rd to Pontiac Trail. It uses the extra space to provide eastbound and westbound on-street bike lanes, matching the cross section of Barton east of Pontiac Trail. This option keeps bikes in the road through the intersection.

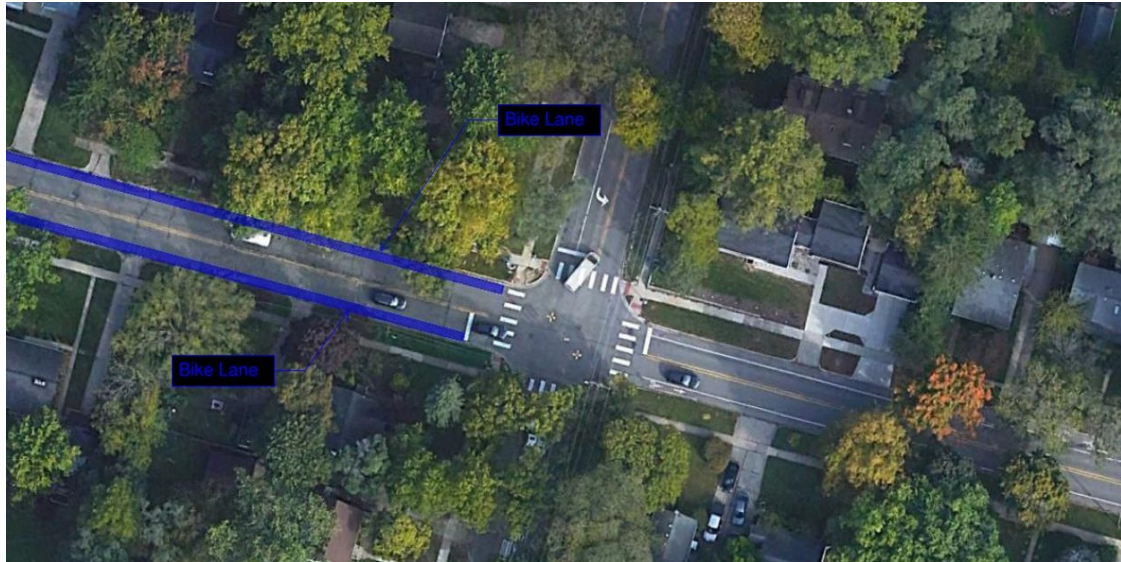


Figure 22: Option B – Extended Bike Lanes

Option B Pro

This option is relatively easy to implement, requiring only changes to traffic signs and pavement markings. The option will not impact vehicle delays while providing a critical link in the City’s bike network along Barton Dr.

Option B Con

This option eliminates on-street parking for residents along this block of Barton. However, it does nothing to reduce pedestrian or motorist conflict points.

Option C Characteristics

This option favors improvement for non-motorists on Pontiac Trail by seeking to provide additional bike facilities. It widens the sidewalk along Pontiac Trail to 10’ so to function as a multi-use path from Starwick Dr to a point about 275’ south of Barton. This provides a linkage between the on-street bike lanes of Pontiac Trail north and south of Barton Dr. Alternately, Pontiac Trail could be symmetrically widened so that the additional bicycle facility is on-street, though this will likely be the more expensive option due to adjustments needed with the widening to the drainage system of the street.

Option C Pro

This option will not impact vehicle delays while providing a critical link in the City’s bike network along Pontiac Trail.

Option C Con

Providing a multi-use pathway may require additional right-of-way to avoid the loss of street trees, but this could be accomplished through easements rather than fee simple purchases. Alternately, additional right-of-way would not be required for widening the street, but the street trees in the green belt would need to be removed.



Option D Characteristics

This option configures the intersection as an urban compact one lane roundabout. It would have an inscribed circle from 70' to 80' diameter. The image below is for one with about 80' outer diameter. Small ROW triangles would be needed in each corner, measuring up to roughly 20'x20'x28' to allow for relocating the sidewalks. The smaller the inscribed circle, the smaller the ROW triangles would be. This option has 16 conflict points, 71% fewer than existing conditions. They include eight with pedestrians, four merging and four diverging vehicle paths. Ramps would be provided to allow bicyclists the option of riding up onto a widened multi-use path and crossing as pedestrians or remaining on the street and taking the lane to negotiate the roundabout.

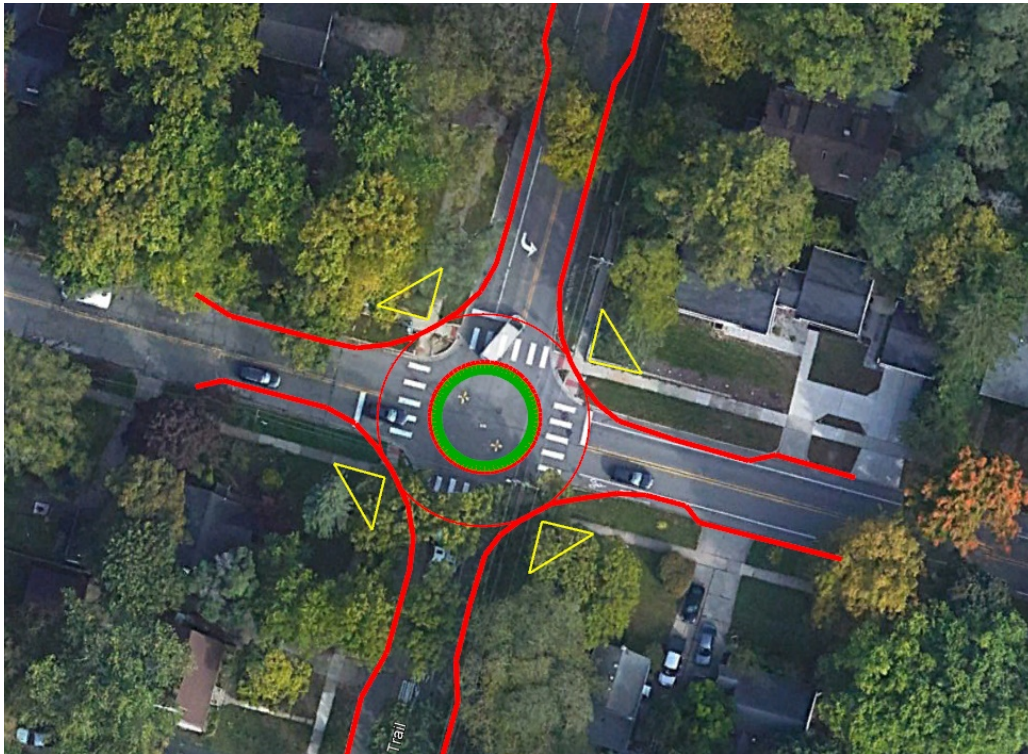


Figure 23: Option D – Urban Compact Roundabout. The yellow triangles are showing potential road right-of-way needed to maintain sidewalk connectivity.

Option D Pro

All current vehicle movements are facilitated with this option. It is the option with the best anticipated safety performance. The reduction of about 71% fewer conflict points tracks nicely with national experience with the actual reduction of crashes when signalized intersections are converted to roundabouts. With this option, all pedestrian crossings would benefit from the splitter islands being refuges for pedestrians crossing the approaches. The slow circulating speed of about 12 to 16 mph is conducive to bike riders sharing the road through the intersection. It would be possible to also provide ramps to and from the on-street bike lanes for users that are not confident with riding through roundabouts. The sidewalks between the ramps within this junction would be widened from their usual 5' dimension to 10' wide so to function as multi-use paths in the immediate area of the roundabout.



Option D Con

This option may need a small amount of road right of way and possibly rights to grade to accommodate the roundabout and the pedestrian sidewalks around the intersection. Would remove on-street parking in the immediate vicinity of the roundabout as part of developing the splitter island(s). This option was not well received by residents living near the intersection, as traffic would now be closer to their front yards and right of way would be required. This option also did not show well in handling future vehicular traffic demands during peak periods.

Operational Analysis

Operationally, two alternatives have been evaluated and found to provide near term value for this intersection, the addition of a dedicated EB right-turn lane and implementation of a modern roundabout. For the addition of the right-turn lane, a storage length of 150 ft was used. One alternative that was investigated, included the addition of dedicated left-turn lanes for EB/WB Barton, however analysis found that this did not provide substantial improvements to traffic operations.

An analysis was performed for the addition of a right-turn lane under both 2019 and 2040 traffic volumes. In the 2019 analysis, Option A is expected to result in modest improvements during the AM Peak. The 2019 PM peak model did not show significant changes to the LOS after adding the EB right-turn lane. This is primarily since most traffic is heading to the M-14 interchange in the PM, whereas in the AM traffic was coming from the interchange.

Due to the substantial projected volume increase at this location, the existing intersection is expected to operate with very poor level of service in 2040. 2040 operational analysis information is provided below. This deterioration in LOS is primarily attributed to the new developments on the horizon along Pontiac between Barton and Dhu Varren. With the Option A addition of a right-turn lane, the intersection overall improves to LOS D in the AM and PM peak periods, but individual movements are still projected to experience lengthy delays.

TABLE 10: Barton at Pontiac Option A (Right Turn Lane) Analysis

	2019 LOS/Delay		2040 LOS/ Delay	
	AM Peak	PM Peak	AM Peak	PM Peak
EB Existing	C (34.9)	C (23.4)	F (89.6)	F (91.0)
EB Option A	B (17.6)	B (18.6)	D (42.8)	E (71.5)
Intersection Existing	C (33.1)	C (20.2)	F (88.2)	D (54.1)
Intersection Option A	C (21.4)	B (19.1)	D (41.3)	D (38.5)

An analysis was performed for a single lane compact roundabout under both 2019 and 2040 traffic volumes. In the 2019 analysis, all approaches were found to operate at LOS C or better under existing traffic conditions, with an overall LOS of B for AM and PM peaks. Due to the substantial projected volume increase at this location, the 2040 single lane roundabout analysis shows poor level of service on multiple approaches and has an overall LOS D in both the AM and PM peak periods.



TABLE 11: Barton at Pontiac Option D (Roundabout) Analysis

	2019 LOS		2040 LOS	
	AM Peak	PM Peak	AM Peak	PM Peak
Pontiac Trail SB	B	A	F	B
Barton EB	C	A	E	A
Pontiac Trail NB	A	B	A	E
Barton WB	A	C	A	F
Overall	B	B	D	D

OHM Recommendation

There are competing interests at this intersection that cannot be served with conventional traffic signal timing or geometric improvements due to limited road ROW available. Signalized and roundabout options were evaluated based on the needs of all users. OHM weighed the benefits of these options and did not find that any one option would solve the long term demands of all users at the intersection. Rather than identify a geometric change to the intersection, it is believed that this intersection would be best served by implementing Traffic Demand Management techniques. The issues at the intersection are primarily related to the significant peak hour traffic demands. Shifting intersection demand to be spread throughout the day provides the most opportunity for delay relief.

D. Dhu Varren Rd / Pontiac Trail



Figure 24: Dhu Varren Rd at Pontiac Trail

Existing Characteristics

Dhu Varren Rd and Pontiac Trail currently operates as a two-way STOP controlled intersection, with the controls applying to Dhu Varren. Both roads are generally two-lanes. On-street bike lanes exist on Pontiac Trail through the intersection. Bike lanes begin on Dhu Varren east of the intersection but do not extend into the intersection. Currently, there is sidewalk along the east side of Pontiac Trail south of Dhu Varren