The City of WORCESTER

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Evaluation of "Miscellaneous"

Newton Square
July 14, 2023

Petition:	Petition of Jennie Backstrom request guidelines for motorists be painted around Newton Sq. Rotary. # 8ii CC September 22, 2021
Scheduled Committee Hearing:	July 19, 2023 Traffic & Parking Committee, Item 9a
Prepared by:	Todd M. Kirrane, Assistant Director

The petitioner is requesting safety and access improvements at the intersections of Pleasant, June, Highland, and Newton Ave at the Newton Square traffic circle.

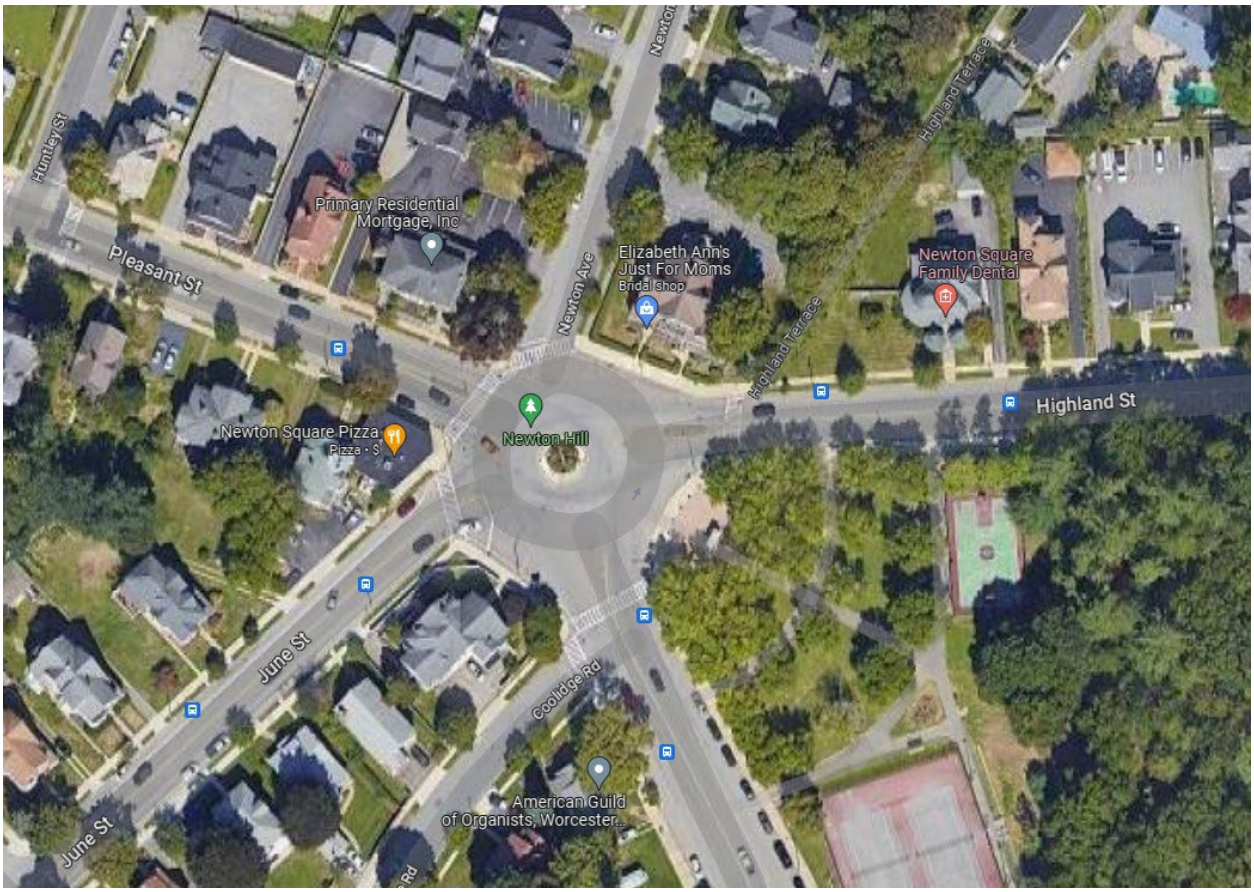


IMAGE 1: Aerial image of location

IMAGE 2: Streetview of Highland St approach

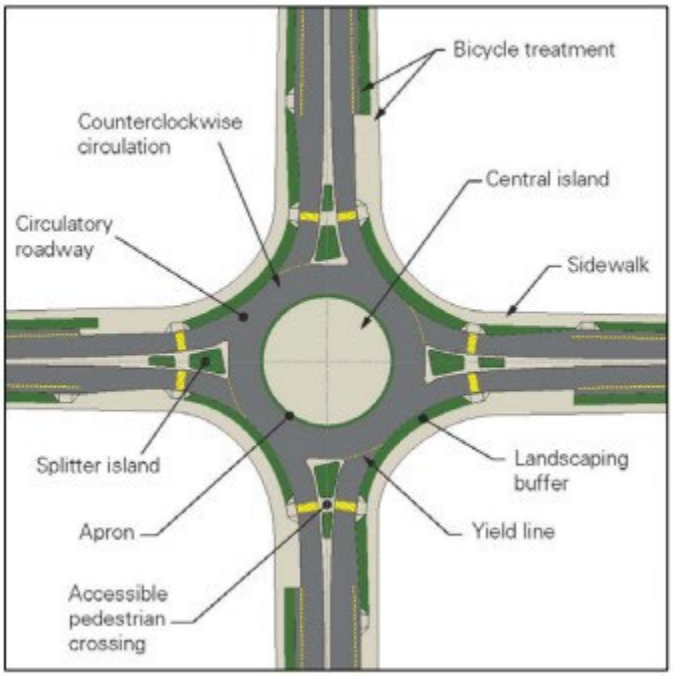
IMAGE 3: Streetview of Newton Ave approach

IMAGE 4: Streetview of Pleasant St eastbound approach

IMAGE 5: Streetview of June St approach

IMAGE 3: Streetview of Pleasant St westbound approach

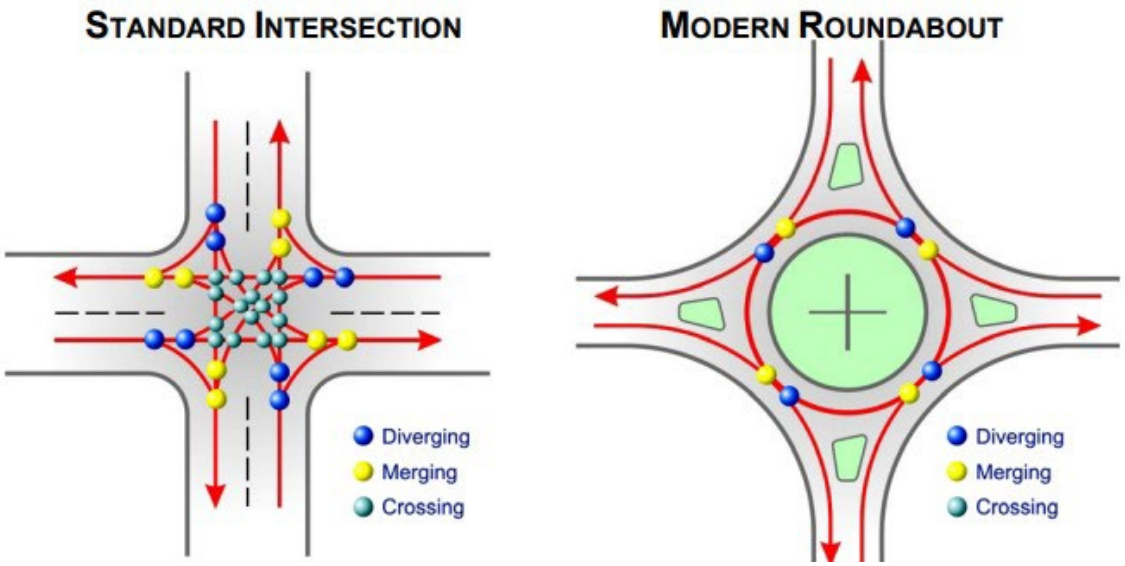
As part of the petition the resident includes information from the Federal Highway Department concerning the design elements and safety benefits of a modern roundabout. These design elements include:



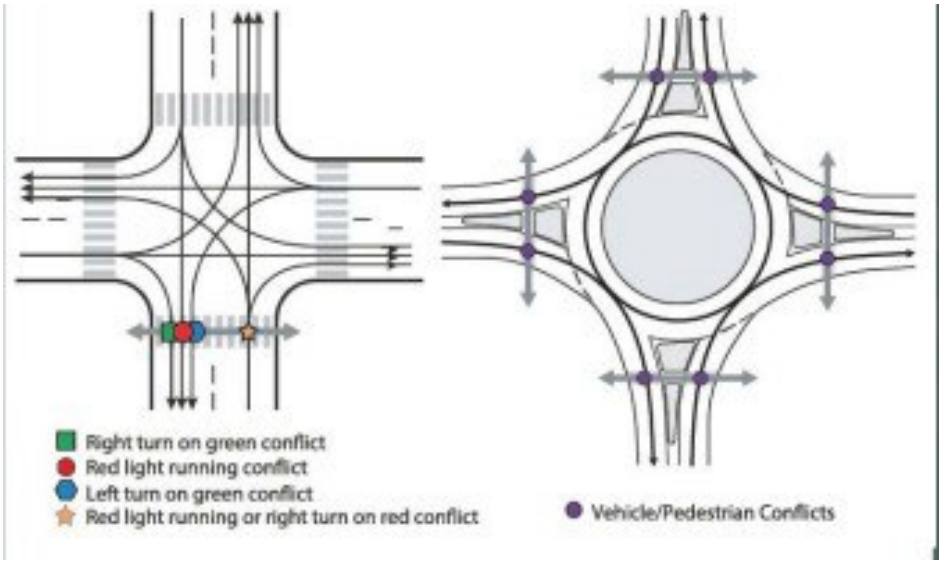
- **Yield control at all entry points** – All approaching traffic is required to yield to vehicles on the roundabout's circulatory roadway before entering the circle. Yield signs and markings are use primarily as entry control.
- **Traffic deflection** – Entering vehicles are directed to the right by channelization or splitter islands onto the roundabouts circulating roadway avoiding the central island. No entrance traffic is allowed to travel a straight route through the roundabout.

- **Geometric curvature** – Entry design and the radius of the roundabout's circulating roadway can be designed to slow the speeds for entering and circulating traffic.
- **Pedestrian Crossings** - Pedestrians crossing locations are generally setback from the roundabout to allow pedestrians to cross one travel lane of traffic at a time and to maximize visibility between the pedestrian and motorist.

The purpose of these designs is to increase safety and access by reducing the number of conflict points between two motor vehicles or a motor vehicle and a pedestrian as opposed to a non-signalized or signalized intersection.



Conflict points between two motor vehicles



Conflict points between a pedestrian and a motor vehicle

Multiple studies conducted on the safety of modern roundabouts have proven that they are safer for all users.

- One study of 24 intersections converted from STOP & Traffic Signal control to modern roundabuts in the United States resulted in a 39% decline in total crashes, 79% decline in injury crashes, and 89% decline in serious injury/fatal crashes
- Same study showed a 30 to 40% reduction in pedestrian crashes and 10% reduction in bicycle crashes

- Studies in Europe indicate that, on average, converting conventional intersections to roundabouts can reduce pedestrian crashes by about 75%
- Studies of intersections in the United States converted from traffic signals or stop signs to roundabouts have found reductions in injury crashes of 72-80% and reductions in all crashes of 35-47%

While staff agrees that a modern roundabout provides many safety benefits for all roadway users, the current design of Newton Square is of an older style traffic circle that was common in the mid to late 20th century to provide a minimal amount of deflection for motor vehicles by preventing them from driving straight through an intersection, but not enough deflection to effectively manage motor vehicle speeds or impede the free flow of traffic. Many of these circles were designed at a time when motor vehicle top speeds were much lower than they are now and pedestrian facilities were often not part of the original design. These differences are easily noticeable when one compares the aerial image of Newton Square in image 1 to the aerial image of a modern roundabout from the Massachusetts Department of Transportation. An easy retrofit of the intersection is difficult to achieve because the existing island is offset and not centered in the middle of the intersection and this is a designated truck route so these factors must be taken into account when redesigning a safe, modern roundabout in Newton Square.

Recognizing the issues that plague this intersection with respect to safety and access for all modes, DTM staff has had conversations with the District 5 Councilor concerning the need to improve the safety and access in Newton Square and will be advancing over the next several years including:

1. Short term changes using pavement markings and signage to retrofit the existing intersection to more closely align with the operation of a modern roundabout using internal staff and existing funding (expected late Fall 2023/Spring 2024)

2. Long term capital project that will include a design consultant, public process, and either local, state, or federal construction funding to redesign and construct an actual modern roundabout.

Recommendation: Based on the information provided above, staff recommends the following

- Vote to FILE this request and submit a Chair's Order requesting, through the City Manager, that the Commissioner of Transportation and Mobility develop and implement a short term safety improvement plan in Newton Square while pursuing longer-term capital improvements.