

Modern Roundabouts in Kane County

Committee of the Whole
July 29, 2015



Overview

- What is a Roundabout?
- How does it work?
- Roundabouts versus Conventional Intersections
 - Cost
 - Safety
 - Capacity
 - Fitting in with Kane County

What a Modern Roundabout is NOT:

- Not a rotary

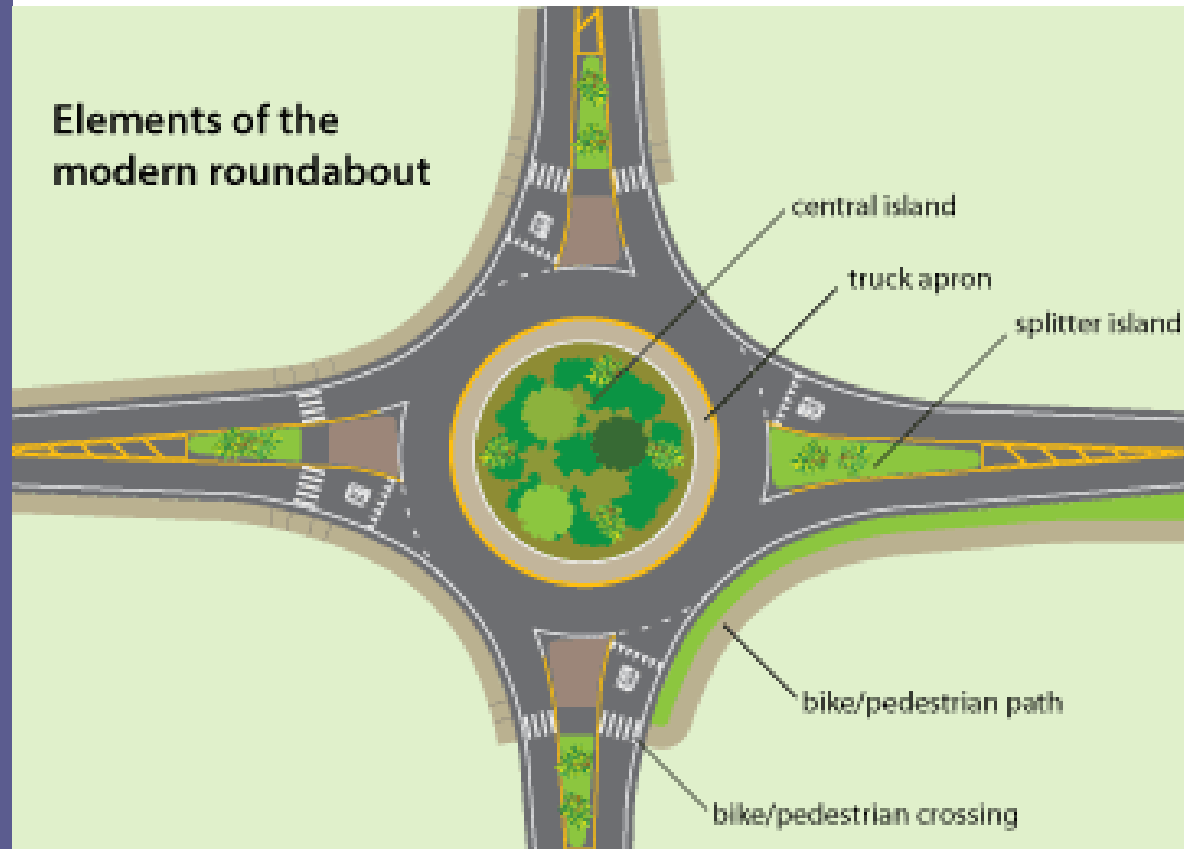


- Not a traffic circle



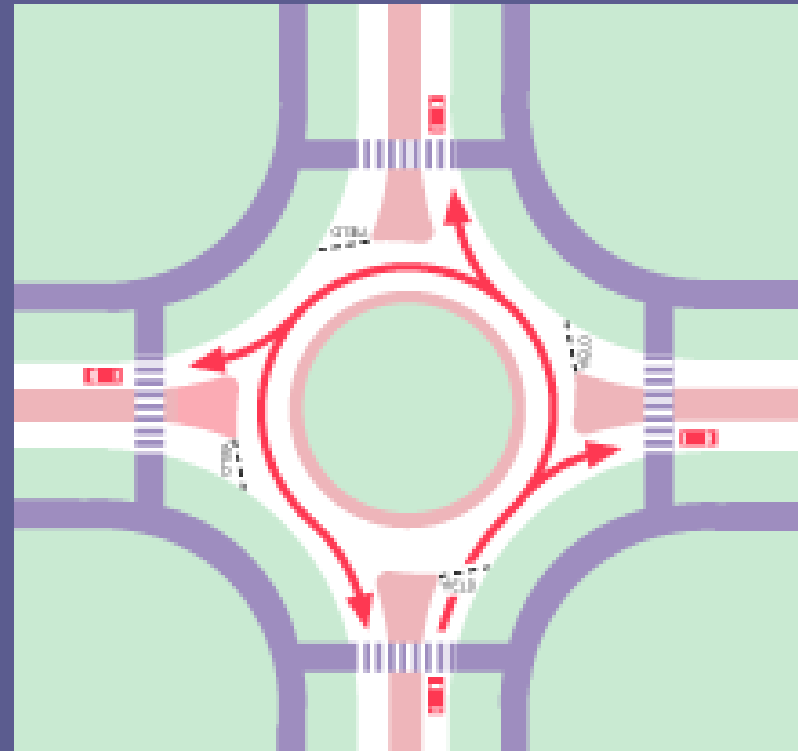
What is a Modern Roundabout?

- Circular Intersection
- Yield control of all entering traffic
- Channelized approaches
- Central island
- Design that ensures travel speeds of less than 25 mph



Why Use a Roundabout?

- An innovative solution to common transportation problems



How a Roundabout Works

- Geometry and signs slow approaching drivers
- Vehicles yield until an opening arrives
- Drivers in the circulating lane have the right of way

Common Concerns

- Public Acceptance
- Driver Unfamiliarity
- Large Trucks/Agricultural Equipment
- Bicycles/Pedestrian Usage
- Emergency Vehicles
- Snow Removal



Roundabout versus Conventional Intersection

Major Design Issues

1. Long auxiliary lanes for small movements
2. Left turn volume percentage is high
3. Level of Service concerns anticipated with traffic signal
4. Minimizing the drainage and ROW footprint
5. Severe high-speed crashes in the past

Roundabout Advantages

- **Flexibility of application**
 - Replace a 2 or 4-way stop or signal controlled intersections
 - Can be used on intersecting 2, 4 and 6 lane facilities
 - Low, medium or medium/high traffic volumes
 - 3, 4, 5 and more legs possible at intersection
 - Handles skews extremely well
- **Compared to traditional signals**
 - Generally have same or less delay and cost
 - All cases have had lower accidents, injuries and fatalities (vehicular and ped/bike)

Roundabout Advantages

- Decreased air pollution
- Conservation of land space
- Less noise
- Visually appealing centerpiece
- Reduced maintenance



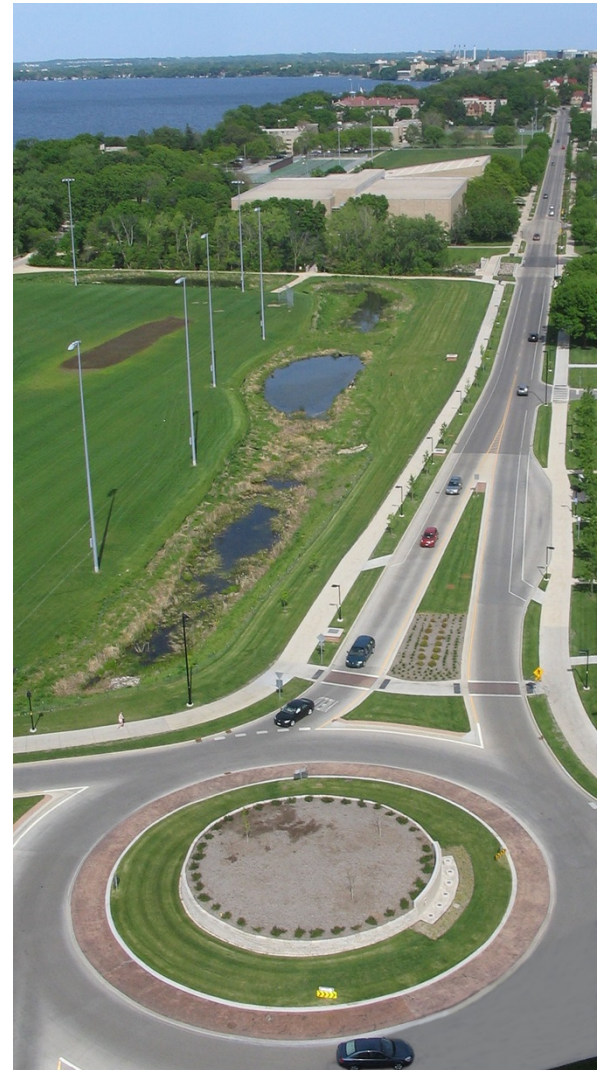
How Do You Drive Through a Modern Roundabout?

- <http://www.wimp.com/testroundabout/>



Cost Comparison

- Pavement costs
- \$3,000 to \$5,000 annual savings on traffic signal energy costs
- Possible federal funding



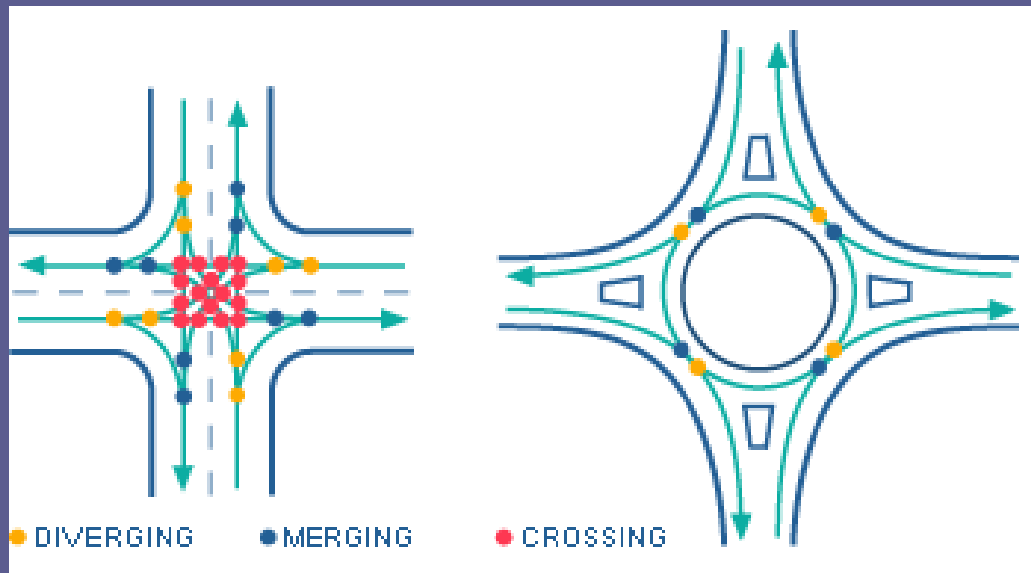
Roundabouts versus Conventional Intersections Safety

- Fewer pedestrian and vehicular conflict points
- Lower speeds (<25 mph) allow more time for drivers to react to potential conflicts
- Lower speeds (<25 mph) reduce severity of crashes

Crash Reduction

- In a recent (IIHS) study of 24 intersections in the USA where stop control and traffic signals were replaced with Modern Roundabouts, there was a:
 - 39% reduction in crashes
 - 76% reduction in crashes with injury
 - 90% reduction in crashes with fatality

Vehicular Conflict Points

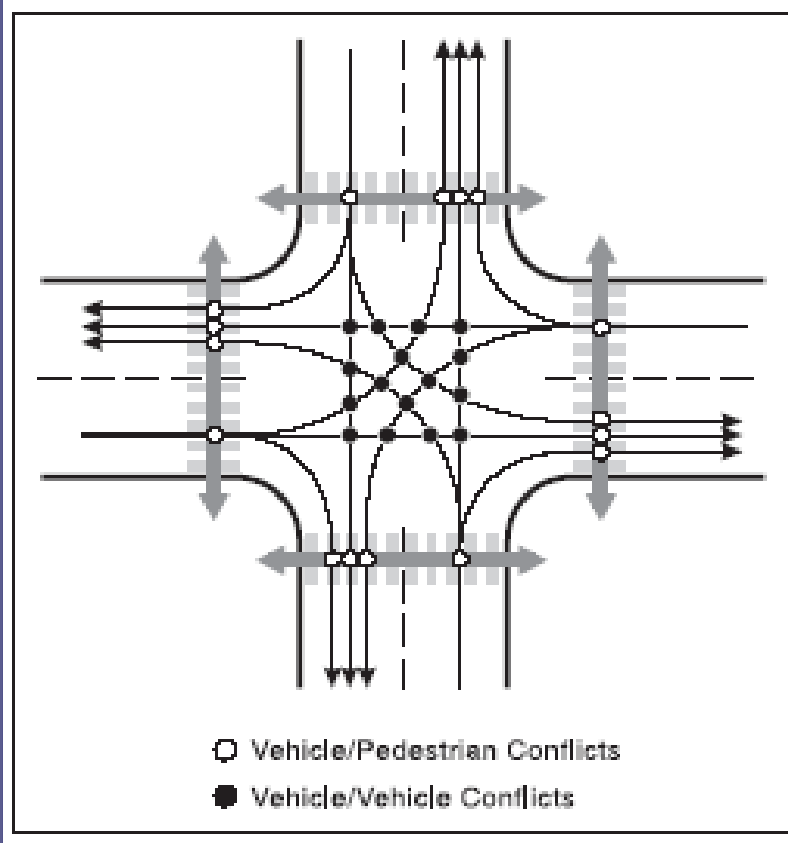


- Conventional Intersection = 32 Conflict Points
- Modern Roundabout = 8 Conflict Points

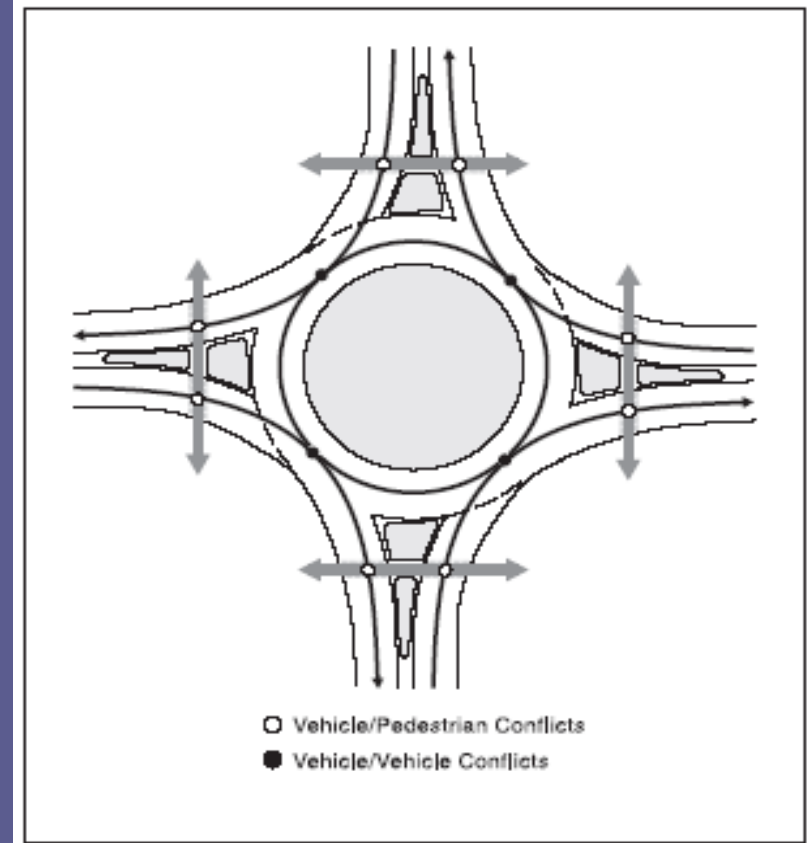
Pedestrian Friendly

- Peds cross one direction of traffic at a time due to the presence of splitter islands
- More frequent gaps between vehicles provide more opportunity for crossing
- Slower speeds (<25 mph) allow easy yielding of motorists to pedestrians at designated crossings

Pedestrian Conflict Points



16 Conflict Points



8 Conflict Points

Roundabout Performance: Capacity

- All legs operate simultaneously
- Can carry over 30% more vehicles during peak hours
- Decreases pedestrian travel time across intersection by 20%

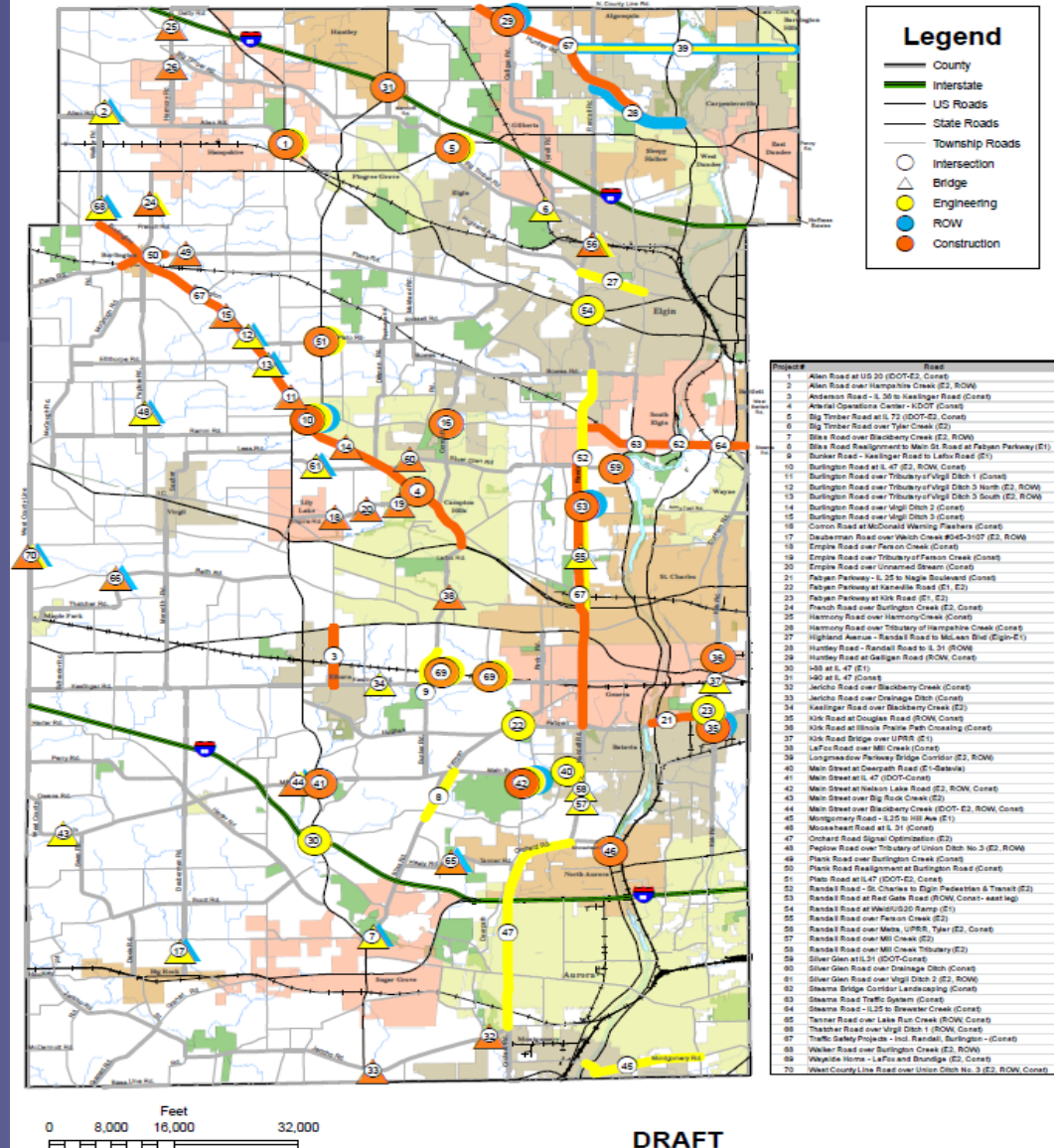


Is the Roundabout Right for Kane County?

Infrastructure Needs

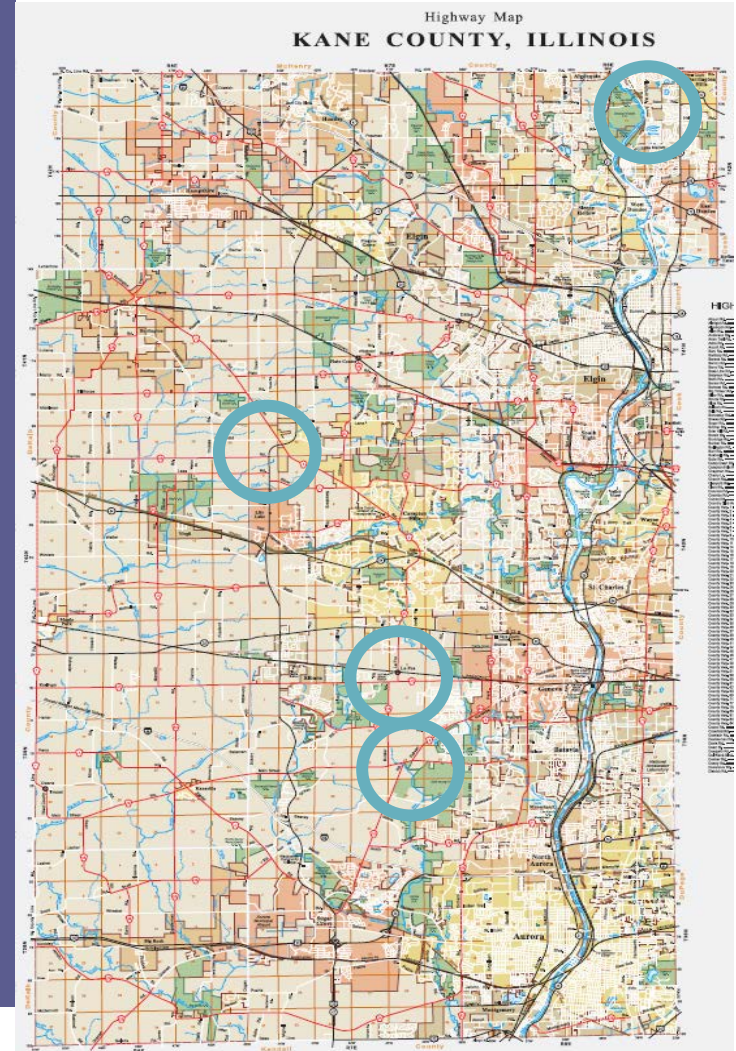
- 5 Year TIP

Kane County Division of Transportation FY2014 Transportation Improvement Program (TIP)



Planned Locations for Roundabouts in Kane County

- Burlington Road & IL Route 47
- Bunker Road & Keslinger Road
- Bliss/Main/Fabyan Intersection Realignment
- Longmeadow Parkway & Bolz Road



Burlington Road & IL Route 47 Intersection Improvement

- Cost estimate for the roundabout at Burlington & 47 showed a \$1 million savings versus a signal at this location



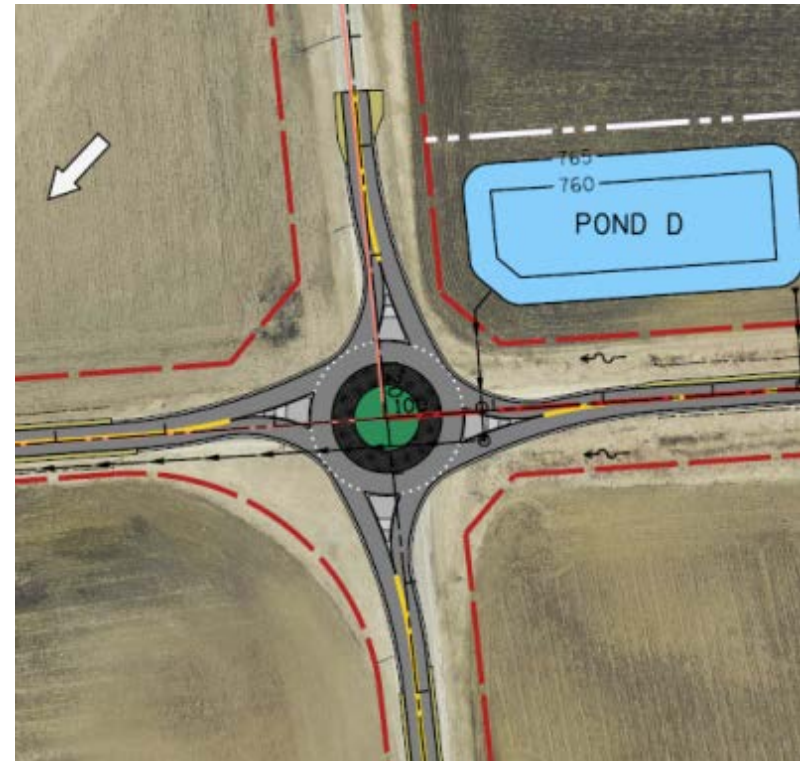
Bliss/Main/Fabyan Intersection Realignment

- Cost savings
- Removes the need for a superelevation through the intersection
- Provides shortest delay and highest LOS
- Fits within existing ROW and approved IGAs



Bunker Road Extension

- Cost savings
- Minimize ROW impact
- Blend and speed of traffic
- Reduce congestion
- Improve safety
- Accommodates traffic through 2040



Longmeadow Parkway & Bolz Road

- Prevents traffic backup onto Longmeadow Parkway

