

Roundabouts for safer American streets

Creating designs that don't compromise safety or process

The streets of America are changing and becoming safer for motorists, pedestrians, and communities. Safety factors, complemented with environmental benefits, operational costs and maintenance of traffic flow, are making modern roundabouts a more familiar alternative to traditional multi-directional intersections

Many transportation departments have already begun construction on roundabouts across the U.S., including projects in Columbus, Ohio (State Route 315), Chippewa Falls, Wisc., (State Highway 124), and Union Lake, Mich. (Duck Lake Road).

Studies done in the U.S., Europe and Australia have found that roundabouts have better safety performance over types of intersections. A May 2000 study conducted by the Insurance Institute for Highway Safety (IIHS) illustrated reductions in crashes after the installation of a roundabout. Additionally, the IIHS study found in instances resulting in a crash, the damage was significantly reduced. The circulatory roadway

geometry of a modern roundabout ensures travel speeds are typically 50 km/h (30 mph) or lower, in addition to greatly reduced impact angles for greater deflection and reduction of points of conflict to 8 from 32 for enhanced safety.

Designing roundabout geometries, until recently, has been a tedious process that involved multiple iterations. The Federal Highway Administration's *Roundabouts: An Informational Guide* remarks that the process of designing roundabouts requires a significant amount of "iteration among geometric layout, operational analysis, and safety evaluation" in order to achieve design objectives. This is because components of the roundabout are interrelated and compatibility between components of the geometry is crucial to adhere to the specifications and more importantly, meet the overall performance and safety objects. Minor adjustments of a roundabout's geometry can result in considerable safety, operational, and/or performance alterations.

Designing roundabout geometries, until recently, has been a tedious process that involved multiple iterations. The Federal Highway Administration's *Roundabouts: An Informational Guide* remarks that the process of designing roundabouts requires a significant amount of "iteration among geometric layout, operational analysis, and safety evaluation" in order to achieve design objectives. This is because components of the roundabout are interrelated and compatibility between components of the geometry is crucial to adhere to the specifications and more importantly, meet the overall performance and safety objects. Minor adjustments of a roundabout's geometry can result in considerable safety, operational, and/or performance alterations.

The greatest challenge to departments of transportation and engineering consultants involved in roundabout projects is providing a design that has maximum safety and operation while minimizing man-hour costs and design time.

In February 2009, Transoft Solutions launched a modern roundabout design tool that generates roundabout geometries, in single or double lane initial configurations, based on design vehicle swept-path movements and clearance offsets. TORUS Roundabouts was developed to give engineers a roundabout design tool that would increase roundabout design productivity by reducing the number of iterations needed to complete a design, without compromising safety, design standards or function. Designers can now see the safety implications as they make alterations to the geometry.

