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**Online Training**

# **Roundabout Design:** Best Practices, Challenges, and Innovations

Roundabouts have been gaining popularity in North America as a viable alternative to traditional intersections. As a means of traffic control and flow, roundabouts are known for reducing crash severity by enhancing road safety and efficiency.

Unfortunately, a poorly designed roundabout can cause problems with public perception. The public typically cannot discern a good and integral design from one that is inadequately designed. Once they have a poor opinion of one, it can drastically affect their perception of all other roundabouts, no matter how well laid out they are.

This course, led by **Howard McCulloch, P.E., PTOE**, from NE ROUNDABOUTS, Inc., a recognized expert with over 25 years of roundabout design experience, equips engineers with the fundamentals in addition to the ins and outs of properly designing a comprehensive roundabout that supports the needs of the community.

## WHO SHOULD ATTEND?

Transportation engineers, designers, consultants, and roadway planners involved in intersection design projects.

## DURATION

4 hours total

## PREREQUISITES

- Basic understanding of Autodesk® AutoCAD® or Bentley® MicroStation®
- General understanding of intersection design concepts

## COURSE OBJECTIVES

- Understand the benefits and challenges of implementing a roundabout.
- Integrate key geometric design elements for cohesive designs.
- Evaluate the roundabout design by applying performance-based measures.
- Identify best practices for traffic control, signing, and striping.
- Understand challenges and risks associated with multilane roundabouts.
- Incorporate new concepts from NCHRP 1043 and updated MUTCD guidance.
- Utilize TORUS and AutoTURN Pro for geometric designs and vehicle path analysis.

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## COURSE CONTENT

- Benefits of Roundabouts: Safety, Operations, and Land Use
- Solving Complex Intersection Challenges:
  - Non-circular layouts
  - Skewed and five-legged intersections
  - Wide node, narrow road concepts
- Geometric Design:
  - Design criteria and holistic integration
  - Risks of disjointed design elements ("Frankenstein" layouts)
- Evaluating Roundabout using Performance Measures Before Construction:
  - Constructability reviews and site adjustments
  - Entry/exit path overlap checks
  - Speed control and lower speed exits
  - Raised pedestrian crossings
- Traffic Control and Signing at Roundabouts:
  - Center island visibility options
  - Yield sign placement, shark's teeth
  - Regulatory vs. warning signs
  - Pavement marking
- Addressing Challenges in Multilane Roundabouts:
  - Common conflict types and mitigation
  - Vulnerable Road User (VRU) considerations from NCHRP 1043
- MUTCD and Roundabout Design History:
  - Evolution of roundabout design under MUTCD updates (2001–2023+)
- Technology and Tools in Modern Roundabout Design:
  - Use TORUS to design roundabout geometry based on vehicle path envelopes, perform speed consistency checks, and make strategic adjustments to improve design feasibility and construction outcomes
  - Apply AutoTURN Pro to evaluate design vehicle swept paths, identify potential path overlaps and conflict zones, check vehicle speeds, and verify ground clearances for critical vehicles (e.g., car carriers, lowboys) — helping prevent costly construction issues and delays

## Contact Us

To register or request additional information,
please contact your Account Manager or email salesNA@transoftsolutions.com