



CASE STUDY

BHI Uses TORUS for Efficient Roundabout Design

The Challenge

Designing optimal roundabouts has long been a challenging aspect of civil engineering projects. For example, even minor geometric modifications can require hours of labor-intensive CAD work, making design iterations time-consuming and resource-intensive. Engineering teams also often face tight right-of-way constraints while working to achieve consensus from clients and agencies on final designs. Additionally, entry speed issues and vehicle turning requirements demand meticulous attention to ensure safety and functionality.

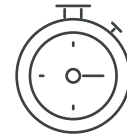
For Bohannon Huston, Inc. (BHI), a leading Southwest engineering firm, these challenges were all too familiar. In one particularly challenging project, BHI engineers invested weeks developing multiple design iterations for a roundabout with severe space limitations. Despite their considerable efforts, finding a solution that satisfied all stakeholders seemed increasingly unlikely as each revision led to new complications.

Breaking the Design Bottleneck

BHI's transformation began when they integrated Transoft Solutions' TORUS roundabout design software into their engineering workflow. This specialized roundabout design & analysis tool offered capabilities perfectly aligned with their needs.

TORUS enabled rapid creation and modification of roundabout geometries, providing real-time updates of fastest path analysis during design changes. Its interactive design capabilities facilitated collaborative stakeholder sessions where everyone could visualize potential solutions immediately. The system automatically checked turning movements based on design vehicles, eliminating hours of manual verification. An important consideration for BHI was that TORUS integrated seamlessly with existing CAD systems, allowing for a smooth transition into their established workflows.

Benefits of using TORUS



Accelerate concept development
from hours to minutes



Enable real-time collaboration
across teams



Improve design confidence
through instant analysis

The implementation of TORUS created immediate and dramatic improvements across BHI's roundabout projects.

1. Accelerate concept development from hours to minutes

Design processes that previously consumed 40+ hours could now be completed in minutes with TORUS, freeing engineers to focus on evaluating multiple alternatives rather than spending time on manual drafting tasks. This efficiency gain made project schedules and budgets more predictable and manageable, reducing stress for both the design team and clients while improving overall resource allocation.

2. Enable real-time collaboration across teams

In one particular project, BHI scheduled a meeting with a review agency for a particularly challenging roundabout design. Using TORUS, they engaged the agency representatives in real-time collaborative design. Multiple alternatives were evaluated on the spot, with entry speed issues resolved during a single session. What might have previously required weeks of back-and-forth revisions

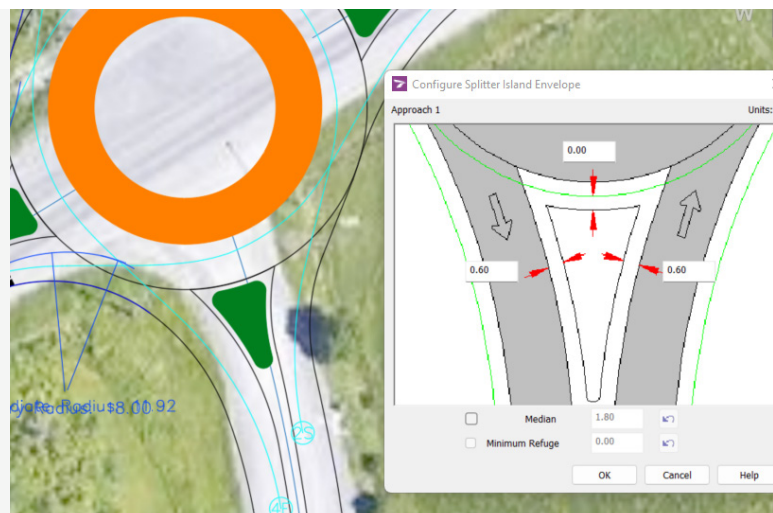
resulted in a consensual consensus solution emerging within hours, demonstrating the transformative power of real-time collaborative design.

3. Improve design confidence through instant analysis

With the time saved on basic geometric layout, BHI's engineers could dedicate more attention to solving complex design challenges unique to each site.

The team also gained increased confidence in geometric functionality through instant visualization and analyses such as fastest path (speed), sightlines, and vehicle movements. This comprehensive approach enhanced their ability to maximize client project value by exploring more options and identifying optimal solutions that might otherwise have remained undiscovered due to time constraints.

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Results Full Circle

Based upon our initial success with TORUS, we have integrated this as a standard program for our designers. Currently, we are using TORUS to develop conceptual roundabout designs at four intersection locations. The time savings has allowed BHI to focus more on evaluating feasible alternative concepts. This helps us maximize our client's project dollar and ensure that optimal design solutions are achieved.

In the past, we would have likely invested 40+ hours in the roundabout geometric layout alone. Now using TORUS, we have been able to develop initial concepts in just minutes. All this with the added knowledge and benefit that because the geometrics are based upon the desired design vehicles, the geometrics will work without having to manually check turning movements.