Trucks in Roundabouts

Background
Transportation agencies have implemented modern roundabouts in a variety of different environments and with a number of different lane configurations. They are finding that accommodating both legal sized trucks and permitted trucks can be challenging from both a design and educational perspective.

Roundabouts that are designed to allow large trucks to stay in their own lane at the approach and through the roundabout typically require larger diameter roundabouts, wider entrances and exits, more right-of-way, and can compromise safety and operations due to the increased size of the roundabout and potentially higher conflicting speeds.

The Truck Problem
- Mix of cars, trucks, bikes, buses, and pedestrians
- Each location has a different user mix
- Each user has a different optimum design
- Each location has different site constraints
- Designs must balance safety and operations
- Unbalanced designs are crash-prone

Truck Tracking in Roundabouts
Observations show that most semi-transport trucks entering roundabouts take up both lanes at the entry, not allowing cars to travel beside the truck in the circulatory roadway.

Depending on the angle of entry and the size of a roundabout a truck may travel completely in the outside lane with sufficient room for another vehicle to travel next to the truck.

In cases where truck volumes are noticeably high it may be necessary to post a warning sign.

No other vehicles should drive next to or pass a truck in a roundabout.

Estimating Circulatory Roadway Width
- Central Island Vertical Curb
- Mountable Apron Curb
- Circulatory Roadway Width (1.0 to 1.2 X widest entry)
- Design Vehicle
- 2’ Wheel Clearance
- Inscribed Circle Diameter
- Width from Curb to Curb
- Truck Apron

Conclusions
- Roundabouts are showing great benefits in crash reduction and congestion relief.
- They are a just-in-time solution for complete streets in urban areas.
- Compact designs are ideal but have trade-offs (bigger is not always better).
- Designs for the largest vehicles are feasible and the trend is toward promoting lane discipline.

Problematic Design Considerations
- Lowboy Trucks
  - Some dimensions as combination trucks
  - No USDOT minimum ground clearance!
- Car Haulers
  - Same dimensions as combination trucks
  - No USDOT minimum ground clearance
  - 2 to 3 inches is common
- Specialty Vehicles
  - Oversize and overweight loads are becoming more frequent. Agencies are asking for accommodation in roundabouts where similar trucks cannot pass through conventional intersections.

The Truck Problem Timeline
- 1990: First multilane roundabouts in the USA.
- 2002: Stripes start to appear on multilane roundabouts; consequently, truck aprons become necessary on two lane roundabouts.
- 2007: Enlarging roundabout entries to allow lane discipline for a truck and a car.
- 2009: Some agencies start to specify additional space for oversize trucks.
- 2010: Pooled fund study of standard design vehicles and oversize trucks.