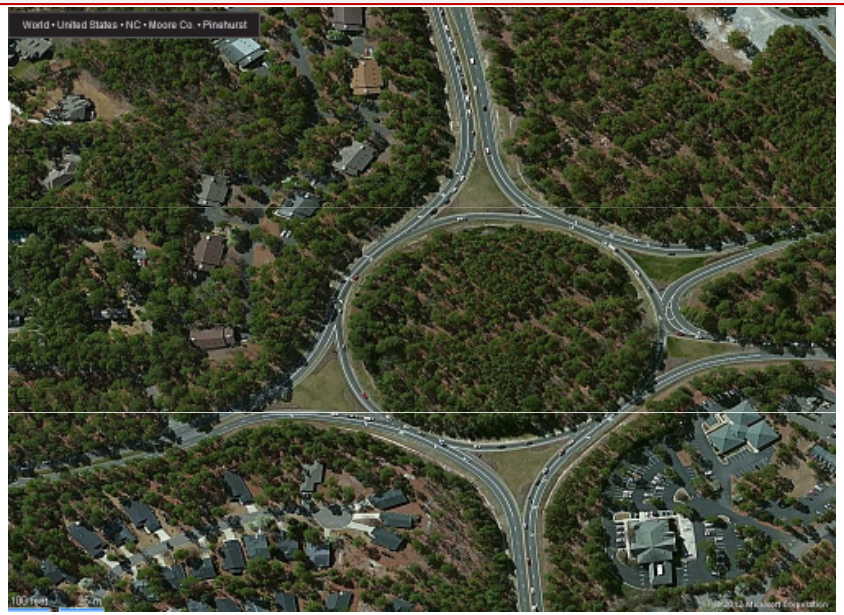
Roundabouts in North Carolina

What is a Roundabout?

A roundabout is a type of circular intersection with yield control of entering traffic, islands on the approaches, and appropriate roadway curvature to reduce vehicle speeds.

What is NOT a Roundabout?



Modern roundabouts are different from rotaries and other traffic circles.

For example, roundabouts are typically smaller than the large, high-speed rotaries still in use in some parts of the country.

In addition, roundabouts are typically larger than neighborhood traffic circles used to calm traffic.

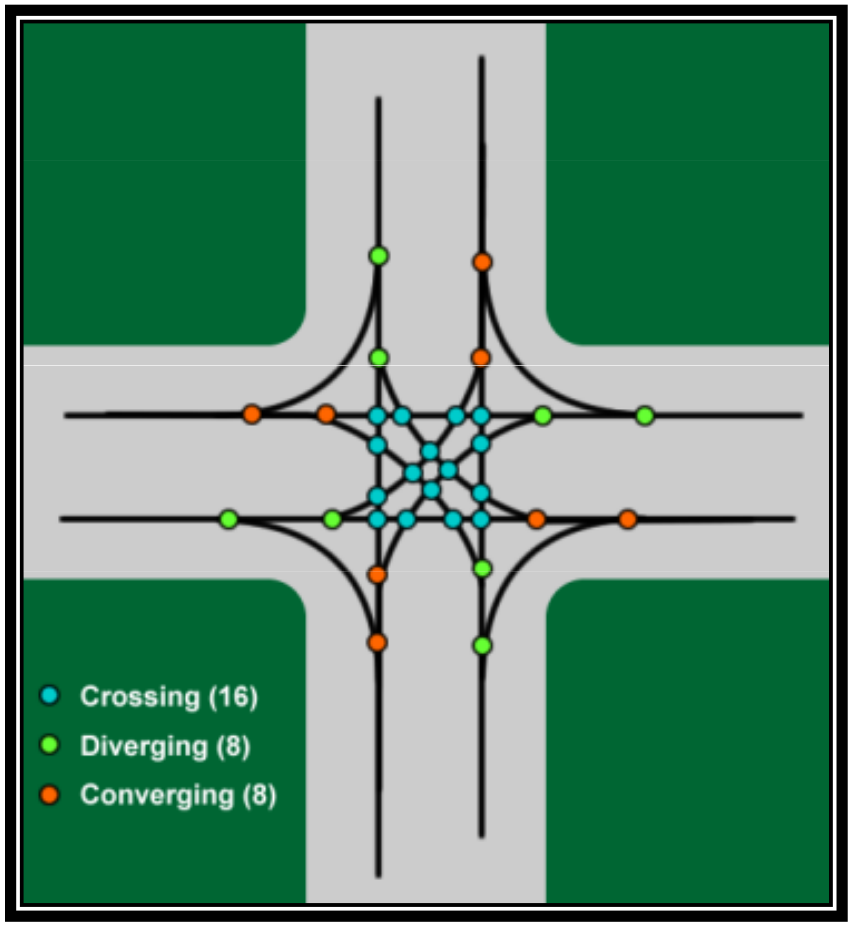
What is a Roundabout?

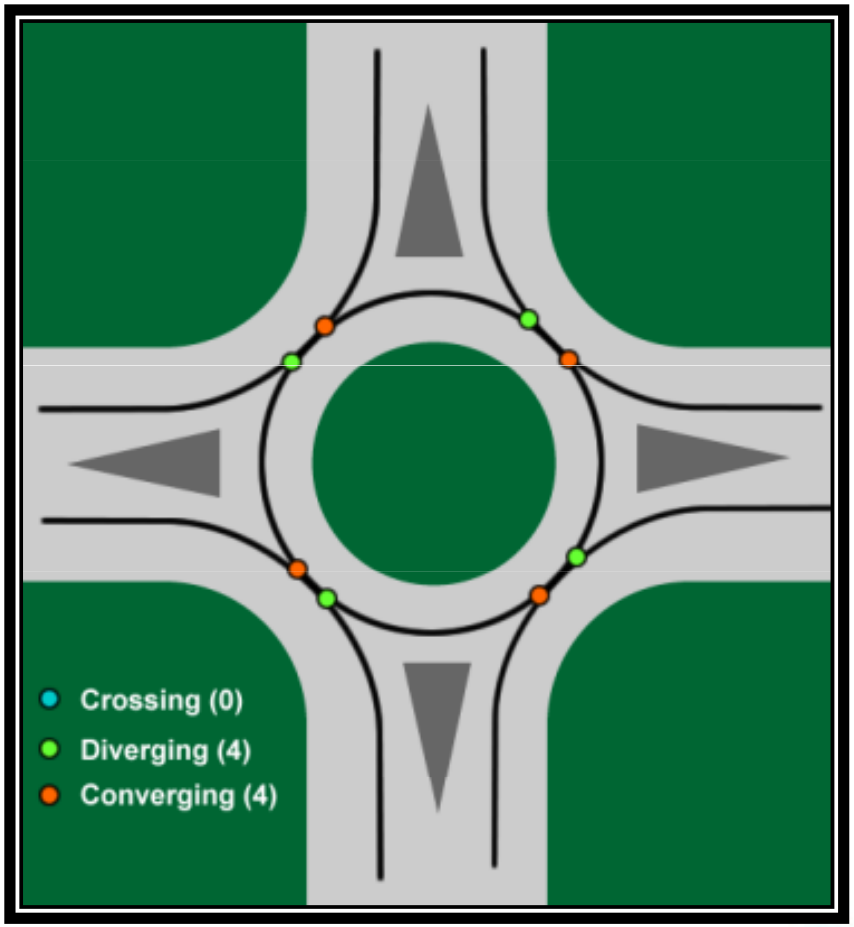
- Traffic Circle - ~ 800’ Diameter
- Roundabout – ~ 120-180’ Diameter

Why Roundabouts?

- Safest Intersection
- High Capacity / Low Delay
- Good for All Modes of Traffic
- Geometric Flexibility
- Aesthetics

Roundabouts – Safety





Convention Intersection - 32 conflict points

Roundabout - 8 Conflict Points

Roundabouts – Safety

Crash Reductions Following Installation of Roundabouts

In the United States – 2007

- Total Crashes 48%
- Fatal/Injury Crashes in Rural Areas 78%
- Fatal/Injury Crashes in Urban Areas 60%

In North Carolina from 1999-2006

- Conversion From Stop Sign Control 41%
- Conversion From Signal Control 74%

Insurance Institute For Highway Safety http://www.iihs.org/research/topics/roundabouts.html
NCHRP Report 572 onlinepubs.trb.org/onlinepubs/nchrp/nchrp_rpt_572.pdf
NCDOT Safety Evaluation Group https://connect.ncdot.gov/resources/safety/Pages/Safety-Evaluation.aspx

Roundabouts – Safety

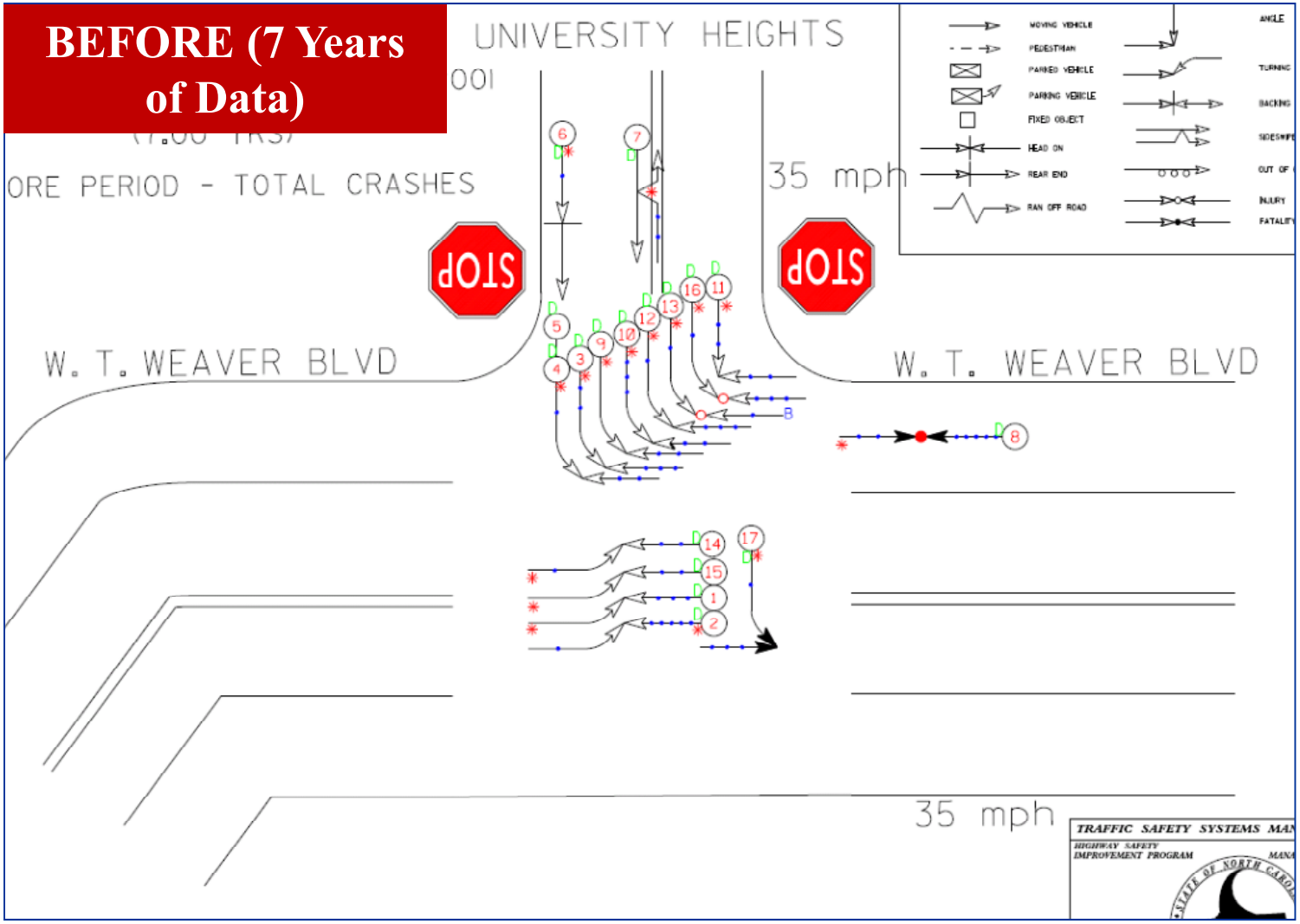
North Carolina Crash Analysis Results - 2010
Percent Crash Reductions

	All 30 Sites
Total Crashes	46.2%
Injury Crashes - All Types	75.3%
Injury Crashes - KAB	85.0%
Frontal Impact Crashes	75.6%
Rear End Crashes	29.9%
Sideswipe Crashes	20.1%

Roundabouts – UNC-Asheville

Roundabouts – Safety

Crash Diagrams: WT Weaver @ University Heights, Buncombe Co.



Roundabouts – Safety

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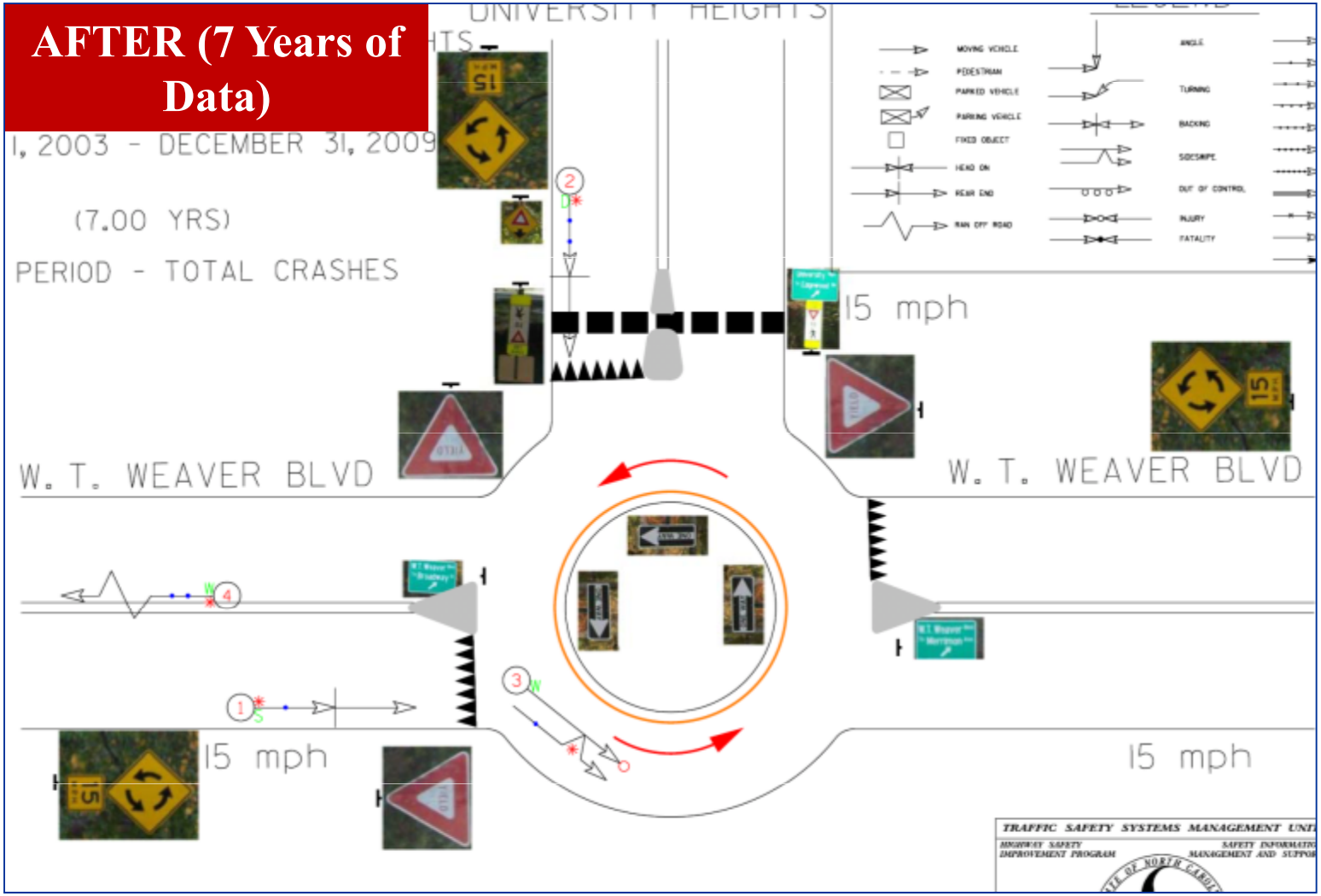


Roundabouts – Capacity and Operation

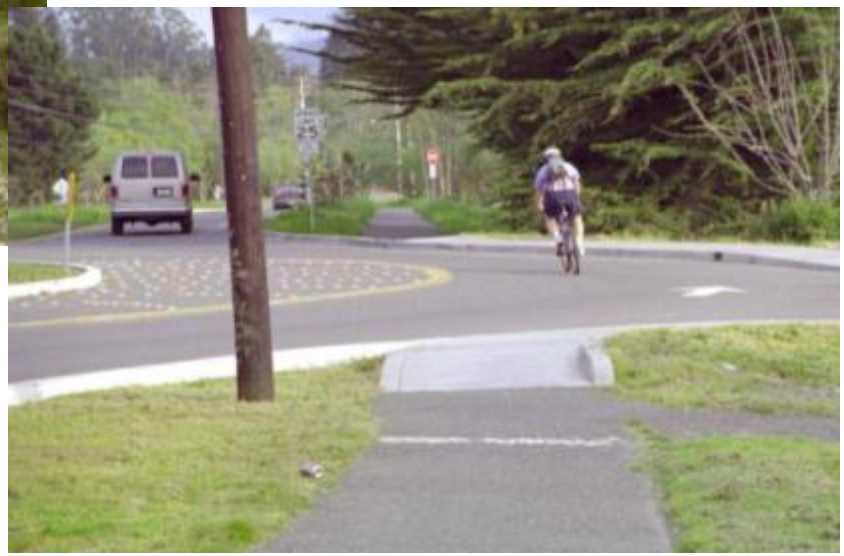
- Peak Hour Traffic – Usually at least as efficient (same overall delay to drivers) as traffic signals or all-way stops
- Off Peak Traffic – Usually significantly more efficient than traffic signals.
- Multi-lane roundabouts can handle as much traffic as a busy signalized intersection

Roundabouts – Multi-Modal

Roundabouts provide a safer crossing for pedestrians

Roundabouts – Multi-Modal

Roundabouts provide safer travel for cyclists



PHOTOGRAPHY SOURCE: Lee Rodegerdts
Kittleson & Associates

Roundabouts – Multi-Modal

Buses do not have trouble negotiating the roundabout, and provide a good location for bus stops

Roundabouts – Geometric Flexibility

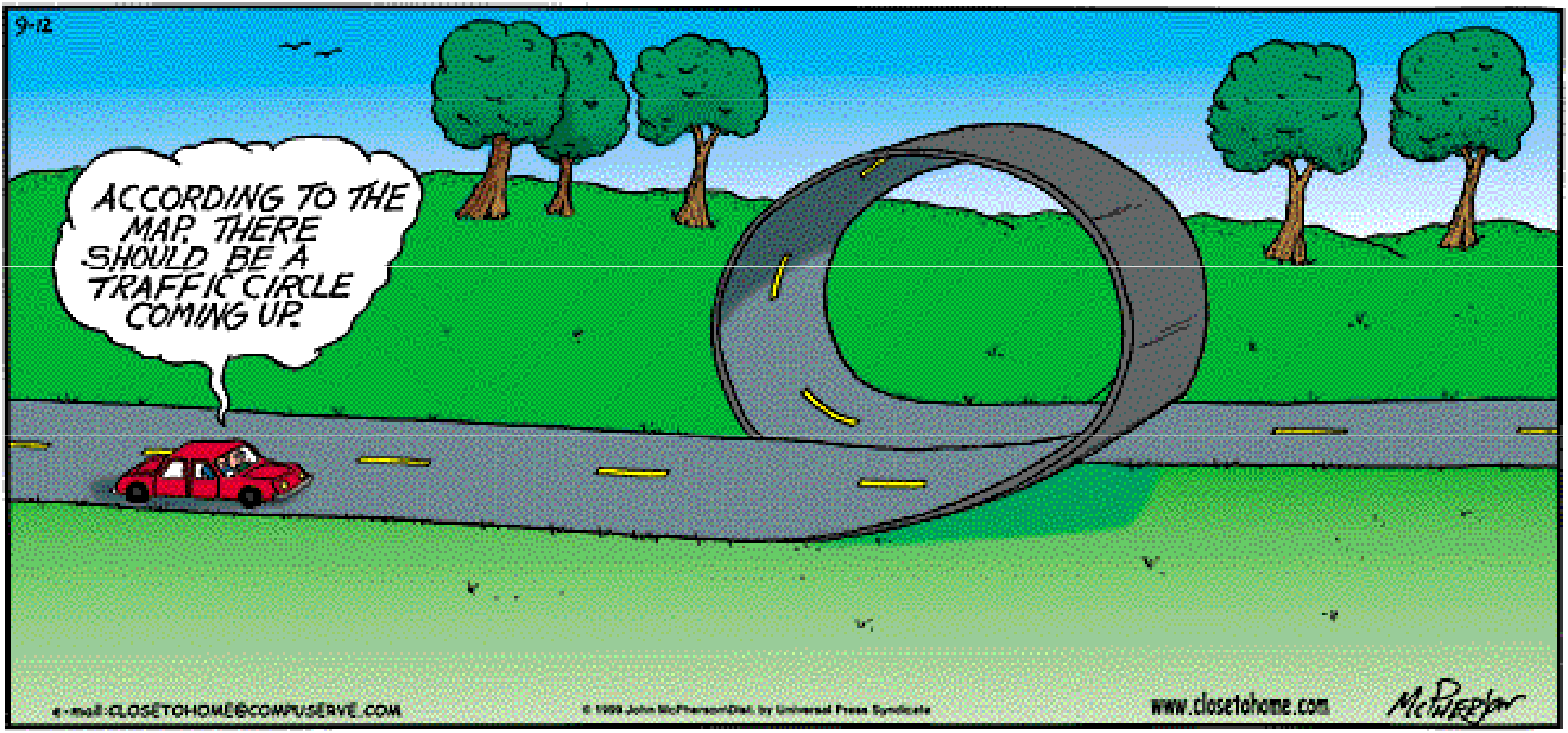
- Roundabouts can be designed as ovals and oblong shapes in order to achieve better movement separation and accommodate unique intersection geometry
- Works well for offset T-type and multiple legged intersections

Roundabouts – Common Concerns

When a roundabout is recommended for an intersection there typically is some public resistance. Some of the complaints and questions we frequently hear/deal with:

- Driver Expectation
- Large Trucks
- Cost and Maintenance
- Emergency Vehicle Access

Roundabouts – Driver Expectations



Roundabouts – Large Trucks

PHOTOGRAPHY SOURCE: Lee Rodegerdts
Kittleson & Associates

Roundabouts – Large Trucks

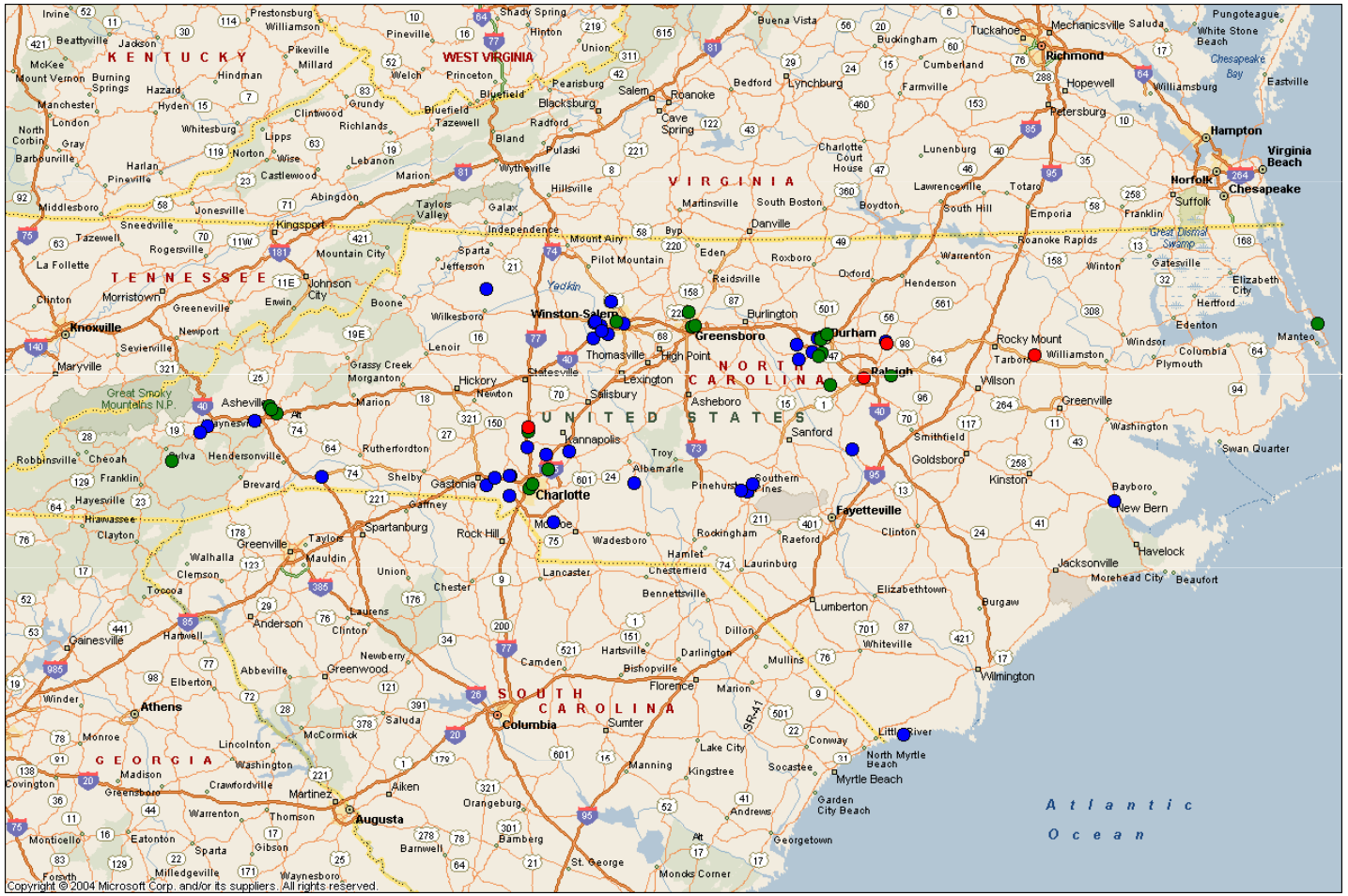
Roundabouts – Intersection Costs

- Average Roundabout construction costs about $600,000 for a retrofit installation
- For TIP projects, cost differential is negligible
- Maintenance is minimal (mostly mowing any additional landscaping is done by others)
- Signalized intersection costs are about $100,000
- Construction of turn lanes is about $75,000-$150,000
- Signal maintenance costs are about $3,000-5,000 annually

Roundabouts – Emergency Vehicles

PHOTOGRAPHY SOURCE: Brian Walsh, Washington State DOT

Roundabouts – North Carolina



200 Roundabouts (as of 10/2012) including 19 UC

- 99 State – 95 Municipal - 6 Private
- 6 Multilane - 4 State (1 UC), 2 Municipal

Roundabouts – North Carolina Examples

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