TRB National Roundabout Conference
Vail, Colorado
May, 2005

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Maryland State Highway Administration
Maryland
Operating/Planned Roundabouts

- 50 Roundabouts in Operation at State Highway intersections (18 are multi-lane)
- 30 Roundabouts in planning, design or construction
- Close to 50 at local government intersections
Our mentor... 

... Ken Todd!
Favorable Geometric Design Elements

- Merging
- Diverging
- Low relative speed
- Reduced conflict points
- Positive guidance
Maryland SHA Goals

- Safety is # 1
- Mobility is close behind
- Both are Key Performance Areas in our SHA Business Plan
- Operational efforts include: CFI, SPUDI, ITS, Traffic Responsive Signal Systems
Traffic Growth in Maryland

- Population 5 million today
- 7 million population by 2030
- VMT 60% increase by 2030
- Very few additional lane miles
- Car-pools, Transit, Flex-time,
  Telecommuting will not do the trick
- Traffic Management – e.g., Roundabouts
Maryland SHA’s Traffic Control Philosophy

- Adhere to standards and guidelines
- Uniformity and consistency – design and traffic control
- The least control is the best control
- Perception vs. reality
- Malfetti’s Graph
- Apply human factors – esp. Positive Guidance
- Henry Barnes
Meanwhile – back to the Ritchie-Marlboro-I 95/495 Story
The Big Ones

- Lisbon – the first
- Leeds – high speed
- Ritchie/Marlboro/Capital Beltway Interchange
- Towson – urban, high traffic, multi-lane, pedestrians, visually impaired, gateway, economic value
MD Roundabouts - High-Speed Rural Environment

The “Lisbon’ Roundabout

MD 94 @ MD 144 – Howard County
ICD = 100’    AM = 630  PM = 696
* Posted speed limit on MD 94 is 45 mph
Public Involvement: Overall Experience

- Typical experience: negative reaction before construction, positive reaction after construction
- Common misconception based on rotaries or neighborhood traffic circles
MD Roundabouts - High-Speed Rural Environment

The “Leeds” or “Lanzi” Roundabout

MD 213 @ Leeds Rd./Elk Mills Rd. – Cecil County
ICD = 110’ AM = 602 PM = 847
* Posted speed limit on MD 213 is 45 mph
MD Roundabouts - Urban Environment
The “Towson” Roundabout
MD 45 @ MD 146/Joppa Road Baltimore County

BEFORE

AFTER
The “Towson” Roundabout

Inscribed Circle Diameter = 140’ x 260’

Peak Hour Approach Volume: AM = 2,771  PM = 3,952

Date of Completion - October, 1998
Roundabouts vs. Traffic Signals

- Safety
- Congestion
- Air quality/Noise
- Operations
- Geometrics
- Long-term costs
The “Annapolis Gateway” Roundabout

MD 450 @ Taylor Avenue/Spa Road

Anne Arundel County
MD Roundabouts - Suburban Environment “Gateway”

The “Brunswick” Roundabout

MD 17 @ ‘B’ St./Maryland Ave. – Frederick County

ICD = 150’ x 110’  AADT = 3,850  DHV= 10%  (Approx.)
Roundabout Safety

- Roundabouts have a proven safety record for reducing motor vehicle crashes, particularly injury crashes.
- Experience is due to basic contributing factors:
  - Reduced vehicle speeds
  - Reduced driver decisions
  - Reduced conflict points
  - Reduced conflict severity
Crash Reduction at Roundabouts
(State Maintained)

- 70% reduction in total crashes
- 86% reduction in injury crashes
- 100% reduction in fatal crashes
- B/C $15 per $1 spent through crash reduction
Mini-Failure - MD 100 @ Snowden River Parkway - Howard County

ICD = 100'  AADT = 14,100 (2020 Projection)
Maryland SHA Roundabout Task Force - 1989

- Planning
- Traffic
- Consultant
- Local Governments
Roundabout Traffic Design

Chapter 1 - Signing
  Multilane Considerations
  YIELD Signs
  Pedestrian Crossing Signs
  Lane-Use Control Signs

Chapter 2 - Pavement Markings
  Approach Markings
  Circulatory Roadway Markings
    Scenario 1 – No Striping
    Scenario 2 – Use of Circulatory Pavement Markings
    Pavement Marking Options
    Pavement Marking Arrows
  Sample Circulatory Roadway Striping Configurations

Chapter 3 - Lighting Guidelines
  General Requirements
  Lighting in Urban and Suburban Areas
  Lighting in Rural Areas
  Equipment Type and Location
  Sample Illumination Layouts

Chapter 4 - References

SHA State Highway Administration
Maryland’s Roundabouts
Accident Experience and Economic Evaluation

Prepared by:
Traffic Safety Analysis Division
Office of Traffic & Safety

April 5, 2004
Roundabout Conclusions

- Safety and Mobility are realized
- Congestion/Delay is reduced
- Geometric design is of paramount importance
- Long-range cost-savings are significant
- There is strong public acceptance...now
- Roundabouts have a significant role to play in a State DOT operations program
- Every State needs a Roundabout Champion
Our Future......

... the mini!