MD 97 & Randolph Road
Road Safety Audit (RSA)

Project Manager: Brett Deane
RSA Engineer: William L. Haynes
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Agenda

- Project Area
- Project Overview
- Road Safety Audit Process Overview
- Stakeholder Input
Project Area

Land Use

- Single-Family Residential Areas
- Glenmont Metro Station
- Shopping Center
- Fire & Police Facilities
- High-Density Residential Areas
Project Area

Three-Year Crash Data (2009 through 2011)

- MD 97: Glenallan Ave to Mason St
  - 138 Total Crashes
  - Significantly exceeds statewide averages for:
    - Total Crashes
    - Rear end, Sideswipe, Angle, Truck-Related
    - Pedestrian (HIA)
  - Notable Vehicle Types
    - Emergency Vehicles (10)
    - School Buses (10)
    - Passenger Bus (15)

- Randolph Road: Judson Rd to Glenallen Ave
  - 84 Total Crashes
  - Highest Occurrence of Crash Types:
    - Rear end, Sideswipe, Angle
    - Pedestrian (HIA)
  - Notable Vehicle Types
    - Emergency Vehicles (5)
    - School Buses (5)
  - Notable Probable Causes
    - Driver Inattention, Fail to Yield, Too Fast, Following Too Closely
Project Overview

- Three-year Project
- Seven Construction Phases
- MD 97 South of Randolph Road
  - 2015 ADT = 47,925
  - 2030 ADT = 52,100
- Randolph Road - East of MD 97
  - 2015 ADT = 38,950
  - 2030 ADT = 40,575
Project Overview

- **Grade separation of the MD 97/Randolph Road intersection by constructing a MD 97 bridge over a depressed Randolph Road.**

- **MD 97 Limits = Mason Street to Layhill Road (MD 182)**

- **Randolph Road Limits = 200 ft west of Judson Road to 500 ft east of Glenmont Circle**

- **Goal = Improve LOS by reducing congestion**
Project Overview

- Project Area
  - Heavy transit reliance and usage
  - Heavy pedestrian activity
  - Montgomery County HIA for pedestrian crashes
  - Nearby Glenmont Metro Station
  - First responder (i.e., police, fire, EMS) operations

- Notable Design Elements
  - New weave and merge areas
  - No merge areas for right turns from Randolph Rd
  - Bike lanes
  - Changes in access management (Commercial & Residential)
  - Randolph Rd WB triple left
  - Bus transit routing and operations
  - Significant traffic signal improvements
What is a Road Safety Audit?

A road safety audit is a formal safety performance examination of an existing or future road or intersection by an independent audit team.
What is a Road Safety Audit?

- An RSA is a **tool** that:
- Is a formal process
- Focuses on safety issues
- Considers all road users
- Proactive review of observed and potential safety issues to reduce risk
- Considers all environmental conditions
- Qualitative analysis, **not a quality control of design. Why?**
What is a Road Safety Audit?

Compliance with design standards, while important, does not necessarily result in optimally safe road design and, conversely, failure to achieve compliance with standards does not necessarily result in a design that is unacceptable from a safety perspective.
What is a Road Safety Audit?

• Effective and cost beneficial proactive safety improvement tool.

• Often identifies safety concerns not typically discovered in a traditional safety review.

• Safety improvement recommendations can be achieved at a relatively low cost with minimal project delay.

• Conducting RSAs and implementing their improvements in design estimated to typically cost 5% of the overall engineering design fees.

• Helps reduce throwaway costs and reconstruction costs

• Reduced lifecycle costs → lower maintenance costs

• Societal costs of collisions

• Liability claims
RSA Scope

Detailed Design Stage

- Roadway Plans (sh. 17 – 21)
- Roadway Profiles (sh. 22 – 28)
- Temporary Roadway Plans (sh. 35 – 60)
- Maintenance of Traffic (sh. 65 – 108)
- Temporary Traffic Controls (sh. 162 – 189)
- Landscape Plans & Details (sh. 203 – 211)
- Traffic Signal Plans (sh. 280 – 285)
- Signing & Marking Plans (sh. 287 – 293)
- Lighting Plans (sh. 300 – 306)
RSA Scope

Purpose of Detailed Design RSA

• Identify and address any design issue prior to construction.

• Will departure from standards significantly impact safety?

• Evaluate safety of road features (i.e., signage, markings, clear zone, roadside protection, landscaping).

• Determine needs of all road users.

• Identify issues “missed” in a previous audit.

• Follow-up on issues identified in a previous audit.
RSA Process

Typical RSA Steps

1. Identify project or existing road to be audited
2. Select interdisciplinary audit team
3. Conduct a pre-audit meeting to review project information and drawings
4. Perform field reviews under various conditions
5. Conduct audit analysis and prepare report of findings
6. Present Audit findings to Project Owner/Design Team
7. Prepare formal response
8. Incorporate findings into project when appropriate

Responsibilities:
- Audit Team
- Design Team / Project Owner
RSA Process

Where are we?

1. Identify project or existing road to be audited
2. Select interdisciplinary audit team
3. Conduct a pre-audit meeting to review project information and drawings
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5. Conduct audit analysis and prepare report of findings
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Responsibilities:
- Audit Team
- Design Team/Project Owner

RSA team will conduct Steps 3-6 over 4 days

Review relevant data to include:
- Stakeholder / Community input
- Design/MOT Plans
- Crash data
- Traffic volumes (pedestrians and vehicles)
- Signal phasing
4. Field Review

- Observe road user characteristics
- Observe surrounding land uses
- Observe link points to the adjacent transportation network
5. RSA Analysis

- Workshop setting
- Review background reports and design criteria
- Systematically review drawings and other information/data
- Identify, prioritize, and mitigate safety issues
6A. Preliminary Findings Meeting

- RSA team, design team, owner
- Discuss preliminary findings and possible solutions
- Use results to write RSA report
6B. RSA Report

- Documents the results of the RSA
- Identifies and prioritizes safety issues
- Includes suggestions for improvements

**Road Safety Audit Report**

**MD 56/58: Frederick Road to Sellford Road**

**Baltimore County**

**Project Location and Description:** The revision of MD 56/58 from Frederick Road to Sellford Road is a project intended to improve safety at the intersection of MD 56/58 and Sellford Road. The project includes the construction of a roundabout, which will consist of a 208-foot diameter and a 6-foot wide concrete median." The project is expected to be completed in the second quarter of 2012. The project is estimated to cost $2.1 million, with funding provided by the Maryland Department of Transportation (MDOT).

**Scope:** The project scope includes the following:

- Construction of a new roundabout
- Widening of MD 56/58
- Installation of a traffic signal
- Pedestrian improvements

**Estimated Completion Date:** The project is expected to be completed in the second quarter of 2012.

**Budget:** The estimated cost of the project is $2.1 million, with funding provided by the Maryland Department of Transportation (MDOT).

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**SUMMARY OF FINDINGS AND RECOMMENDATIONS**

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<thead>
<tr>
<th>Finding</th>
<th>Recommendation</th>
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<tbody>
<tr>
<td>1. The roundabout will improve safety by reducing conflicts at the intersection.</td>
<td>Implement roundabout as designed.</td>
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<tr>
<td>2. The median will reduce the distance for pedestrians to cross the roadway.</td>
<td>Increase the median width to 6 feet.</td>
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<tr>
<td>3. The traffic signal will improve traffic flow.</td>
<td>Install traffic signal as designed.</td>
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**Conclusion:**

The project will improve safety at the intersection of MD 56/58 and Sellford Road by reducing conflicts, improving traffic flow, and providing additional pedestrian safety features.

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**Contact Information:**

For more information, contact:

Maryland Department of Transportation

1300 East Preston Street

Baltimore, MD 21202

Phone: 410-767-2000

Website: www.maryland.gov/transportation

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**5/31/2012**

**MD 97 & Randolph Road**
RSA Team Members

- Maryland SHA (Roadway, MOT, ADA, Bike/Ped, Traffic Signal Operations)
- Montgomery County DOT (Roadway, Traffic Operations)
- Fairfax County Police Department (Emergency Operations)
- Sabra, Wang & Associates (Human Factors)
We appreciate your feedback!
Discussion Topics

Safety

- How does proposed design influence:
  - Conflicts and Speeds
  - Transit Operations
  - Bicycle Safety & Accessibility
  - Pedestrian Safety & Accessibility
  - Access Management
  - Weaving & Merging
    - East of Glenmont Cir
    - EBR & WBR from Randolph Rd
    - EB from Grandview Ave
Discussion Topics (cont’)

Safety
- How is land-use impacted by proposed design
  - Commercial Access
  - Residential Driveways
  - Emergency Management (Access & Breakdowns)

Maintenance of Traffic

Human Factors
- How would various road users interact with interchange?
  - Driver Expectancy
  - Driver & Pedestrian Behavior

Project Elements
- Landscaping
- Structures
- Roadside/Shoulders/Medians
- Lighting
Discussion Topics (cont’)

Safety

- Georgia Avenue
  - South Section: Mason Street - Glenmont Circle
  - North Section: Sheraton Street – Layhill Road

- Traffic Signals
  - Georgia Ave & Randolph Rd
  - Randolph Rd & Glenmont Cir
  - Georgia Ave & Layhill Rd

- Randolph Road
  - West Section: Judson Road – Grandview Ave
  - East Section: Glenmont Cir – Glenallen Ave