Agenda

Benefits of Access Management

Manual Organization & Policy

Volume 1

Volume 2

Volume 3
Benefits of Access Management

• 50% Crash Reduction
• 45% Increased roadway capacity
• 60% reduced travel time and delay
“An effective access management program can slow or reduce the cycle shown . . . Without adversely affecting economic development.” (TRB)
# Benefits of Access Management

## Summary of Research on Effects of Access Management Techniques

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Effect</th>
</tr>
</thead>
</table>
| Add continuous Two-Way Left-Turn Lane (TWLTL) | 35% reduction in total crashes  
30% decrease in delay  
30% increase in capacity |
| Add non-traversable median | > 55% reduction in total crashes  
30% decrease in delay  
30% increase in capacity |
| Replace TWLTL with non-traversable median | 15% to 57% reduction in crashes on four-lane roads  
25% to 50% reduction in crashes on six-lane roads |
| Add left-turn bay | 25% to 50% reduction in crashes on four-lane roads  
Up to 75% reduction in total crashes at unsignalized access  
25% increase in capacity |

### Type of left-turn improvement
- Painted  
- Separator or raised divider
  - 32% reduction in total crashes  
  - 67% reduction in total crashes

### Add right-turn bay
- 20% reduction in total crashes  
- Limit right-turn interference with platooned flow, increased capacity

### Visual cue at driveways, driveway illumination
- 42% reduction in crashes

### Long signal spacing with limited access
- 42% reduction in total vehicle hours of travel  
- 59% reduction in delay  
- 57,500 gallons of fuel saved per mile per year

Project History & Purpose

**Why Update TDOT’s Standards?**

- Safety
  - 55% of all vehicular crashes involve access activity
  - 360 access related crashes estimated per day in TN
Manual Organization

Highway System Access Manual

Volume 1 Planning
- Model Land Development Regulations
- Corridor Management Agreement Guidance

Volume 2 IIE
- Two Phase procedures to evaluate control type options

Volume 3 Design
- Geometric Design Criteria
- Deviation Process
Policy

• Policy 385-01 “Application of the HSAM on TDOT Projects” became effective on February 1, 2022

• The HSAM Volume 2: Intersection and Interchange Evaluation shall be used during the project planning process to evaluate intersections on all projects.
  – Projects implemented by in-house maintenance, private driveways, other than street type intersections, and intersections where the major and minor approach have less than 400 vehicles per hour are not required to be evaluated under this policy.

• The HSAM Volume 3: Geometric Design shall be used on the following projects:
  – New Alignments
  – Roadway Widening
  – Major Reconstruction

• TDOT Rule – Adoption process underway to update current permit process for private driveways.
Adoption

- TDOT has adopted the manual for TDOT projects
- Entrance Rule update underway
- Local agencies may adopt for use in their jurisdictions (TDOT follows stricter guidance)
- Some local agencies have MOU to issue driveway permits, have agreed to follow TDOT Requirements or to be stricter
Corridor Management Agreements

A collaborative agreement among multiple communities or agencies that addresses the development, management, and operations of a roadway corridor.
Corridor Management Agreements

Overview of corridor management agreements

History of CMAs in Tennessee

Outlines the process to successfully implement a CMA agreement
Model Land Development Regulations

- Local agencies are responsible for land use regulations and planning.

- TDOT is willing to provide input or assistance as requested by the local agency.
Model Land Development Regulations

For local jurisdictions wishing to better promote sound access management by way of their land development regulations.

This guide provides the following:

- Overview of national best practices
- An introduction to the various planning and regulatory tools
- Model ordinance language that may be adopted and incorporated into the local regulatory code

Avoid

Preferred
Model Land Development Regulations

- Regulations provide standards to a site before its development, they can be quite effective in promoting good access management.

- Provisions included in the land division and subdivision regulations can designate:
  - Lot size
  - Block size
  - Street network and connectivity
  - Driveway spacing and location
  - Pedestrian and bicycle access
  - Location and placement of transit access
Volume 2
Intersection & Interchange Evaluation (IIE)

- Documented screening process for intersection and interchange selection (FHWA calls this ICE)
- Takes into account traffic operations, safety, and life-cycle costs (optional)
- Allows flexibility for local conditions
When should an IIE be done?
- Anytime a signal is being considered.
- May be done with 2-way and all way stop as well.
Alternative Intersections/Interchanges: Informational Report (AIIR)

PUBLICATION NO. FHWA-HRT-09-090

APRIL 2010

US Department of Transportation
Federal Highway Administration
Research, Development, and Technology
Tunnel-Fairbanks Highway Research Center
5201 George Mason Drive
McLean, VA 22101-2296
Vol. 2 IIE – Intersection Options

- Signalized
- Quadrant Intersection
- Displaced Left Turn
- Continuous Green T
- Roundabout
- J-Turn or R-Cut
Vol. 2 IIE – Interchange Options

Diamond

Diverging Diamond

Parclo

SPUI with Roundabout

SPUI

Diamond with Roundabouts
TDOT’s IIE process is implemented in two stages:

• "Stage I – Scoping" step to determine the short list of all possible options that merit further consideration and analysis because they meet project needs and are practical to pursue.

• "Stage II – Preferred Option Selection" step to determine the preferred option based on more detailed evaluations conducted during typical preliminary engineering activities.
Documented Intersection Control Evaluation (ICE) Methodology

Utilization of CAP-X for capacity screening

Documented life-cycle cost approach (optional)

Documented predictive crash analysis (optional)

All scalable to the project needs
• NCHRP Report 1087: Guide for Intersection Control Evaluations recently published
  – Provides guidance on doing intersection evaluations
HSAM Volume 3: Access Geometric Design
### Context / Functional Classification

#### Figure 2. Five context categories.

<table>
<thead>
<tr>
<th>Roadway</th>
<th>Rural</th>
<th>Rural Town</th>
<th>Suburban</th>
<th>Urban</th>
<th>Urban Core</th>
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</thead>
<tbody>
<tr>
<td>Principal Arterial</td>
<td>H speed</td>
<td>L/M speed</td>
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<td>L/M speed</td>
<td>L speed</td>
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<tr>
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<td>M mobility-</td>
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<td>M/ H access</td>
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</tr>
<tr>
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<tr>
<td></td>
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<td>Local</td>
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<td>L/ H access</td>
<td>H access</td>
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</tr>
</tbody>
</table>

H = high, M = medium, L = low
HSAM: Sources

Access Management Report
December 2017

Prepared by:
The University of Tennessee,
Knoxville
Center for Transportation Research
Aaron Kohls, Ph.D.
Mareike Ottmann
HSAM V3: Content Overview

- Access Spacing
- Access Geometry
- Medians
- U-Turn Guidance
Access Geometry

Access Geometry

Intersection Geometrics
- Design Vehicle
- Turn Lanes
- Lane Drops
- Corner Islands
- Grading & Tie-ins

Driveway Geometrics
- Horizontal Geometrics (Radius, Width, Length . . .)
- Grading & Profile
- Cross Slopes
- Sight Distance
- Multimodal
“... Warrants indicate situations where a left-turn lane would help mitigate traffic conflicts, not necessarily situations where a left-turn lane is required. ...”
Access Geometry - Throat Length

Table 3-17: Minimum Driveway Throat Length Requirements

<table>
<thead>
<tr>
<th>Number of Egress Lanes (left, thru and right)</th>
<th>Minimum Throat Length Feet</th>
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</thead>
<tbody>
<tr>
<td>1</td>
<td>35 ft. *</td>
</tr>
<tr>
<td>2</td>
<td>75 ft.</td>
</tr>
<tr>
<td>3</td>
<td>200 ft.</td>
</tr>
<tr>
<td>4</td>
<td>300 ft.</td>
</tr>
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</table>

* Inadequate driveway length can also provide hazards to entering traffic on site. Particularly where the on-site parking can back out of and block the entrance and prevent a vehicle from entering. To avoid this problem, a distance of at least 50 feet is used on entrance length where back out parking may interfere with entry movement, as shown in Figure 3-25.
Medians

- Median Widths
- Left Turn Lanes in Medians
- Two-Way Left-Turn Lanes
Two Way Left Turn Lanes (TWLTL)

HSAM **Recommendations** for TWLTL:

- Non-traversable median should be considered first
- 3-Lane TWLTL should have ADT < 17,000 VPD
- 5-Lane TWLTL should have ADT < 28,000 VPD
- Posted Speed should be < 45 MPH to warrant TWLTL
- 7-Lane TWLTL is strongly discouraged
- Unsignalized Left-Turning movements across 3+ Lanes of Opposing traffic is strongly discouraged

SR-153 (7-lane Section) Note one of the highest Crash Rates in R2
Deviations

• Process:
  – Complete Deviation Request form (different form for TDOT project or private development project)
  – Submit to Region Traffic Engineer for approval and submittal to Deviation Committee
  – Committee meets once a month
Implementing Access Management on established routes will have difficulties. When criteria can’t be met, deviations should be mitigated.

Mitigations:

- Limiting Access points to right-in / right-out
- Consider use of frontage or backage roads to consolidate access
- Consider joint access driveways
- Reducing the number of driveways for properties with multiple access points
- Limit corner lot access to minor roadway
Using the Manual

- Vol 1 – Use as a reference or adopt included language for local land use planning regulations.
- Vol 1 – Coordinate with TDOT Region if interested in a CMA.
- Vol 2 – Use as a guide for determining the best intersection control type. A signal is not always best.
- Vol 3 – Use for access design to ensure the integrity of the roadway is maintained as adjacent land is developed.
Questions???

Manual website:

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