Ordinance Authority

Ordinance Authority is Subdelegated to the State Traffic Engineer from the Secretary of Transportation.

1.2 Ordinance Authority

In general, the North Carolina Department of Transportation (NCDOT) has the authority to "make rules, regulations and ordinances for the use of, and to police traffic on, the State highways, and to prevent their abuse" (§136-18.5). The Board of Transportation (BOT) has the power and duty to "promulgate rules, regulations, and ordinances concerning all transportation functions assigned to the Department" (§143B-350, f-g). The BOT has delegated to the Secretary of Transportation the authority to "adopt all necessary rules for the use of and to police traffic on state highways" (19A-4A.0104, a). The Secretary of Transportation has sub-delegated to the State Traffic Engineer (STE) the authority to “adopt all necessary rules for the use of and to police traffic on state highways, and to set, change or extend route numbers on the Primary highway system of North Carolina” (19A-4A.0104, b).
Traditional Methods

*Emphasized 85th Percentile Speed
*Included Guidance for Evaluating Roadside Development
*Considered Other Roadway and Traffic Factors

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**Engineering and Traffic Investigations**

In the determination of proper numerical speed limits to be posted on any section of roadway it is the policy to consider several topographic and traffic characteristics with their relation to probable effect on safe and reasonable speeds. Among these characteristics are:

- The 85th percentile speed of prevailing traffic in the area under study.
- Condition and type of roadway surface.
- Roadway type, width, and number of traffic lanes.
- Shoulder width, condition and type.
- Horizontal and vertical alignment of the roadway.
- Roadside development: amount, type, and proximity to the travel way.
- Composition of the traffic using the roadway.
- Numbers and types of intersections, including private driveways and roads.

*From 1995 NCDOT Guidelines*
Where did the 85th Percentile come from?

Based on Rural Highways in the late 1950’s.

Validated by later studies on Rural Highways. 1968 and 1970’s

Research in the 2000’s show that on roads with speed limits of 50mph or greater crash risk increases with higher speeds above speed limits and crash risk is lower for lower speeds.

Hap Crowe’s explanation – “Reasonable people are traveling at or below the 85th percentile and those above are in the Lunatic Fringe”
What Affects the 85\textsuperscript{th} Percentile?

The 85\textsuperscript{th} percentile is similar to an individual’s “vote” on what is a reasonable speed limit for a segment of highway. This would be true if the speed selection was not a circular decision. Studies have shown that drivers select their speeds based upon:

- Roadway – how fast can I go and still stay on the road and not hit anyone
- Posted Speed limit – circular reference
- The perceived enforcement tolerance – the higher the tolerance the higher the speeds above the speed limit
- Their perception of the level of enforcement – the chances of getting caught, higher the level of enforcement to closer the speed selection is to the speed limit or perceived tolerance
- Their severity of the penalty – Drivers who are insurance points weary select 9 mph above the speed limit, those who riskier select 14 hoping to please to 9 over, and the riskiest blow the doors off every trip.
- Their perception of penalty will be received – If the driver knows that they can get away with speeding even if caught, this affects their decisions as well
Current Recommended Practice
Clarified in FHWA 2015 Guidance Memorandum

- Engineering Approach may consider 85\textsuperscript{th} percentile free-flow speed, design speed or other initial conditions to establish an initial baseline

- Adjustments are then made based on traffic and roadway characteristics, development, bike and pedestrian activity, crash history and other factors

- A two-step process that is comparable to traditional methods, but the strict adherence to the 85\textsuperscript{th} percentile is de-emphasized and other factors are more fully evaluated and considered
Direction on the Use of the 85th Percentile Speed Limits in NC

Modified figure from J Gattis 2013
Developing Guidelines and Documentation of Engineering Studies for Establishing North Carolina Speed Limits

September 27, 2017

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September 27, 2017
Objectives

• To provide more defined guidelines to the NCDOT on how its engineers should conduct speed limit studies for various roadway settings.
• To recommend ways by which the NCDOT can document those studies.
SPEED LIMIT REVIEW DOCUMENTATION FORM

Three Components:

1. Office Worksheet
2. Field Worksheet
3. Assessment Worksheet

The form is 5 pages of mostly electronically fillable fields and checkboxes.

There are fields for notes and other items as needed.
**OFFICE WORKSHEET**

One Page of Data Collected in the Office:

- Location Information
- Existing Speed Limits
- Past Speed Studies
- Road Class & Area
- Driveways, Intersections and Buildings
- Multimodal
- Crash History

<table>
<thead>
<tr>
<th>Offsetting Type</th>
<th>Units</th>
<th>Distance</th>
<th>Study Motivation</th>
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<tbody>
<tr>
<td>Study Road</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Study Segment Begins</td>
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<td></td>
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<tr>
<td>Study Segment Ends</td>
<td></td>
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<td></td>
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<tr>
<td>Current Speed Limit</td>
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<td></td>
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</tr>
<tr>
<td>Speed Limit Upstream of Starting Point</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Speed Limit Downstream of Ending Point</td>
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<td></td>
</tr>
<tr>
<td>Past Speed Studies</td>
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</tr>
<tr>
<td>Date:</td>
<td>Result:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Date:</td>
<td>Result:</td>
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<td>Road Classification &amp; Area Type</td>
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<td>Functional Class:</td>
<td>Select One</td>
<td>NCDOT Complete Street Area Type:</td>
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<td>AADT:</td>
<td>vehicles per day</td>
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<tr>
<td>Driveway/Intersection/Offset</td>
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<tr>
<td>Number of Driveways by Type:</td>
<td>Business</td>
<td>Residential</td>
<td>Other:</td>
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<tr>
<td>Driveway Density:</td>
<td>Consistent throughout segment</td>
<td>Considerable variation throughout segment</td>
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<tr>
<td>Number of Intersections by Type:</td>
<td>Signalized</td>
<td>Unsignalized</td>
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<tr>
<td>Typical Building Offset to Roadway:</td>
<td>Consistent</td>
<td>feet (approximate)</td>
<td>Varies from</td>
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<td>Multimodal Facilities</td>
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<td>Are schools present along the segment?</td>
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</tr>
<tr>
<td>Are parks or recreation areas present along the segment?</td>
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</tr>
<tr>
<td>Are pedestrian facilities present along the segment?</td>
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<tr>
<td>Are transit facilities designated along the segment?</td>
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<tr>
<td>Are bicycle facilities designated along the segment?</td>
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<tr>
<td>Is on-street parking designated?</td>
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<tr>
<td>Crashes</td>
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<td>A:</td>
<td>B:</td>
<td>C:</td>
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<td>per 100 million VMT</td>
<td>State-wide rate for road type:</td>
<td>per 100 million VMT</td>
</tr>
</tbody>
</table>
FIELD WORKSHEET

Two Pages of Data Collected in the Field:

- Pavement, Markings, Cross Section
- Shoulders
- Sight Distance, Vertical Alignment, Horizontal Alignment
- Ped, Bike and Truck Activity
- Operating Speed
- Purpose of Road
FIELD WORKSHEET (cont’d)

Two Pages of Data Collected in the Field:

- Notes
- Sketch
- Photo Notes (if needed)
- Note Any Attachments
### SPEED LIMIT ASSESSMENT

Two Pages That Document the Engineer’s Decision and the Elements Considered

- Identifies Elements Evaluated
- Notes Any Critical Elements
- Records Recommended Speed Limit
- Records Ordinance Numbers
SPEED LIMIT ASSESSMENT (cont’d)

Two Pages that Document the Engineer’s Decision and the Elements Considered

• Records Additional Comments and Discussion on Other Factors that Influenced the Recommended Speed Limit
Starting Points

70 mph Interstate Highways and other Full Control

55 mph Multilane Rural Roadways

45 mph Two Lane Rural Roadways

35 mph Suburban Roadways

25 mph Neighborhood, Downtown
Questions and Comments

- Final Thoughts
- Questions and Comments
- Implementation