North Carolina Goes With the Flow(chart) to Identify Countermeasures

North Carolina Department of Transportation

KEY ELEMENTS:

Uniform decision-making

Organizational training

The North Carolina Department of Transportation (NCDOT) guidance uses roadway characteristics and pedestrian data to uniformly recommend pedestrian countermeasures at signalized and unsignalized crossing locations. NCDOT adopted the "North Carolina Pedestrian Crossing Guidance" in 2015 to guide crash countermeasures across the State's 14 divisions.

OVERVIEW OF THE CROSSING GUIDANCE

The guidance is a four-step procedure that is a culmination of research, policy analysis, and interviews.[1] For example, an extensive literature review provides guidance for when to recommend the installation of marked crosswalks. Similarly, the Manual on Uniform Traffic Control Devices (MUTCD) informs when to install pedestrian signal heads. A flowchart walks the practitioner through sequenced assessments that result in a recommended or required action or no action (see Figure 1).

The guidance acknowledges several limitations to its process. It provides recommendations and considerations—not requirements—for most scenarios, and potential improvements are limited by engineering judgment and availability of funds.

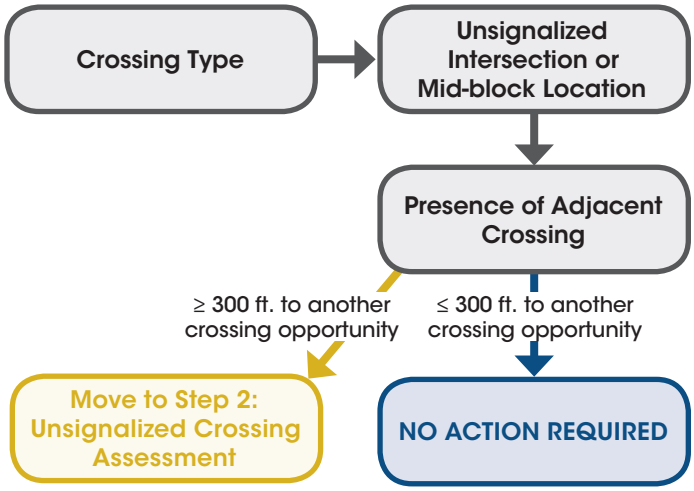

Figure 1. Excerpt from NCDOT Pedestrian Crossing Guidance.[1]

STEP 1: DOCUMENT EXISTING CHARACTERISTICS/ SIGNALIZED CROSSING ASSESSMENT

The guidance's first step includes gathering relevant data such as traffic volumes, posted and operating speeds, number of lanes, pedestrian volumes, sight distances, and activity generators at the crossing location under analysis. The guidance recommends the practitioner does the following:

- Conduct a site visit to gather data on vehicle volumes, number of lanes, crossing distance, and traffic speeds.
- Consult with transit agencies for ridership information (if applicable).
- Consult local plans for the near-term

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presence of sidewalks if they do not currently exist.

If collected correctly, information from these sources will be sufficient to evaluate a candidate location.

STEP 2: UNSIGNALIZED CROSSING OR MIDBLOCK CROSSING ASSESSMENT

The second step assesses the crossing treatment options for unsignalized crossing locations. This part of the process considers the number of lanes, roadway configuration, speed, and vehicles and pedestrian volumes. Results will either elevate the location to Step 3, recommend a crosswalk marking, or end in no action.

STEP 3: ADDITIONAL/ALTERNATIVE TREATMENTS ASSESSMENT

The third step examines new considerations such as peak pedestrian volumes, pedestrian delay, and MUTCD guidance. Here, the potential outcomes include geometric improvements, supplemental traffic control devices, or moving to Step 4. For locations that receive recommendations for additional treatments, the guidance directs the practitioner to countermeasure resources such as FHWA's "PEDSAFE."[2]

STEP 4: PEDESTRIAN HYBRID BEACON ASSESSMENT

The final step is intended for crossing locations with high vehicle and pedestrian volumes, travel speeds, or pedestrian delay. Potential outcomes for this step include a recommendation to either install a Pedestrian Hybrid Beacon (PHB) or supplemental warning signs, marking, actuated beacons, or Rectangular Rapid Flashing Beacons. The guidance's PHB recommendation is ultimately dependent on MUTCD minimum criteria, installation costs, and engineering judgment.

SUMMARY

NCDOT's "Pedestrian Crossing Guidance" merges research and design consideration into an easy-to-follow process for recommending crossing treatments. Since 2015, more than 250 people from the State DOT, municipalities, county governments have received the training.

Figure 2. NCDOT workshop field data exercise.[3]

> "We needed to consistently recommend pedestrian crossing treatments across the state, so we created the guidance to help local agencies and NCDOT engineers ask the right questions and gather the right data to make the most appropriate decision."
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> –Brian Mayhew, NCDOT State Traffic Safety Engineer

References

1. North Carolina Department of Transportation, "Pedestrian Crossing Guidance," (2015) https://connect.ncdot.gov/resources/safety/Teppl/TEPPL%20All%20Documents%20Library/Pedestrian_Crossing_Guidance.pdf

2. Federal Highways Administration, "PEDSAFE: Pedestrian Safety Guide and Countermeasure Selection System." http://www.pedbikesafe.org/PEDSAFE/index.cfm

3. O'Brien, Sarah, Program Manager, Institute for Transportation Research and Education, Document review, 11 Oct. 2017