STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

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August 20, 2012

To: Division Engineers
Mobility and Safety Field Operations Engineers

From: J.K. (Kevin) Lacy, P.E., State Traffic Engineer

Subject: Standard Practice for Traffic Signal and Signal System Revisions Resulting from Speed Limit Changes (T-69)

Attached is the standard practice for considering all speed limits and speed limit changes (statutory, ordinance, and posted) in the designs of signals and signal systems, and is effective as of the date of this memo. This standard practice has been previously reviewed by several business units in the Department including Division staff and Regional staff as follows:

- General issue discussions began in September 2011
- Discussed at the May 2012 DTE/RTE technical roundtable in North Wilkesboro
- Presented at the June Division of Highways Staff Meeting
- Operations review performed between June 11, 2012 and July 13, 2012
- Comment review on July 25, 2012
- ITS and Signals Unit final review between August 1, 2012 and August 10, 2012

Please distribute this information to all applicable personnel within your business unit. If you have any questions regarding this standard practice, please contact Kevin Lacy or Terry Hopkins in the Transportation Mobility and Safety Division.

JKL/rjj

Attachment

cc w/attachment: Jon Nance, P.E., Deputy Chief Engineer
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Terry Hopkins, P.E., State Traffic Safety Engineer
Greg Fuller, P.E., State ITS and Signals Engineer
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North Carolina Department of Transportation
Division of Highways
Transportation Mobility and Safety Division

STANDARD PRACTICE
for
Traffic Signal and Signal System Revisions Resulting from Speed Limit Changes

It will be the standard practice of the North Carolina Department of Transportation (NCDOT) to consider all speed limits and speed limit changes (statutory, ordinance, and posted) in the designs of signals and signal systems. Speed limit is an integral part of signal and signal system design so speed limit changes need to be accounted for in signal and timing plans as these changes can affect loop placement, yellow change/red clearance intervals, and other items. Funding will also need to be allocated to cover the cost of plan designs and field changes. The purpose of this standard practice is to provide guidance on the considerations and requirements related to speed limit changes with respect to signals and signal systems.

CONSIDERATIONS

A. Raising speed limits can cause safety issues by creating insufficient clearances, which can affect splits, so plans may have to be revised and field changes (such as relocating loops) may have to be made. Raising speed limits can also move the decision zone away from loops, which can result in emergency stop situations. Relocating loops usually runs about $1,000 per approach but can run as high as $6,000 to $7,000 per approach.

B. Lowering speed limits can lead to capacity and/or mobility issues but is generally not a safety issue. Existing clearances may be too long and gaps may be too small. A plan of record (POR) change generally costs around $1,000. The traditional method has been to change gap time without moving loops. With regards to systems, splits are generally not affected but lowering speed limits can affect offsets so the whole system should be reviewed.

C. If speed limit changes are requested on State Highway System routes by municipalities that affect a signal or signal system, or enacted by municipalities on municipal routes that are an approach to a state signal or signal system, then they should contribute to the cost of any plan or field changes.

D. Since NCDOT is generally not informed of speed limit changes enacted by municipalities on their approaches to state signals or signal systems, the Division and Regional traffic engineers should work with the municipalities in their divisions to keep them informed of these issues.

REQUIREMENTS

1. All signals shall be designed, installed, marked, and signed in compliance with the Manual on Uniform Traffic Control Devices (MUTCD), the North Carolina Supplement to the MUTCD, the NCDOT Roadway Standard Drawings, the NCDOT Roadway Design Manual, the NCDOT Signal Design Manual, and the standards herein.

2. Lowered speed limits at isolated signals – the speed reduction may be implemented with the signal plans being reviewed and/or revised at a later date (approximate 2012 cost is <= $1,000 for a plan of record change).

3. Lowered speed limits affecting one or more signal systems – the speed reduction and system/s revisions should occur at approximately the same time (approximate 2012 cost is $4,000 per system signal).

4. Raised speed limits at isolated signals – all signal plan revisions and field changes (including signs and loops) shall occur at the same time (approximate 2012 cost is $10,000 but could be higher depending on the age of the signal).

5. Raised speed limits affecting one or more signal systems – signal timing/plan revisions and field changes shall occur at the same time (approximate 2012 cost is $4,000 to $10,000 per system signal).

6. Funding for signal and signal system plan and field changes resulting from speed limit changes at locations with documented safety issues shall come from the Transportation Mobility and Safety Division (TMSD).

7. Funding for signal and signal system plan and field changes resulting from speed limit changes related to mobility or maintenance shall come from appropriate Highway Division sources.

8. Funding for signal and signal system plan and field changes resulting from something other than safety, mobility, or maintenance may come from municipal funds, variance, or some other source.

9. Division Traffic Engineering staff shall identify signals and/or systems that may be affected by a speed limit change and identify a funding source for changes (if not safety related).

10. Regional Traffic Engineering staff shall notify the ITS and Signals Unit and/or the Traffic Systems Operations Unit when ordinances are issued changing speed limits that affect one or more signals and/or signal systems.

11. Regional Traffic Engineering approval of a speed limit increase shall be indicative that loop, plan, and cost issues have been coordinated with the Division, the ITS and Signals Unit, and the Traffic Systems Operations Unit as needed, all work shall be scheduled at the same time, and a post-implementation review shall be conducted.

12. All signal and signal system designs shall include a review of Traffic Engineering Accident Analysis System (TEAAS) ordinances to verify field speed limits (statutory and posted). The signal designer will notify the DTE if any inconsistencies in posted versus ordinanced speed limits are found and rectify before finalizing the design.

13. All deviations from this practice shall have written approval by the State Traffic Engineer.