

Evaluating the Effectiveness of utilizing Changeable Message Signs for Temporary Workzone Speed Limits

Statement of Problem

The NCDOT has a new method for providing safe and effective movements through workzones on our interstate system. Utilizing the Changeable Message Signs (CMS), workzone workers can reduce the speed limit temporarily while working within the workzone providing enhanced safety for drivers and themselves.

Project Scope

Project Goals

The goal of this project is as follows:

Determine if temporary speed limits posted on a CMS in workzones are effective in creating speed limit compliance.

Measures of Effectiveness (MOEs)

- Vehicle speeds, average speeds, and percentage of vehicles exceeding the speed limit will be the measure of effectiveness for this project.

Data Collection Method

- A Lidar gun will be used to collect speed data at each data point. At least 150 speed samples or one hour of data collection will also be obtained at each data point per day that that data point is being collected.
- All attempts will be made to collect data from an inconspicuous spot. Pulling the vehicle off to the shoulder when collecting data may influence drivers to slow down or shy away from certain lanes to avoid the parked car.
- Only unimpeded vehicles will be targeted for speed measurements. This allows us to determine if the traffic control has an effect on the drivers that are selecting their own speeds. Vehicles in platoons will be avoided as they are not actively choosing their own speeds.
- All data collection will be done under similar weather conditions. Favorable weather conditions are clear to overcast skies and dry roadway conditions.

Countermeasure Location

- The subject workzone identified for this study is located on I-95 north of Roanoke Rapids to the Virginia State Border, mile marker 176 to 181.
- The known posted speed limit for this section of highway is 70 mph with an anticipated speed reduction by CMS to 55 mph.
- Upstream and Downstream data collection will be made approximately 5 miles beyond the workzone, to the north (in Virginia) and to the south.
- The Changeable Message Signs (CMS) will only display the temporary speed reduction when there is both a lane closure and construction workers on site.
- The contractor is allowed to leave lane closures within the workzone through the night without having the CMS display a speed reduction.

Project Tasks

		Percent of Total Work Est. Completion Date
Task I	Project Management <ul style="list-style-type: none">• Develop detailed project Work Plan• Conduct brief literature review to look for similar studies	<u>5%</u> 7/25/07 7/07
Task II	Identify Data Points <ul style="list-style-type: none">• Verify project limits and scope• Identify times and locations for data collection	<u>10%</u> 7/07 7/07
Task III	Collect 'Before Period' Data <ul style="list-style-type: none">• Collect speed data in each direction	<u>20%</u> 7/07 – 8/07
Task IV	Install Treatment / Collect 'During Period' Data <ul style="list-style-type: none">• Verify with Resident Engineer when the CMS Signs will be used to temporary reduce speed• Collect speed data in each direction	<u>30%</u> 8/07 – 11/07 8/07 – 11/07
Task V	Collect 'After Period' Data <ul style="list-style-type: none">• Collect speed data in each direction	<u>20%</u> 12/07 – 1/08
Task VI	Data Analysis <ul style="list-style-type: none">• Compile data and analyze for statistical significance	<u>10%</u> 1/08
Task VII	Document Findings and Recommendations <ul style="list-style-type: none">• Prepare report• Present final results and recommendations	<u>5%</u> 1/08 – 2/08 2/08