

**North Carolina Department of Transportation
Division of Highways
Transportation Mobility and Safety Division**

**Guidelines
For
Work Zone “Variable” Speed Limits For NC Highway
Construction and Maintenance Activities on High-Speed Facilities**

PURPOSE: This guideline provides guidance and uniformity on the establishment of “variable” speed limits for highway work zones.

OBJECTIVE: The objective of this guideline is to identify conditions where it’s appropriate to reduce the speed limit on freeways with existing speed limits of 65 MPH and above for specific, short-term work being performed in construction and maintenance work zones.

GUIDELINE: The Work Zone Traffic Control Section in consultation with the Regional Traffic Engineering staff has developed these guidelines to provide guidance and uniformity in the implementation of reducing the speed limit for specific, short-term activities in work zones. The intent is to coordinate and implement “best strategies” to address appropriate work zone speed limits for construction and maintenance activities. In accordance with the provisions described in Part 6 of the MUTCD, this guideline has been crafted to ensure thorough engineering study prior to implementation of interim speed limit reductions.

Work zone “variable” speed limit reductions are implemented in the interest of safety for the construction worker and/or they can be applied if the reduction is intended for the safety of the motoring public due to active project conditions or a combination of both. The focus for this type of application is the short-term and/or moving type of work zones which generally have traffic controls implemented such as lane closures, temporary short-term cross-overs, short-term onsite detours and other temporary patterns and / or conditions which may last from 1 to 30 days. During these operations; lane merging, traffic queuing, and non-standard patterns may require added decision making time, increased reaction times, and other driver focused actions where slower speeds can allow for better driver recognition and reaction.

However, this guideline can not cover every situation that may be encountered in construction and maintenance work zones. There are many factors that can come into play which may not be covered in this guideline which may justify the use of a Work Zone “variable” speed limit reduction. Therefore exceptions can be made on a case-by-case basis. Appropriate judgment must be used in applying the guidelines. Exceptions to the required criteria below will be considered on a case-by-case basis. Whenever these arise, the Work Zone Traffic Control Section will coordinate with the Transportation Mobility and Safety Division and Division personnel to evaluate the conditions and associated operations to recommend the most appropriate course of action.

The State Traffic Engineer will have the final decision making authority as to whether the work zone “variable” speed limit is implemented. Below are the definition, application and criteria for work zone “variable” speed limit reductions.

A Work Zone “Variable” Speed Limit is one that temporarily reduces the existing speed limit for short-term activities in work zones. These speed limits are intended for passive temporary traffic control activities such as lane closures and other temporary traffic pattern alterations lasting from 1 day up to 30 days at a given location. The Work Zone “Variable” Speed Limit can not be in operation continuously (24/7) for a period exceeding 30 calendar days. If the conditions warrant a longer period, the Work Zone Speed Limit shall be used.

These “variable” speed limits are intended for use where it is imperative to reduce high speed entry into a work area where passive traffic controls are in place or where traffic controls significantly alter the existing traffic patterns. These speed limits should only be posted when and where the traffic controls necessitate a slower speed entry to either provide the workers an environment with fewer high-speed encroachments into their work space or for the motorists to safely navigate the temporary traffic controls in place.

Only the specific portion of the work zone where conditions warrant or restrictive features are present shall receive consideration for the work zone “variable” speed reduction. In addition, only certain phases of construction may warrant this reduction.

After the State Traffic Engineer signs the ordinance, the Work Zone “Variable” Speed Limit signs/sign messages can be installed on the project according to the drawings. In addition, if a project warrants a Work Zone “Variable” Speed Limit, it automatically qualifies for the \$250 speeding fine. This additional speeding fine is also to be ordinated by the State Traffic Engineer.

The Work Zone “Variable” Speed Limit warrants are defined below. In order for a project/activity to “qualify” for this treatment, it must meet all of the warrants in Section I and at least 1 warrant in Section II.

ORDINANCE CRITERIA

SECTION I

The work zone must meet **ALL** of the following warrants to be considered for the Work Zone “Variable” Speed Limit ordinance. If Section I warrants aren’t met, the project doesn’t qualify for the “Work Zone Speed Limit” ordinance.

1. The existing Speed Limit is 65 MPH or greater.
2. Work at a “spot location” is of short duration (1 day up to 30 days) with the traffic control usually removed within the same day. A Work Zone “Variable” Speed Limit can NOT be in operation continuously (24/7) for a period exceeding 30 calendar days.

SECTION II

The work zone shall meet **at least one** of the following criteria to be further considered for the **Work Zone “Variable” Speed Limit** ordinance.

1. The work requires temporary ‘significant’ alterations in the existing traffic pattern such as continuous lane closures (up to 30 days), temporary median cross-overs, temporary on-site detours, and/or temporary “All Exit” road closures and or temporary road closures that involve the stopping of traffic.
2. The worker is actively and visibly performing work behind the passive lane closure.
3. Multiple lane closures on a mega-multi laned facility
4. Night work requiring the use of temporary lane closures.
5. Uneven pavement elevations between travel lanes greater than 2”
6. Work that involves the changing the traffic pattern/s where markings are placed in a revised location and the old markings removed.

If the above criteria are met, the existing speed limit may be reduced. The Division, Work Zone Traffic Control Section and the Traffic Safety Unit will coordinate and provide the required analysis and final determination if a work zone “variable” speed limit is the appropriate action.

When appropriate, the Work Zone “Variable” Speed Limit will be ordinances by the Regional Traffic Engineer and signed by the State Traffic Engineer. No speed limit information is to be displayed on any device without a signed ordinance by the State Traffic Engineer.

Once the ordinance is signed by the State Traffic Engineer, the Regional Traffic Engineer will contact the Resident Engineer’s Office and the Work Zone Traffic Control Section for notification and approval for its use.

SECTION III- IMPLEMENTATION PROCESS

1. Process initiated by contact from the Work Zone Traffic Control Section of the Transportation Mobility and Safety Division to the Regional Traffic Engineer’s office requesting an engineering investigation.
2. Engineering Investigation will include a review of the existing posted speed limit and the 85th percentile speeds.

3. In addition, the Work Zone “Variable” Speed Limit Criteria will be reviewed by the Work Zone Traffic Control Section to determine if the project meets the above criteria.
4. The Work Zone Traffic Control Section and the Regional Traffic Engineer will discuss and collaborate on the results of the review and determine whether to implement the Work Zone “Variable” Speed Limit reduction.
5. If the ordinance is approved, the Regional Traffic Engineer will notify the Resident Engineer and the Work Zone Traffic Control Section.
6. Also, if implemented, it may only be for a specific segment of the work zone, or it may only be for a specific phase for the work zone.
7. If it is determined the existing speed limit should be lowered, the \$250 fine for speeding should also be used.
8. In order for the Work Zone “Variable” Speed Limit to be valid and enforceable, the ordinance has to be approved and signed by the State Traffic Engineer. No work zone speed limit messages/signs are to be installed in the work zone before the ordinance is in effect.
9. The Resident Engineer will notify the Regional Traffic Engineer to rescind the ordinance once the Work Zone “Variable” Speed Limit is no longer warranted.
10. Once the ordinance is rescinded, the existing posted speed limit shall be returned.
11. See attached drawings for the correct signs and sign locations for this application.

SECTION IV-SIGNING APPLICATIONS

Since these speed limit reductions are utilized for short-term activities, the recommended application is the use of either portable/dynamic message signs or portable speed limit signs. Changeable message signs, due to their size and greater visibility, provide the largest target value possible. In addition, these devices can provide the motorists more information concerning the upcoming conditions and expectations. Messages pertaining to the upcoming speed limit reduction, conditions related to the speed limit reduction and finally the reduced speed limit message are all possible through their usage. These portable devices are also capable of being moved along the project as work progresses, as well as having their messages either changed and/or removed.

However, portable speed limit signs (R2-1) are also a valid and less expensive technique to reduce the speed limit for short-term activities. The Regional Traffic Engineer, the Division and the Work Zone Traffic Control Section will collaborate on the technique used for each work zone.

If changeable message signs are utilized, the messages reducing the speed limit and/or \$250 speeding fine are to be displayed when workers are visibly present and active work is taking place.

At the end of the work period, when the temporary traffic control devices are removed, so shall the work zone “variable” speed limit and \$250 fines by removing the reduced speed limit and \$250 fine messaging on the portable/dynamic message signs. However, if lanes are to be reopened to uneven elevations, the work zone “variable” speed limit reduction and \$250 fine may remain in place until this situation is mitigated.

If portable speed limit signs are utilized, they shall be removed along with the \$250 fine signs when the temporary traffic control devices are removed and traffic returned to their normal patterns. However, if lanes are to be reopened to uneven elevations, the work zone “variable” speed limit reduction and \$250 fine may remain in place until this situation is mitigated.

When a work zone “variable” speed limit is in affect, all existing stationary speed limit signs shall be covered. Immediately upon completion of the work activity necessitating the speed limit reduction, all existing speed limit signs shall be uncovered at no cost to the Department.

After the project/work activity is complete, the State Traffic Engineer is to be notified so the work zone “variable” speed limit ordinance will be rescinded.

Typical speed limit reductions are 10 MPH below the existing posted speed limit. In 70 MPH speed zones, a maximum 15 MPH speed reduction may be used.

It is strongly recommended that no speed limits below 55 MPH be posted on fully controlled access facilities. The Regional Traffic Engineer, after consulting with the Division, will determine the speed limit with the final approval being made by the State Traffic Engineer.

The concluding sign should be a portable, regulatory Speed Limit sign with the in-place speed limit for the roadway ahead. This is to inform the drivers the work zone “variable” speed limit has ended. Each of these signing applications is shown on separate drawings.