

 MARYLAND DEPARTMENT OF TRANSPORTATION STATE HIGHWAY ADMINISTRATION	TRAFFIC CONTROL DEVICE APPLICATION GUIDELINES OFFICE OF TRAFFIC AND SAFETY			
	Issuing Unit TDS	Application Guideline No. 6-F1	Originally Issued: 05/14/1995	Revision Date: 10/31/2024

GUIDELINES ON REDUCED WORK ZONE SPEED LIMITS ON MARYLAND STATE HIGHWAYS

BACKGROUND AND PURPOSE

A work zone is an area of a highway with construction, maintenance, inspection, or utility work activities extending from the first warning sign or warning light to the END ROAD work sign or last temporary traffic control device. Each work zone is different, and no one set of temporary traffic control devices or safety measures can satisfy all conditions for a given project. Work zones often present changing conditions that are unexpected for road users and create a high degree of vulnerability for workers on or near the roadway. Speed limits in work zones should be carefully established as they affect the safety of workers and all Vulnerable Road Users (VRU) in accordance of Maryland Department of Transportation’s Complete Streets Policy, and the credibility of speed limits in general. Drivers will reduce their speed through a work zone only when there is a perceived need to do so. Arbitrary speed limit reductions may result in non-compliance with the reduced speed limit and a false sense of security for workers.

The safest conditions in a work zone generally occur when workers are located behind positive protection devices and road user flow is inhibited as little as possible. Temporary traffic control provisions through work zones should use the same basic safety principles used to design permanent roadways, when possible. There are circumstances where it may be necessary to reduce the posted speed limit through the work zone. Reduced speed limits should be considered early in the planning phase of a project and continue through the design and construction phases.

Large speed limit reductions, especially those that drivers perceive to be unreasonably low (e.g. 30 mph reductions), have been shown to increase speed variance and the potential for crashes. Conservative drivers tend to observe the work zone speed limit, while aggressive drivers continue to operate at speeds closer to or above the posted speed limit prior to the work zone. Smaller reductions in the speed limit of up to 10 mph yield smaller changes in speed variance and lessen the potential for increased crashes. There may be situations where the nature of the work or restrictive features in the work zone require a greater speed reduction. The Maryland Manual on Uniform Traffic Control Devices (MdMUTCD) provides the option to consider a 15-mph reduction on highways with posted speeds of 70 mph.

These guidelines provide direction on the establishment of reduced speed limits in work zones on State highways.

SCOPE

These guidelines apply to work zones on SHA owned and maintained roads.

EXCEPTIONS

N/A

Speed Limit Reduction Evaluation

Reduced speed limits shall be considered for roadways with posted speed limits of 45 mph or greater when:

- a) Work activity occurs on or within 15 feet of an open travel lane without positive protection measures; or,
- b) Work activity places VRU (i.e., pedestrians or bicyclists) within 15 feet of open travel lanes without positive protection measures.

On all roadways, regardless of posted speed limit, a reduced speed limit should be considered where drivers may need to reduce speed to safely navigate through work zone lane geometry or other potential obstacles encountered in the work zone, or where engineering judgment determines a reduced speed limit is appropriate for other reasons, including worker safety.

Where speed limit reduction is deemed not feasible or practical, (e.g. mobile operations moving intermittently/continuously or short-term stationary for a single daylight period), refer to the Additional Safety Measures section of these guidelines for measures to improve worker safety.

General Guidance for Reduced Speed Limit on All Roadways

1. Conditions that may factor into the need for a reduced work zone speed limit may include:
 - a) Reduced lane widths;
 - b) Worker's proximity to live traffic;
 - c) Work zone conditions that may necessitate a speed limit reduction for safe navigation, for example:
 - Work zone alignments (e.g., long-term median cross-over or traffic shift) having a design speed less than that of the existing roadway
 - Adverse roadway geometry (below current design standards, steep downhill grade)
 - Sight distance restrictions due to grade or alignment changes
 - d) Work zone eliminates usable shoulders, for example:
 - A shoulder is converted to a temporary travel lane
 - Maintenance activities occupy the shoulder
 - Partial or full shoulder closure
 - Shoulder is used for worker access to and from work site, or material delivery
 - e) The crash rate for the roadway segment in vicinity of the work zone (prior to construction) is higher than the statewide average for similar roadways.
2. When evaluating the need for a reduced work zone speed limit, other factors to consider include:
 - a) The length of the work zone (or section of the work zone) where the speed limit reduction is being considered;
 - b) The duration of work;
 - c) The type of work; and,
 - d) The type of temporary traffic control devices to be used and their effectiveness.

3. If a speed limit reduction is deemed appropriate, consider whether advisory speed signs are appropriate or whether reducing the regulatory speed limit through the work zone is appropriate.
 - a) Advisory Speeds (MdMUTCD Section 2C.05, 2C.06 and 2C.53):
 - Use advisory speeds for spot situations such as sharp alignment changes or short sections of narrow lanes.
 - Advisory speed signing shall not be used with general warning signs (e.g. W20-1) or to govern long sections of the work zone.
 - b) Reduced Speed Limits (MdMUTCD Section 6B.01):
 - Reduced work zone speed limits should only be posted when and where the work zone environment continuously dictates the need for a reduced speed. If work is not underway and/or the site conditions do not require a reduced speed limit, reduced speed limit signs shall be folded, covered, turned, or removed. Reduced work zone speed limit signs shall only be displayed at those times when needed and shall be removed when no longer required (e.g., if construction Phase 1 requires a reduced work zone speed limit, but Phase 2 does not, the reduced work zone speed limit signs should be removed at the end of Phase 1.)
4. Work zone speed limit signs shall be placed in accordance with MDOT SHA standards (see MD 104.01-06 and MD 104.01-07 for additional information).

Additional Safety Measures

Where a work zone speed limit reduction is deemed not feasible or practical (e.g. mobile operations moving intermittently/continuously, short-term stationary for a single daylight period, or based on engineering judgment), the following safety measures should be considered to enhance road user and worker safety. These additional safety measures can also be implemented with a reduced work zone speed limit.

- Protection Vehicles - See MD 104.00-12 and MD 104.01-11A for details.
- Temporary Portable Rumble Strips – MD 104.00-18, MD 104.06-28 through 104.06-31
- Speed Display Trailer
- Portable Changeable Message Signs - Provide advance notice during work activity.
- Close travel lane(s) adjacent to work space to increase lateral buffer space.
- Lengthen lane closure tapers and/or extend longitudinal buffer space such that merging maneuvers occur well in advance of work space.
- Law Enforcement Strategies – Consider the need for Maryland State Police presence (see OOTS Application Guidelines No. 6-F6), police enforcement or Automated Speed Enforcement (ASE). Active enforcement of the work zone speed limit or police presence where active enforcement is not feasible encourages compliance with the work zone speed limit.
- Work zone ITS devices/technology (e.g., Connected Arrow Panel, Intrusion Alarm Systems, Location Transponder delivering real-time digital alert to motorists). New ITS devices may be submitted for product evaluation/approval through the Maryland Product Evaluation List (MPEL) web site <https://apps.roads.maryland.gov/mpel/>

- Rolling roadblock
- Temporary roadway closure or detour

Process to Implement Speed Limit Reduction

Where it is deemed appropriate to reduce speed limits to improve safety in work zones, the reduced speed limit should be based on adequate engineering study/judgment and shall be approved by the District Engineer (DE). A proposed speed limit reduction in a work zone with Automated Speed Enforcement (ASE) must be approved by the Director of the Office of Traffic and Safety (OOTS) in addition to the DE.

An engineering study shall be conducted to determine the need for a reduced work zone speed limit. This study should include and document the following:

- Traffic conditions during construction;
- A determination of the conditions that necessitate the reduced speed limit;
- A recommendation of the appropriate speed limit based on traffic conditions;
- A statement of the limits of the work zone where the temporary speed limit reduction is to be enforced; and,
- A statement of the times during construction when the temporary speed limit reduction is to be posted and enforced (e.g., throughout all phases of construction, during phase 2 of construction only, time-of-day variable speed limit when workers are present, etc.)

A memorandum summarizing the results of this study and recommending a reduced work zone speed limit shall be prepared. This memo will serve as the Memorandum of Action (MOA) to temporarily modify the posted speed limit on that roadway. The memo shall be signed by the DE. For projects with ASE, the memo shall be signed by both the DE and the Director of OOTS.

Speed limit reductions should be implemented in 5 mph increments. The maximum allowable speed limit reduction on MDOT SHA roadways is 10 mph. A reduction of 15 mph may be considered for MDOT SHA roadways with posted speed limit of 70 mph in special circumstances.

Work zones with reduced speed limits shall be clearly marked with all appropriate speed reduction and work zone warning signs. The speed limit signing shall include the “Work Zone / Fines Double” message as required by the MdMUTCD.

