

*TDOT WORK ZONE SAFETY AND MOBILITY MANUAL*

**Appendix C**

**TDOT Circular Letters**

**CIRCULAR LETTER**

**Section: 105.15 Termination of the Contract**  
**Number: 105.15-02**  
**Subject: Post-Construction Review Process**  
**Date: July 1, 2004**

In order to determine future construction process improvements and reduce cost overruns, a post-construction review is required on all projects with an original contract amount of \$10,000,000 (ten million) or greater. This review shall be conducted as soon as practical following the completion of all work.

Attendees at this review shall include the prime contractor and representatives from the following area when applicable: Construction, Design, Structures, Materials and Tests, Project Management, FHWA, consultant firm (design and inspection). The review shall be facilitated by Regional Construction personnel or the construction inspection consultant when applicable. The participants will identify all significant project problems and make recommendations on how these problems can be avoided on future projects. Items to be reviewed shall include but are not limited to cost overruns, supplemental agreements, plans completeness and accuracy, and contract obligations.

A post-construction review report shall be submitted to the Director of Construction. The report shall provide recommendations on any construction process improvements and how the identified overruns can be eliminated.

**CIRCULAR LETTER**

**Section:** 104.04 - Maintenance of Traffic  
**Number:** 104.04-01  
**Subject:** Structure Width Restrictions  
**Date:** July 1, 1992

When routing truck and/or oversize traffic around or detouring through a work zone, the Project Engineer should advise the Region Construction Office approximately two weeks prior to the restriction of width and/or closing of a structure on the State or Interstate Highway System. This will allow the Regional Construction Office and the Permits Section ample time to make advisements of the lane restrictions. Also, once the restriction or closure has terminated, the Project Engineer should advise the Region Construction Office.

The Region Construction Office will relay restrictions on highway lane widths to the Permits Section at the following address:

Permits Section  
Tennessee Department of Transportation  
Suite 300 James K. Polk Building  
505 Deadrick Street  
Nashville, TN 37243-0331  
Phone: (615)741-3821

limit upstream of the work zone during the construction period. The preconstruction speed limit serves as the default value for the work zone speed limit. The speed limit in the work zone should be reduced only if such a reduction is warranted by the factors considered in the remainder of the procedure.

#### **Step 2—Determine the work zone condition that applies**

The work zone condition is determined by the location of work activities in relation to the traveled way. In general, speed limit reductions are more appropriate for work zones in which work activities take place in or near the traveled way than for work zones where work activities take place in shoulder or roadside areas well removed from the traveled way or behind a positive barrier.

The procedure addresses the following conditions:

1. Activities that are more than 10 ft from the edge of the traveled way (roadside activity),
2. Activities that encroach on the area closer than 10 ft but not closer than 2 ft to the edge of the traveled way (shoulder activity),
3. Activities that encroach on the area from the edge of the traveled way to 2 ft from the edge of the traveled way (lane encroachment),
4. Activities that require an intermittent or moving operation on the shoulder (moving activity on shoulder),
5. Activities that encroach on the area between the centerline and the edge of the traveled way (lane closure),
6. Activities that require a temporary detour roadway (temporary detour), and
7. Activities that encroach on the area on both sides of the centerline of a roadway or lane line of a multilane highway (centerline or lane line encroachment).

The conditions are discussed in greater detail later in this section.

#### **Step 3—Determine which factors for the appropriate condition apply to the specific site**

The third step in the procedure is to review the

### **Work Zone Speed Limit Procedure**

The appropriate speed limit for any highway work zone can be determined from the procedure presented in this section. The procedure is applicable to stationary construction zones, maintenance zones, and utility operations; intermittent moving operations; and continuous moving operations. The recommended procedure has four steps:

- Step 1—Determine the existing speed limit,
- Step 2—Determine the work zone condition that applies,
- Step 3—Determine which factors for the appropriate condition apply to the specific site, and
- Step 4—Select the work zone speed limit.

Each step is discussed below. This procedure is illustrated by the flow chart in Figure 3. Figure 4 illustrates the seven work zone conditions that are addressed in Step 2.

#### **Step 1—Determine the existing speed limit**

The first step in the procedure is to determine the existing (preconstruction) speed limit for the work zone. The preconstruction speed limit is usually, but not necessarily, the same as the speed

portion of Table 1 applicable to the condition present in the work zone. Table 1 identifies the factors that should be considered in determining whether a speed limit reduction is appropriate for any given work zone condition. If any of the factors identified in the applicable portion of Table 1 is present, then a work zone speed limit reduction is warranted and may be implemented. Consideration of the factors in Table 1 is especially important at sites where the presence of these factors may not be apparent to motorists.

#### Step 4—Select the work zone speed limit

The work zone speed limit should be selected considering the factors presented in Table 1. The table includes guidelines on the maximum speed limit reduction that is recommended for each work zone condition. Speed limit reductions larger than the recommended 10-mph maximum should generally be considered only if restricted geometrics with a lower design speed are present in the work zone and modification of the geometrics to a higher design speed is not feasible.

Highway engineers responsible for each work zone should monitor the conditions in the work zone and ensure that the posted speed limit is appropriate for the actual conditions at any given time. For example, the presence of workers in an unprotected position within 10 ft of the traveled way for an extended period of time warrants a speed limit reduction of 10 mph. However, if worker protection is the only warrant for a speed limit reduction, the speed limit should be restored to its original value when the work activity at that location is completed. Use of work zone speed limits that are appropriate for the conditions that actually exist in the work zone is very important in maintaining motorists respect for speed limits. If motorists frequently encounter reduced speed limits that are not appropriate for the actual conditions in the work zone, they may lose respect for all speed limits and, thus, choose a speed that is too high in a situation where reduced speeds are truly necessary.

All work zone traffic controls should be evaluated at the beginning of the project and

periodically through the life of the project to determine if the traffic controls are operating as intended. If problems, including traffic accidents, evidence of traffic accidents, such as debris, or near misses are occurring, the responsible person (resident engineer or traffic control specialist) should determine the cause of the problems so that the circumstances causing the problems can be corrected. Correction may require assistance from the traffic control designer, traffic engineer, or other knowledgeable person.

#### Condition 1

Activities that are more than 10 ft from the edge of the traveled way (roadside activity)

#### Typical Applications

Roadway construction  
Cleaning drainage  
Landscaping work  
Structural work  
Utility work  
Reworking ditches  
Fencing work

**Reductions to Existing Regulatory Speed Limit**  
Should not be used\*

**Suggested Maximum Amount of Speed Reduction**  
None

**Factors**  
None

The regulatory speed limit shall meet all requirements of the *MUTCD*.

\*There should not be a reduction to the existing regulatory speed limit unless unusual situations create hazardous conditions for motorists, pedestrians, or workers.

**Condition 2**

Activities that encroach on the area closer than 10 ft but not closer than 2 ft to the edge of the traveled way (shoulder activity)

**Typical Applications**

Roadway construction  
 Culvert extensions  
 Guardrail installation  
 Cleaning drainage  
 Reworking ditches  
 Shoulder work  
 Utility work  
 Side slope work  
 Landscaping work  
 Structural work  
 Sign installation

**Reductions to Existing Regulatory Speed Limit**  
 May be used where Factors exist

**Suggested Maximum Amount of Speed Reduction**  
 10 mph

**Factors**

- Workers present for extended periods within 10 ft of traveled way unprotected by barriers
- Horizontal curvature that might increase vehicle encroachment rate (could include mainline curves, ramps, and turning roadways)

The regulatory speed limit shall meet all requirements of the *MUTCD*.

**Condition 3**

Activities that encroach on the area from the edge of the traveled way to 2 ft from the edge of the traveled way (lane encroachment)

**Typical Applications**

Roadway construction	Utility work
Guardrail installation	Shoulder work

**Reductions to Existing Regulatory Speed Limit**  
 May be used where Factors exist

**Suggested Maximum Amount of Speed Reduction**  
 10 mph

**Factors**

- Workers present for extended periods within 2 ft of traveled way unprotected by barrier
- Horizontal curvature that might increase vehicle encroachment rate (Could include mainline curves, ramps, and turning roadways.)
- Barrier or pavement edge dropoff within 2 ft of traveled way
- Reduced design speed for stopping sight distance
- Unexpected conditions

The regulatory speed limit shall meet all requirements of the *MUTCD*. Where work zone geometrics with reduced design speeds cannot be avoided, the work zone speed limit should not exceed the design speed, even if this requires a work zone speed limit reduction greater than 10 mph.

**Condition 4**

Activities that require an intermittent or moving operation on the shoulder (moving activity on shoulder)

**Typical Applications**

Roadway construction  
Widening  
Delineator installation  
Shoulder and slope work  
Utility work  
Guardrail installation  
Landscape work

Reductions to Existing Regulatory Speed Limit  
Should not be used \*

Suggested Maximum Amount of Speed  
Reduction  
None

Factors  
None

The regulatory speed limit shall meet all requirements of the *MUTCD*.

\*There should not be a reduction to the existing regulatory speed limit unless unusual situations create hazardous conditions for motorists, pedestrians, or workers.

**Condition 5**

Activities that encroach on the area between the centerline and the edge of traveled way (lane closure)

**Typical Applications**

Roadway construction  
Pavement repair  
Utility work  
Widening  
Pavement resurfacing  
Pavement marking  
Bridge repair

Reductions to Existing Regulatory Speed Limit  
May be used where Factors exist

Suggested Maximum Amount of Speed  
Reduction  
10 mph

**Factors**

- Workers present for extended periods in the closed lane unprotected by barrier
- Lane width reduction of 1 ft or more with a resulting lane width less than 11 ft
- Traffic control devices encroaching on a lane open to traffic or within a closed lane but within 2 ft of the edge of the open lane
- Reduced design speed for taper length or speed change lane length
- Barrier or pavement edge dropoff within 2 ft of the traveled way
- Reduced design speed of horizontal curve
- Reduced design speed for stopping sight distance
- Traffic congestion created by a lane closure
- Unexpected conditions

The regulatory speed limit shall meet all requirements of the *MUTCD*. Where work zone geometrics with reduced design speeds cannot be avoided, the work zone speed limit should not exceed the design speed, even if this requires a work zone speed limit reduction greater than 10 mph.

**Condition 6**

Activities requiring a temporary detour to be constructed (temporary detour)\*\*

**Typical Applications**

Roadway construction  
Subgrade restoration  
Bridge construction  
Culvert repair

**Reductions to Existing Regulatory Speed Limit**  
May be used where **Factors** exist

**Suggested Maximum Amount of Speed Reduction**

10 mph

**Factors**

- Lane width reduction of 1 ft or more with a resulting lane width less than 11 ft
- Reduced design speed for detour roadway or transitions (radius of curvature, superelevation, and sight distance)
- Unexpected conditions

The regulatory speed limit shall meet all requirements of the *MUTCD*. Where work zone geometrics with reduced design speeds cannot be avoided, the work zone speed limit should not exceed the design speed, even if this requires a work zone speed limit reduction greater than 10 mph.

\*\*Detour and transition geometry with a design speed equal to or greater than the existing regulatory speed limit should be provided whenever possible.

**Condition 7**

Activities that encroach on the area on both sides of the centerline of a roadway or lane line of a multilane highway (centerline or lane line encroachment)

**Typical Applications**

Roadway construction	Widening
Pavement marking	Crack sealing
Pavement resurfacing	Bridge repair
Pavement repair	

**Reductions to Existing Regulatory Speed Limit**  
May be used where **Factors** exist

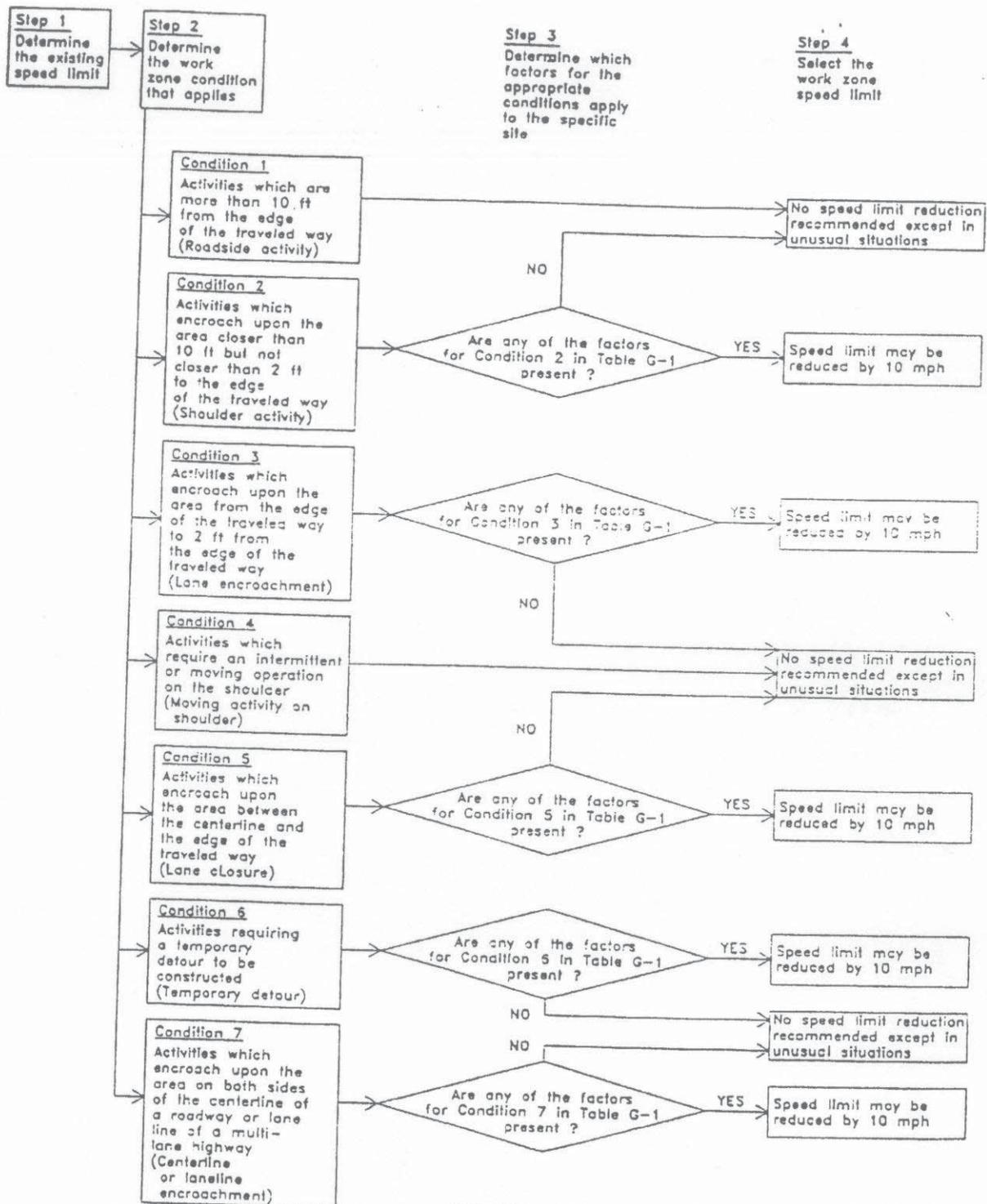
**Suggested Maximum Amount of Speed Reduction**

10 mph

**Factors**

- Workers present on foot in the traveled way or in the closed lane unprotected by barrier for extended periods
- Remaining lane plus shoulder width is less than 11 ft
- Reduced design speed for taper length or speed change lane length
- Barrier or pavement edge dropoff within 2 ft of the traveled way
- Reduced design speed of horizontal curve
- Reduced design speed for stopping sight distance
- Traffic congestion created by lane closure
- Unexpected conditions

The regulatory speed limit shall meet all requirements of the *MUTCD*. Where work zone geometrics with reduced design speeds cannot be avoided, the work zone speed limit should not exceed the design speed, even if this requires a work zone speed limit reduction greater than 10 mph.



Note: Where work zone geometrics with reduced design speeds cannot be avoided, the work zone speed limit should not exceed the design speed, even if this requires a speed limit reduction greater than 10 mph.

Figure 3. Work zone speed limit procedure flowchart.

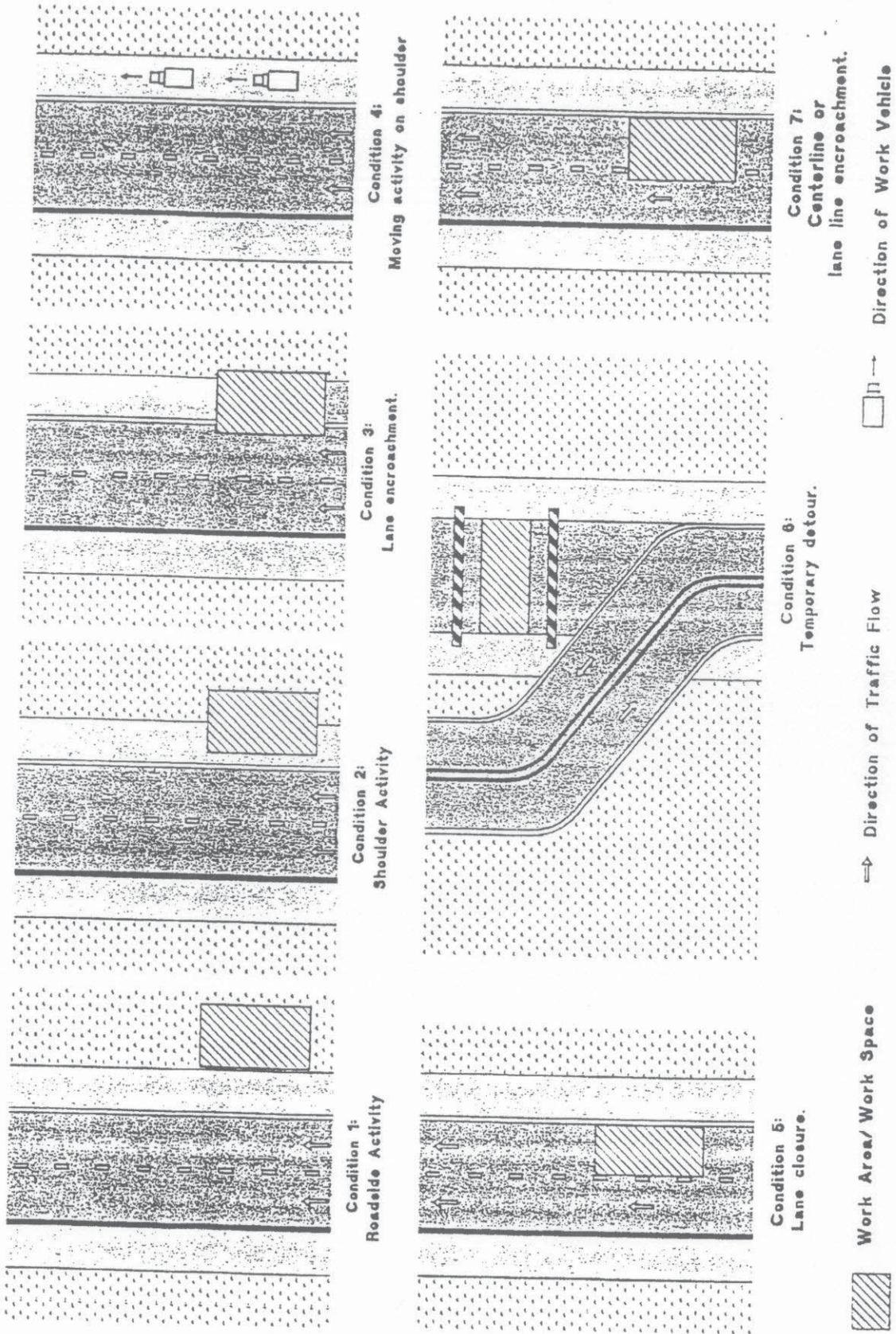


Figure 4. Work zone conditions.

**CIRCULAR LETTER**

Section: 712.07-Maintenance  
Number: 712.07-01  
Subject: Manual on Uniform Traffic Control Devices

Date: May 15, 1994

All construction warning signs are to be placed in accordance with the Manual on Uniform Traffic Control Devices for Highway Construction and Maintenance Operations.

Construction signs should be erected no closer than 50 feet from an existing sign. Construction signs may be moved plus or minus 100 feet from the Plans location in order to avoid conflicts with existing signs, driveways and side streets. The Regional Traffic Engineer should be contacted if this criteria cannot be met.

At the beginning of work on a project, the construction signs and other traffic control devices are to be placed in accordance with the MUTCD and, thereafter, properly maintained and changed as conditions on the project change.

To direct traffic through construction projects safely and expeditiously, it is imperative that adequate and proper signing be maintained for the full duration of the project. Such maintenance includes the cleaning, repositioning, temporary covering, removing of foliage or other needs as warranted. It should be noted that the MUTCD illustrates minimum desirable standards for normal situations. Additional protection must be provided when special complexities and hazards exist.

To be effective, signing must be credulous. To maintain credibility the signing must convey to the motorist exactly what can be expected on the road ahead. This cannot be accomplished with contradictory or improper signing. Signs should be removed or covered when they are not applicable. If a driver observes a sign several times such as "Right Lane Closed" or "Flagmen Ahead", but as he proceeds he finds the situation conveyed by the message to be nonexistent, he will be much more apt to disregard it in the future. In addition, when a series of signs encroach into the area of another series of signs, only the signs conveying the appropriate message should be displayed. For example, if a series of lane closure signs encroach into the advance warning signs, the advance warning signs should be covered or removed until their need is warranted again.

It is important that the responsibility for inspecting the signing be clearly defined. This responsibility may be assigned to one individual on a region wide basis or on a project basis by the designation of a staff member by the Project Engineer.

Signing should be inspected at least once a week or more often if conditions warrant. Inspections should be made periodically during hours of darkness.

Attached is a check list for use in assuring that proper and adequate signing is maintained at all times. The completed check lists should be filed in the project files.

Section 6B-4 of the MUTCD states that all sign installations should be constructed so as to yield upon impact to minimize hazards to motorists. Also, because of the potential hazard to pole climbers and other considerations, traffic control signs are not to be attached to utility poles

CHECK LIST FOR TRAFFIC CONTROL DEVICES

Contract No. \_\_\_\_\_ Project No. \_\_\_\_\_ County \_\_\_\_\_

Contractor \_\_\_\_\_

- 1. Have test reports been received on all signing materials? Yes No N/A
- 2. Are all signs and sign supports constructed in accordance with the Tennessee Manual on Uniform Traffic Control Devices? Yes No N/A
- 3. Are all signs, barricades, tapers and transitions placed in conformance with at least the minimum standards of the M.U.T.C.D.? Yes No N/A
- 4. Do stripes on the barricades point in the proper direction? Yes No N/A
- 5. Are all signs and barricades properly supported? Yes No N/A
- 6. Are all traffic control devices clean and clearly visible to the approaching motorist? Yes No N/A
- 7. Has all necessary temporary striping been placed? Yes No N/A
- 8. Have all contradictory permanent traffic control devices been covered or removed? Yes No N/A
- 9. Are all signs that are appropriate only during certain periods being covered or removed when not necessary? Yes No N/A
- 10. Are all flagmen wearing orange vests? Yes No N/A
- 11. Are traffic control devices set-up in advance of the work area to warn the approaching motorists in ample time to make needed adjustments? Yes No N/A
- 12. Are lane closures and the beginning of detours clearly visible to the approaching motorist? Yes No N/A
- 13. Are all traffic control devices being promptly adjusted as changing conditions warrant? Yes No N/A
- 14. Are traffic control devices adequate to safely and expeditiously guide an unfamiliar motorist through the project? Yes No N/A
- 15. Have arrow boards been checked and are the three mode (bright, dim, automatic) selector switches working properly as determined by night time inspection? Yes No N/A

EXPLAIN ALL "NO" ANSWERS AND ACTION TAKEN: \_\_\_\_\_

- (1) date inspected: \_\_\_\_\_ time inspected \_\_\_\_\_ am/pm
- (2) date inspected: \_\_\_\_\_ time inspected \_\_\_\_\_ am/pm
- (3) date inspected: \_\_\_\_\_ time inspected \_\_\_\_\_ am/pm
- (4) date inspected: \_\_\_\_\_ time inspected \_\_\_\_\_ am/pm

INSPECTOR'S SIGNATURE: \_\_\_\_\_

cc: Regional Safety Coordinator

## CIRCULAR LETTER

Section: 712.04 Temporary Traffic Control - General

Number: **712.04-02**

Subject: Review and Approval of Proposed Traffic Control Prior to Major Disruptions of Existing Traffic Patterns

Date: February 1, 1994

Anytime proposed construction requires major disruption to existing traffic patterns the Regional Traffic Engineer is to be consulted. The Regional Traffic Engineer should be provided details on the proposed disruption including but not limited to advance warning, possible alternate routes, type of disruption, time and length of disruption, Contract Plans, etc. The Regional Traffic Engineer should review, modify if needed, and approve the proposed plan prior to implementation. The Regional Traffic Engineer's guidance is crucial to minimize negative impacts and to maximize safety for the public.

Such major disruptions could include closures of interstate, primary, major arterials and/or secondary highways; lane closures on urban interstates or major arterials; and any other disruptions deemed appropriate.

**MEMORANDUM**

**TO:** Regional Engineering Directors  
Regional Traffic Engineers  
Regional Construction Engineers  
Regional Safety Coordinators

**FROM:** Mike Tugwell  
Joseph Sweat  
Traffic Engineering Office  
Tennessee Department of Transportation

**DATE:** February 25, 2002

**SUBJECT: Guidelines for Establishing Work Zone Speed Limits**

The Traffic Engineering Office has developed uniform guidelines for establishing work zone speed limits. The procedures and related guidelines are shown on the following pages.

The guidelines are based on research by the National Cooperative Highway Research Program (NCHRP). (See attached report No. 192). The research was initiated by AASHTO.

The new procedure addresses the problem of speed limits remaining in place during periods when they are no longer warranted.

C: Commissioner Saltsman  
Bill Moore  
Jim Jeffers  
David Donoho  
Gerald Gregory  
Alex Noble  
Don Dahlinger  
Karen Brunelle  
David Martin  
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## **TDOT Guidelines for Establishing Work Zone Speed Limits**

Note: These guidelines were developed by the Traffic Engineering Office and are based on research by the National Cooperative Highway Research Program (NCHRP). (See attached report No. 192).

This document outlines the general procedures to be used for establishing speed limits in Tennessee work zones. The Tennessee Department of Transportation acting through its construction engineers and regional personnel, are in the best position to decide if a work zone speed limit is appropriate for the conditions at a given work site. These guidelines are intended to aid in applying work zone speed limits in a more uniform manner and to aid TDOT personnel in making decisions, however, they are not a substitute for sound engineering judgement.

Request for speed reductions are currently initiated by contractors and are granted in most cases. Reductions are currently given for the entire length of the work zone (blanket reduction) and generally remain in place for the duration of the project.

Speed limits left in place for the duration of the project are at times unwarranted, particularly near the end of the project, when major aspects of the work, such as paving, are complete. Because of scheduling, there are often significant periods of time when no work is being done and no need for a speed reduction. Unwarranted speed reductions leads to increasing non-compliance by motorists and results in an overall reduction in the safety of the work zone. These procedures address that problem.

### **Work Zone Speed Limit Procedure:**

#### **Refer to attached NCHRP report 192**

- Step 1 - Determine the existing speed limit.
- Step 2 - Determine the work zone condition that applies
- Step 3 – Determine which factors for the appropriate condition apply to the specific site, and
- Step 4 – Select the work zone speed limit

### **Commentary on Procedures:**

- The procedures provide a method for considering engineering factors in selecting an appropriate work zone speed limit. The need for a speed limit reduction is

determined in the procedure through consideration of a number of factors related to the actual conditions in a specific work zone.

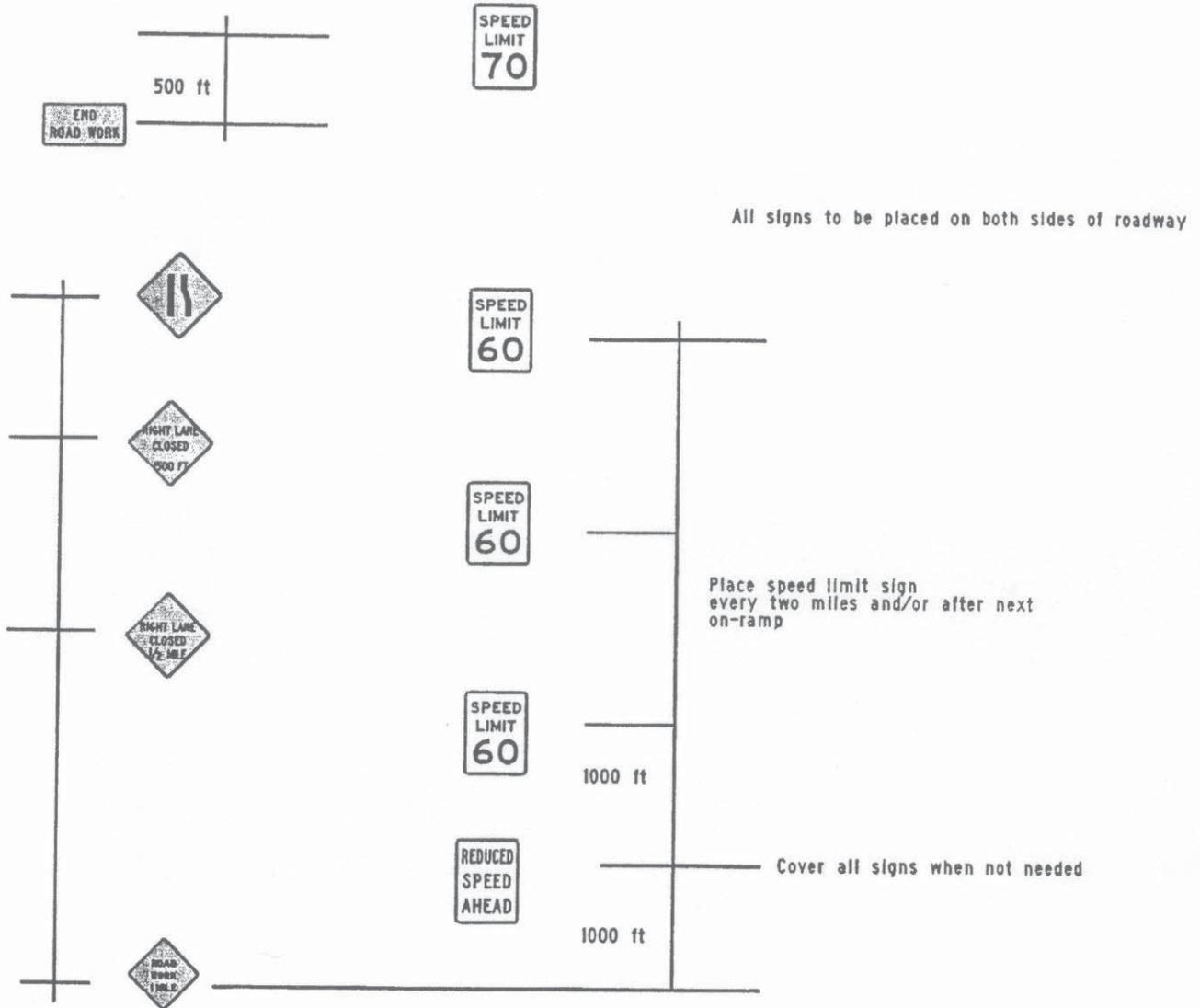
- At such locations where work activities are removed from the edge of the traveled way by 10 ft or more, it is recommended that the work zone speed limit not be reduced.
- When work zone activities are closer than 10' to the edge of the traveled way and where other specific factors are present, as established by NCHRP NO. 192 (see attached report) speed limit reductions **may** be used.
- Work zone speed limit reductions larger than 10 mph are undesirable and should be avoided except where required by restricted geometrics or other work zone features that can not be modified.
- Reduced speed limits are generally most appropriate for project that last at least 72 hours.
- TDOT personnel should review each work zone to determine if a reduced speed is needed. Work zone speed limits may be reduced when factors outlined in NCHRP 192 exist. See attached NCHRP No. 192.
- Reduced speed limits may remain in place when work is ongoing in any 72 hour period.
- If work is halted for more than 72 hours and no factors exist which warrant a speed reduction, then the speed limit should be returned to previous regulatory limits.
- In order to for contractors to easily and quickly change the speed limit within the work zone, the procedure recommends the use of removable plates which will change the speed limit signs by 10 mph increments. A standard regulatory speed limit sign is easily modified to meet this requirement.
- A request by a contractor does not alone constitute a need for a reduced speed zone.

NCHRP procedure for  
determining work zone speed  
limits follows this page.

*From the NCHRP report No.192:*

*TDOT Doc no. WSSpeed.doc*

## Typical Placement For Speed Limit Signs In Work Zones



### General Notes :

Distances given above may be field adjusted by direction of the engineer.

On freeways and expressway signs to be 48" x 60"

On conventional highways signs may be 36" x 48"

**CIRCULAR LETTER**

SECTION: 712.04  
NUMBER: **712.04-01**  
SUBJECT: Reduction of Speed Limit in Active Construction Zones

DATE: May 15, 2002

In order to enhance safety for both the motoring public and construction personnel the Department will permit, upon written request and written approval by the State Traffic Engineer, the contractor to erect signs for reduced speed limits as warranted by the Guidelines for Establishing Work Zone Speed Limits. The Project Supervisor shall first review the Guidelines to determine if the reduction in speed is warranted before forwarding the request to the State Traffic Engineer.

The intent is to allow a reduction of the legal speed limit for the shortest period warranted in the area of active construction work as outlined in the Guidelines. The reduced speed limit signs are to be furnished, erected, maintained and removed at the contractor's expense. They are to be used only for the immediate area of active construction work.

Enclosed, herewith along with the Guidelines, is a suggested form that may be used for the approval procedure.

Contract No.  
Project No.  
Project Ref.No.  
County

Civil Engineering Supervisor  
Tennessee Department of Transportation

Dear Sir:

We \_\_\_\_\_, prime contractor, on the above captioned project request permission to reduce speed limit from \_\_\_\_ MPH to \_\_\_\_ MPH to utilize Speed Limit Reduction Signs as shown on Tennessee Department of Transportation Drawing No. T-S-18. We agree to utilize subject signs only in the immediate area of active construction. We further agree to furnish, erect, maintain and remove them at our expense. The flashing lights will only be operational when active work is being performed.

Thanks for your consideration of this matter.

Prime Contractor

Approved:

Civil Engineering Supervisor

Date:

Copy to Regional Construction Engineer