

**PAY ATTENTION**  
**SLOW DOWN in WORKZONES**



A MESSAGE FROM THE MINNESOTA DEPARTMENT OF TRANSPORTATION.



## Speed Limits in Work Zones

# Speed Limits in Work Zones

- Why do workers want speed limits?
- How effective are speed limits in work zones?
- New legislation
- What are the speed limits that can be used in a Work Zone?
- What guidance is available?
- What are the procedures?







**\$300 FINE  
WORK ZONE  
SPEED LIMIT  
VIOLATION**



**GIVE 'EM  
A BRAKE**



## Speed Limit Effectiveness

# Speed Limit Sign (only)

**Table 1. Potential Voluntary Speed Reductions for Various Work Zone Conditions.**

Work Zone Condition	Potential Voluntary Speed Reduction*
Work Zone Reduced Speed Limit Sign	0 to 3 mph
Barrier Near Inside Travel Lane	0 to 3 mph
Lane Encroachment	1 to 5 mph
Lane Closure	1 to 7 mph
Construction Vehicle Access/Egress Location	5 to 6 mph
Temporary Crossover	4 to 9 mph
Two-Lane, Two-Way Barrier Separated Traffic	7 to 9 mph

\* The speed reductions listed are based on a study conducted in Texas. Operating speeds upstream of the work zones ranged from 60 mph to 77 mph.

Source: *Guidelines on Managing Speeds in WZ* – Roadway Safety Consortium, published by FHWA, available on [www.workzonesafety.org](http://www.workzonesafety.org)

Drivers ignore speed limit signs that don't reflect current driving environment

# Speed Limit Signs – with other enhancements

Table 2. Potential Speed Reductions for Various Speed Management Techniques.

Speed Management Technique	Potential Speed Reduction*
CB Radio Information Systems	0 to 2 mph
Narrow Lanes With Channelizing Devices	0 to 5 mph
Transverse Pavement Markings	0 to 5 mph
Portable Changeable Message Sign With Radar	0 to 6 mph
Drone Radar	2 to 3 mph
Transverse Rumble Strips	2 to 5 mph
Speed Display Trailers	2 to 10 mph

\* The speed reductions listed are based on a number of studies, and the results vary considerably.

15 mph reduction in some situations  
5-10 mph reduction more common





# Work Zone Legislation

# MN Session Law 2014 Chapter 312

- Defined Work Zone
- Modified fine for violating a flagger direction
- Modified speed limits in work zones
  - **Required reduction** under certain conditions
  - Allowed road agency to set without an engineering study
  - Modified fine

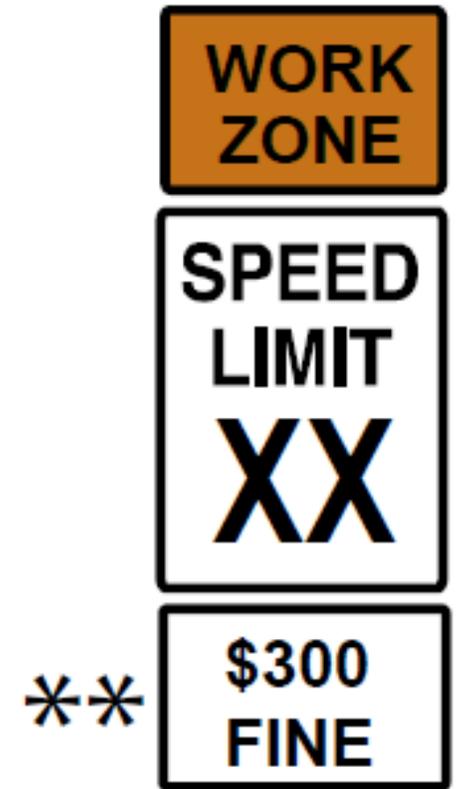


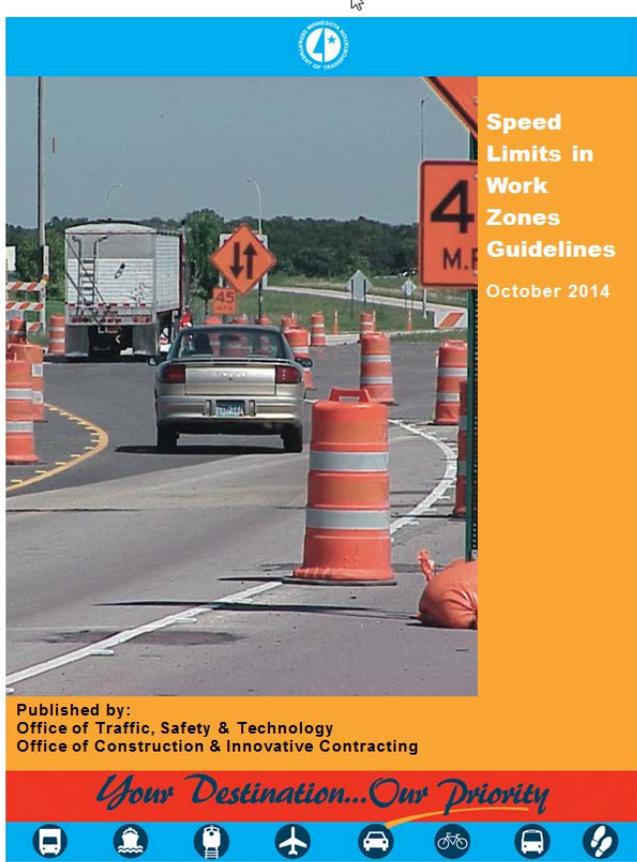
Effective August 1, 2014

# Work Zone Speed Limit Violations

## MN Statute 169.14, Subd. 6a

- \$300 fine for violating speed limit in work zone
  - “Fines double” no longer applies
- All work zones that meet statutory definition
  - Even those without posted speed limits
- MN MUTCD allows turning existing posted speed limits into work zone speed limit assembly

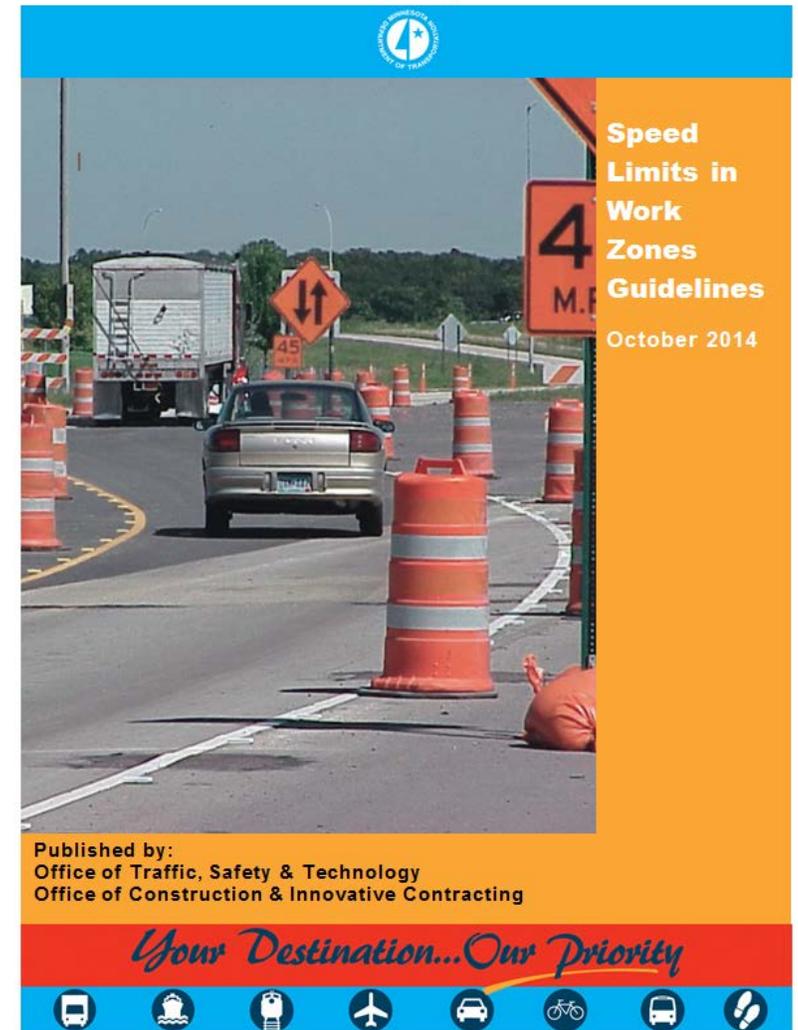




# Speed Limits in Work Zones

# Speed Limits in Work Zones Guidelines

- Laws
- Speed limit types
- Applications
- Layouts
- See weblink on footnote
  - Or websearch mndot work zone speed limit



# Statutory definition of a work zone

MN Statute 169.011, Subd. 95 – slightly paraphrased

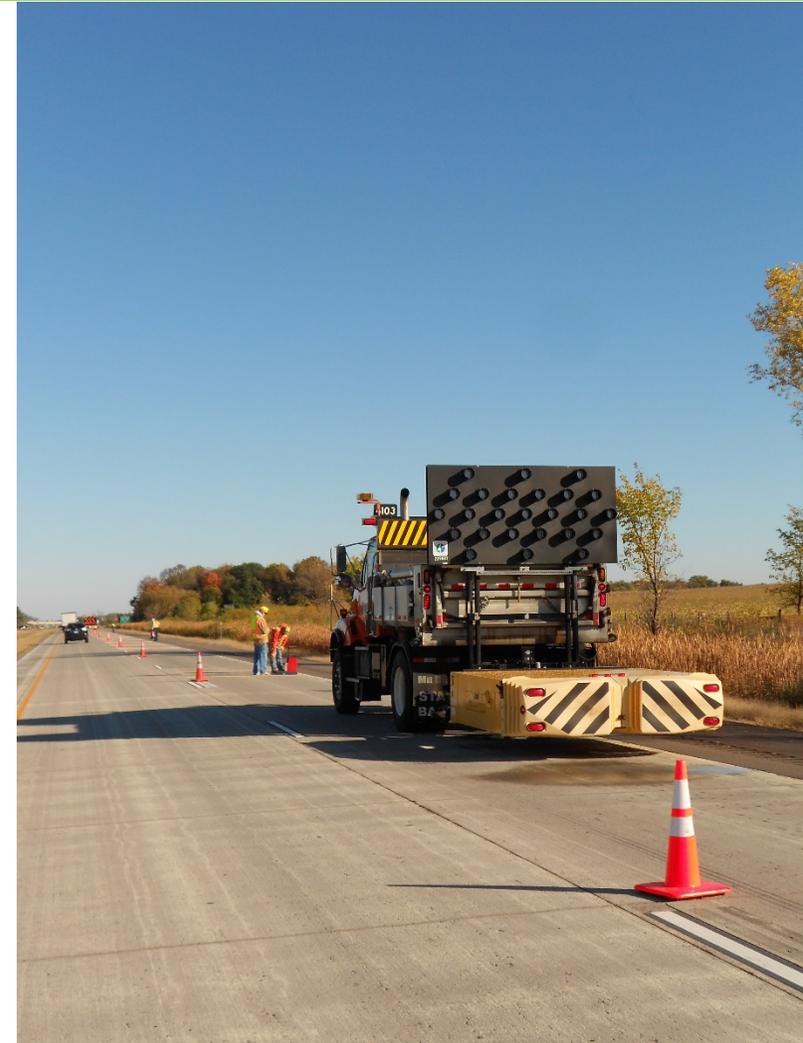
- A work zone means a segment of street or highway which...
  - A road authority or its agent is constructing, reconstruction, or maintaining the physical structure of the roadway, which may include, but is not limited to, shoulders, features adjacent to the roadway, and utilities and highway appurtenances, whether underground or overhead, AND any of the following items applies...



# Statutory definition of a work zone

MN Statute 169.011, Subd. 95 – slightly paraphrased

- Official traffic control devices that indicate the segment of a street or highway under construction, reconstruction, or maintenance, are erected
- *One or more lanes of traffic are closed*
- *A flagger is present*
- *A 24/7 construction speed limit is established*
- *A workers present speed limit is in effect*



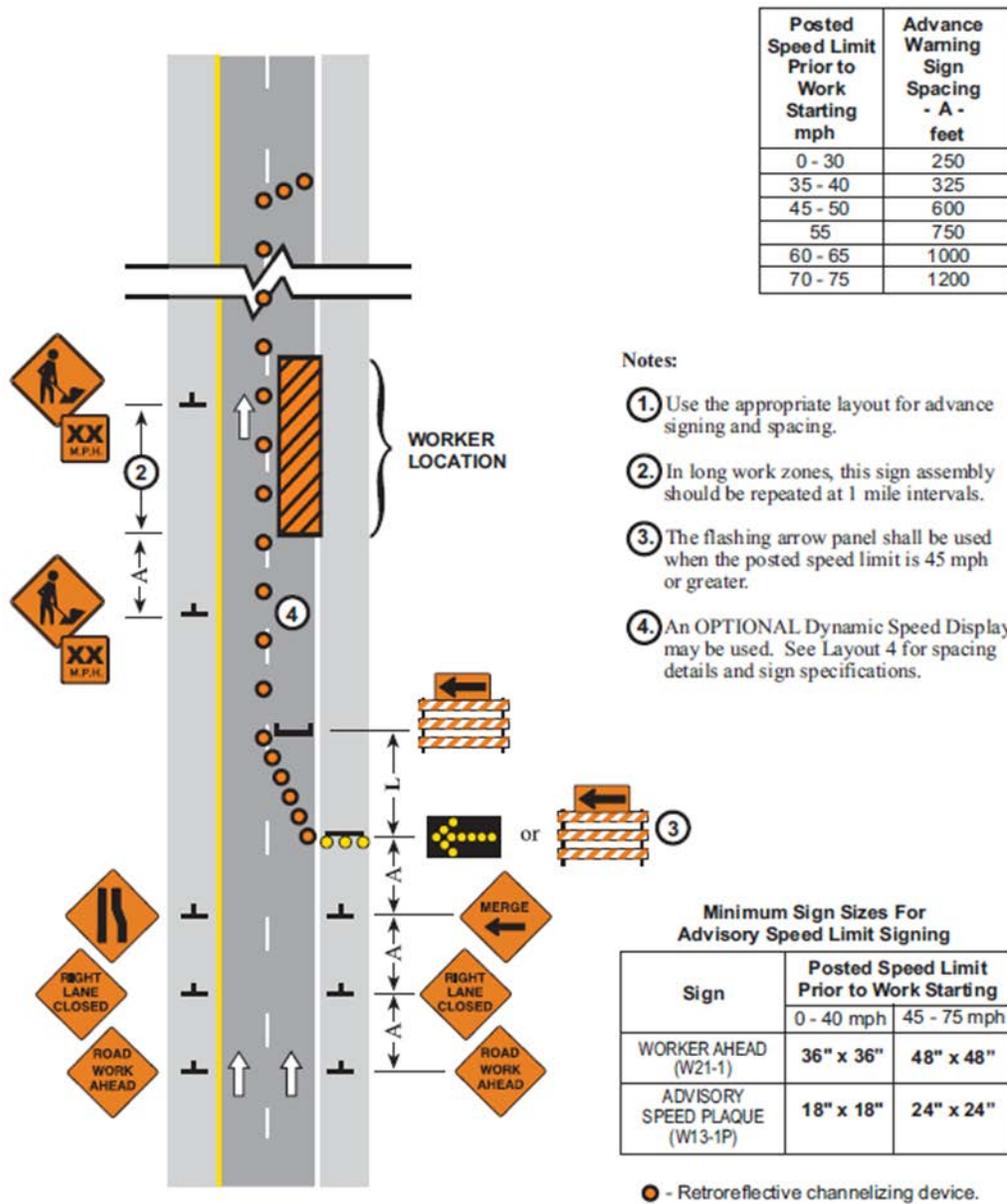
# Advisory Speeds

- Application
  - For driver safety – let driver know a safe speed to travel to negotiate a potential hazard
    - Bumps, low shoulders, bypass indicating the curve, narrow lanes, lane shift, poor road surface, etc.
  - For worker safety at spot locations
    - Let driver know that there are workers ahead
- Authority
  - Warning sign needed
  - Established by the District per MN MUTCD Part 6H-2



**Can be as effective as regulatory speed limit**

# Advisory Speed Layout



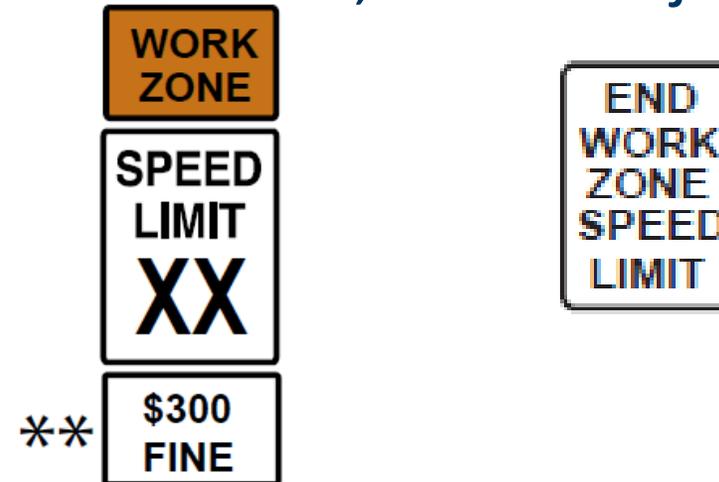
# Workers Present Speed Limit

- Application

- For worker safety, established in short-term projects during continuous worker activity when workers are present and are adjacent to moving traffic

- Examples

- Pavement repair, loop detector installation, M&O, concrete joint repair & crack sealing.



# Workers Present Speed Limit

- Regulatory speed limit
  - Engineering study not needed
  - Required 45 mph under certain conditions
  - Or agency determined
    - At MnDOT – District Traffic Engineer or designee
  - **Workers have to be present**
- What can the speed limit be?
  - Required 45 mph under certain conditions
  - No more than 20 mph reduction – existing speed limit  $\geq$  55mph
  - No more than 15 mph reduction – existing speed limit  $\leq$  50mph

# Required workers present speed limit

## MN Statute 169.14, Subd. 5d

- The speed limit on a road having an established speed limit of 50 mph or greater is adjusted to 45 mph in a work zone (remember definition) when...
  - At least one lane or portion of a lane of traffic is closed in either direction and
  - Workers are present
- Exceptions follow -



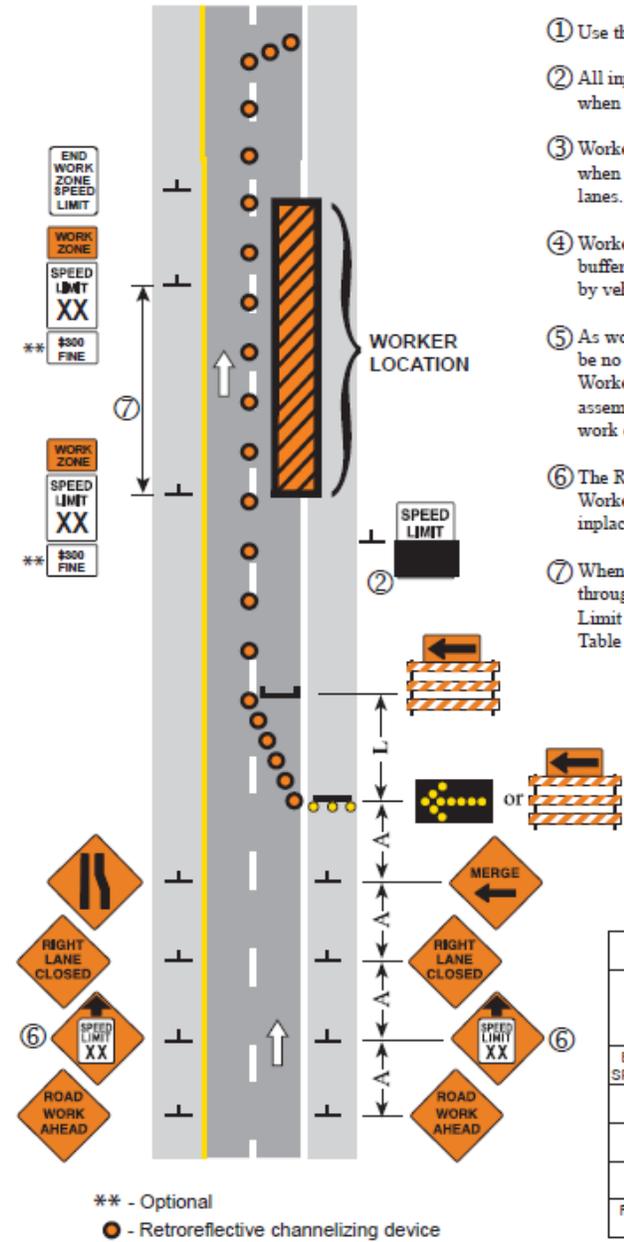
# Required workers present speed limit - exceptions

The required work zone speed limit of 45 mph **does not apply** when...

- Positive barriers are placed between the workers and the traveled portion of the highway
- The work zone is in place for less than 24 hours
- 24/7 Construction Speed Limit used
- Agency determined Workers Present Speed Limit used
- If there is a median



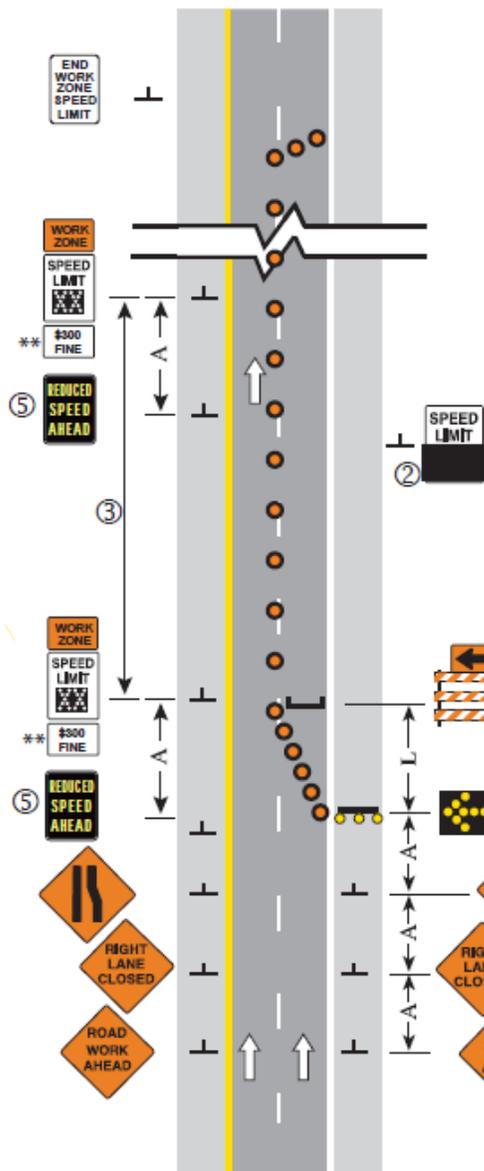
# Workers Present Speed Limit - Multilane



- NOTES:
- Use the appropriate layout for temporary traffic control.
  - All in-place Speed Limit signs shall be removed or covered when the Workers Present Speed Limit is implemented.
  - Workers Present Speed Limit assemblies shall be removed when workers are not present directly adjacent to traveled lanes.
  - Workers Present Speed Limit assemblies may be placed in the buffer or work space as long as the assemblies are not blocked by vehicles or devices.
  - As workers proceed through the work area, the assembly shall be no greater than 1 mile in advance of the work crew. For Workers Present Speed Limits of less than 40 mph, the assembly should be no greater than 1/2 mile in advance of the work crew.
  - The Reduced Speed Ahead sign should be used when the Workers Present Speed Limit is more than 10 mph below the in-place speed limit.
  - When workers are present adjacent to traveled lanes throughout the work area, confirming Workers Present Speed Limit assemblies may be placed according to the Spacing Table below:

Workers Present Speed Limit (mph)	Assembly Spacing (mile)
< 40	1/2
≥ 40	1

Sign	Posted Speed Limit Prior to Work Starting	
	≤ 40 mph	> 40 mph
END WORK ZONE SPEED LIMIT (R2-12)	24" X 36"	36" X 54"
WORK ZONE (G20-5aP)	24" X 18"	36" X 24"
SPEED LIMIT (R2-1)	24" X 30"	36" X 48"
\$300 FINE (R2-6bP)	24" X 18"	36" X 24"
REDUCED SPEED AHEAD (W3-5)	36" X 36"	48" X 48"



**NOTES:**

- ① Use the appropriate layout for temporary traffic control.
- ② All in-place Speed Limit signs shall be removed or covered.
- ③ Electronic Workers Present Speed Limit assemblies shall be placed through the length of the activity area no greater than 1 mile apart. In locations with a Workers Present Speed Limit of less than 40 mph, the Electronic Workers Present Speed Limit assemblies should be no greater than 1/2 mile apart.
- ④ Each Electronic Workers Present Speed Limit assembly shall display the Workers Present Speed Limit when workers are present directly adjacent to traveled lanes in the segment beyond the assembly. When workers are not present, the in-place Speed Limit shall be displayed.
- ⑤ An Electronic Reduced Speed Ahead sign (may be electronic display or flip board) should be used when the Workers Present Speed Limit is more than 10 mph below the in-place speed limit.
- ⑥ Electronic Workers Present Speed Limit assemblies may be placed in the buffer or work space as long as the assemblies are not blocked by vehicles or devices.

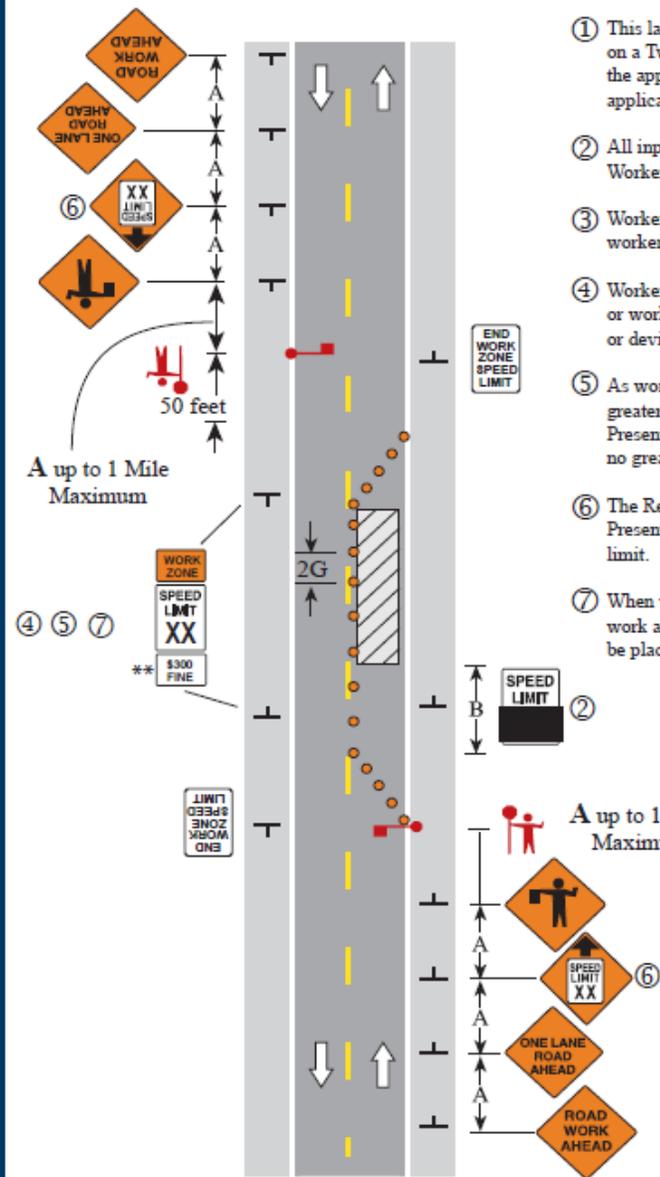
Minimum Sign Sizes		
Sign	Posted Speed Limit Prior to Work Starting	
	≤40 mph	>40 mph
END WORK ZONE SPEED LIMIT (R2-12)	24" X 36"	36" X 54"
WORK ZONE (G20-5aP)	24" X 18"	36" X 24"
SPEED LIMIT (R2-1)	24" X 30"	36" X 48"
\$300 FINE (R2-8bP)	24" X 18"	36" X 24"
REDUCED SPEED AHEAD (Electronic Display or Flip Board)	24" X 30"	36" X 48"

\*\* - Optional

● - Retroreflective channelizing device.

# Electronic Workers Present Speed Limit - Multilane

# Workers Present Speed Limit - 2-lane, 2-way



## NOTES:

- ① This layout shows an application of Workers Present Speed Limits on a Two-Lane Two-Way Road with Flaggers as an example. Use the appropriate layout for temporary traffic control for other applications on Two-Lane Two-Way Roads.
- ② All in-place Speed Limit signs shall be removed or covered when the Workers Present Speed Limit is implemented.
- ③ Workers Present Speed Limit assemblies shall be removed when workers are not present directly adjacent to traveled lanes.
- ④ Workers Present Speed Limit assemblies may be placed in the buffer or work space as long as the assemblies are not blocked by vehicles or devices.
- ⑤ As workers proceed through the work area, the assembly shall be no greater than 1 mile in advance of the work crew. For Workers Present Speed Limits of less than 40 mph, the assembly should be no greater than 1/2 mile in advance of the work crew.
- ⑥ The Reduced Speed Ahead sign should be used when the Workers Present Speed Limit is more than 10 mph below the in-place speed limit.
- ⑦ When workers are present adjacent to traveled lanes throughout the work area, confirming Workers Present Speed Limit assemblies may be placed according to the Spacing Table below:

Workers Present Speed Limit (mph)	Assembly Spacing (mile)
< 40	1/2
≥ 40	1

Sign	Posted Speed Limit Prior to Work Starting	
	≤ 40 mph	> 40 mph
END WORK ZONE SPEED LIMIT (R2-12)	24" X 36"	36" X 54"
WORK ZONE (G20-5aP)	24" X 18"	36" X 24"
SPEED LIMIT (R2-1)	24" X 30"	36" X 48"
\$300 FINE (R2-6bP)	24" X 18"	36" X 24"
REDUCED SPEED AHEAD (W3-5)	36" X 36"	48" X 48"

# Workers Present Speed Limit

## Documentation critical

### WORKERS PRESENT SPEED LIMIT DOCUMENTATION FORM

Road Name	Control Section
Road Authority	
Existing Speed Limit	Posted Workers Present Speed Limit

Whereas it is necessary to perform maintenance/construction roadwork in a safe and efficient manner, therefore, the following changes in maximum speed limits shall be made to the described roadway sections. Changes authorized herein are in accordance with Minnesota Highway Traffic Regulation Act, Minnesota Statutes Chapter 169.14, Subd. 5d.

#### Location

FROM \_\_\_\_\_ TO \_\_\_\_\_

Signature \_\_\_\_\_ Time/Date Installed \_\_\_\_\_

Signature \_\_\_\_\_ Time/Date Installed \_\_\_\_\_

#### Location

FROM \_\_\_\_\_ TO \_\_\_\_\_

Signature \_\_\_\_\_ Time/Date Installed \_\_\_\_\_

Signature \_\_\_\_\_ Time/Date Installed \_\_\_\_\_

#### Location

FROM \_\_\_\_\_ TO \_\_\_\_\_

Signature \_\_\_\_\_ Time/Date Installed \_\_\_\_\_

Signature \_\_\_\_\_ Time/Date Installed \_\_\_\_\_

#### Location

FROM \_\_\_\_\_ TO \_\_\_\_\_

Signature \_\_\_\_\_ Time/Date Installed \_\_\_\_\_

Signature \_\_\_\_\_ Time/Date Installed \_\_\_\_\_

Use fixed physical features such as intersections and bridges or the distance from these features to describe from/to locations. Reference Points (mileposts) may be used if accurately identified. DO NOT USE signs, poles, barricades, or temporary devices.

# Contractor responsibility

- Reduced speed only when workers present in adjacent lane within 1 mile of the reduced speed limit sign
  - Works best if the workers are right past the speed limit assembly
- Signs must be taken down when workers leave
- Document

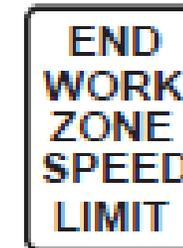
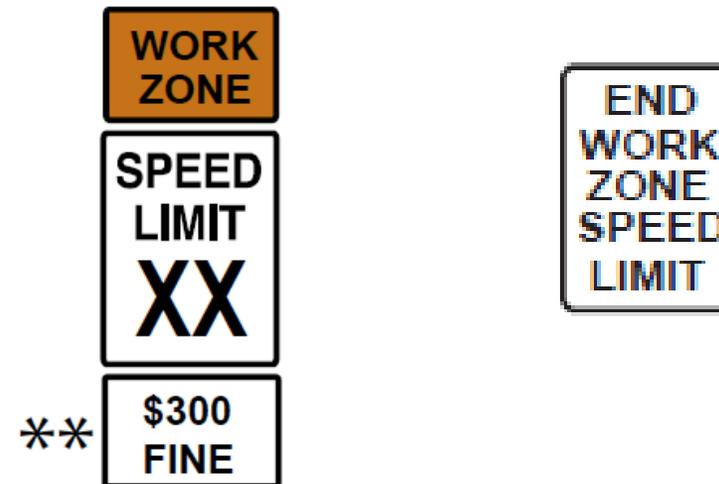
# 24/7 Construction Speed Limit

- Application

- Primarily for driver safety. Intended for 24 hour posting where motorists must reduce speed to safely navigate the work zone.

- Examples

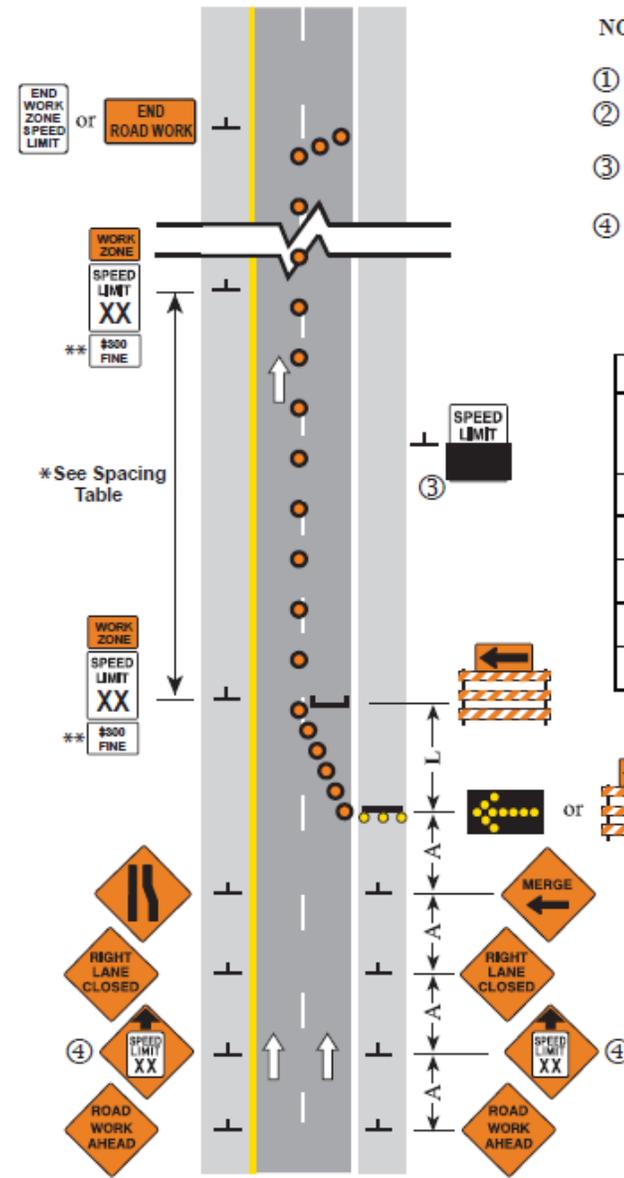
- Bypasses, shoulder drop-offs, narrow lanes, pavement repair



# 24/7 Construction Speed Limit

- Authority
  - Regulatory speed limit allowed by same statute as permanent regulatory speed limits
  - Established by Commissioner as recommended by District Traffic Engineer - requires “engineering and traffic investigation”
    - Includes TTC Plan, idea of staging, location of geometric issues, narrative
    - 24/7 Construction Speed Limit should be monitored and verified that it is appropriate for activities

# 24/7 Construction Speed Limit



## NOTES:

- ① A Commissioners Authorization is required.
- ② Use the appropriate layout for temporary traffic control.
- ③ All in-place Speed Limit signs shall be removed or covered.
- ④ The Reduced Speed Ahead sign should be used when the 24/7 Construction Speed Limit is more than 10 mph below the in-place speed limit.

Sign	Minimum Sign Sizes	
	Posted Speed Limit Prior to Work Starting	
	≤40 mph	>40 mph
END WORK ZONE SPEED LIMIT (R2-12)	24" X 36"	36" X 54"
WORK ZONE (G20-5aP)	24" X 18"	36" X 24"
SPEED LIMIT (R2-1)	24" X 30"	36" X 48"
\$300 FINE (R2-6bP)	24" X 18"	36" X 24"
REDUCED SPEED AHEAD (W3-5)	36" X 36"	48" X 48"

## \* Typical Spacing For 24/7 Construction Speed Limit Signs

24/7 Construction Speed Limit mph	Sign Spacing mile
≤ 25	1/4
30 - 35	1/2
40 - 45	3/4
≥ 50	1

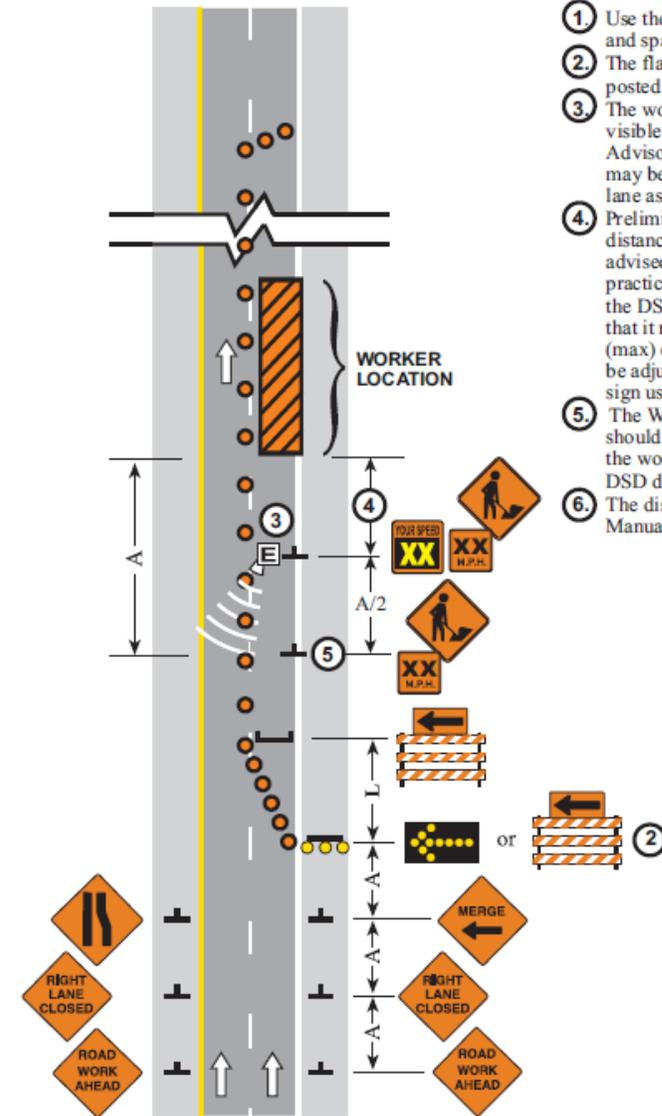
\*\* - Optional

● - Retroreflective channelizing device.

# Speed Limits on Detours

- Regulatory speed limit allowed by same statute as permanent regulatory speed limits
- Follow procedures similar to setting permanent speed limit
- Not a work zone

# Dynamic Speed Display Signs



## Notes:

- ① Use the appropriate layout for advance signing and spacing.
- ② The flashing arrow panel shall be used when the posted speed limit is 45 mph or greater.
- ③ The work crew (or poor road condition) should be visible to the driver from the point of viewing the Advisory Speed Plaque and DSD sign display. It may be located on either side of the open traffic lane as space allows for the equipment.
- ④ Preliminary studies show 'A' is the optimum distance for speed reduction, therefore, it's advised to maintain that distance as much as practical. As workers move within the work zone, the DSD location should be re-positioned such that it remains within 300 feet (min) and 600 feet (max) of the worker location. The distances may be adjusted following further studies of the DSD sign usage in work zones.
- ⑤ The Warning Sign with Speed Advisory Plaque should be placed a minimum distance 'A' ahead of the workers and approximately 'A/2' ahead of the DSD device location.
- ⑥ The distances 'A' and 'L' are found in the Field Manual (MnMUTCD Part 6K) Distance Charts.

● - Retroreflective channelizing device.

## MINIMUM SPECIFICATIONS on DSD SIGN EQUIPMENT

Display size of the DSD sign is dependent on the size of the speed plaque used.

Plaque size	DSD display MIN.
18" X 18"	10" character
24" X 24"	10"
30" X 30"	14" character
36" X 36"	14"

The static sign (YOUR SPEED) should be black letters on a **fluorescent orange** background when used with a work zone advisory speed plaque. The font should be a minimum of 4" high when used with a 10" display character, and 6" when used with a 14" or greater character display sign.

# Dynamic Speed Display Sign



# Discussion

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