

# High Tension Cable Median Guardrail

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# **In-Service Performance Evaluation of Median Cable Barriers in Iowa**

**Final Report  
May 2018**



## REPORT FINDINGS

- Fatalities: reduced by 61.6%
- Incapacitating Injuries: reduced by 30.8%
- Non-Incapacitating Injuries: reduced by 25.8%

## ALSO FOUND

- Injuries that have been reported with no visible injury, but complaints of pain  
Possible Injuries: increased by 11.2%
- Property Damage: increased by 108.3%

# **NCHRP**

**REPORT 711**

**Guidance for the Selection,  
Use, and Maintenance of  
Cable Barrier Systems**

**NATIONAL  
COOPERATIVE  
HIGHWAY  
RESEARCH  
PROGRAM**

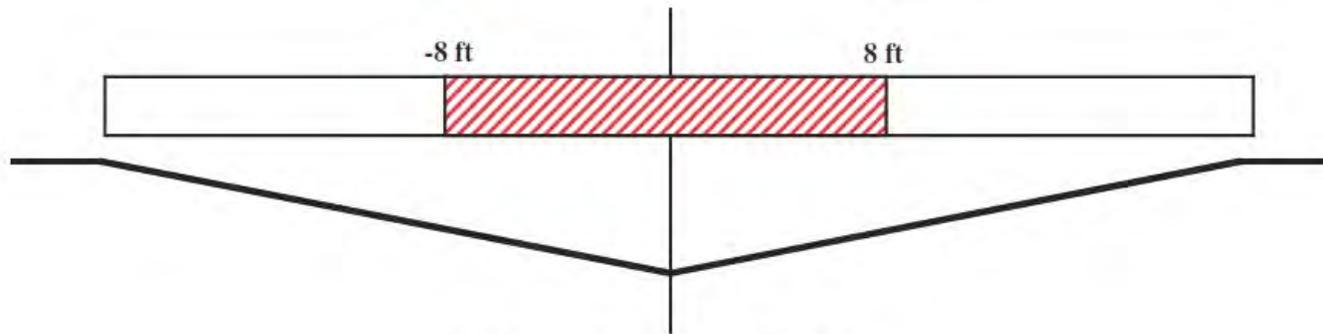
## INSLOPES:

- not steeper than 4:1
- 6:1 or shallower is preferable

## LATERAL OFFSET

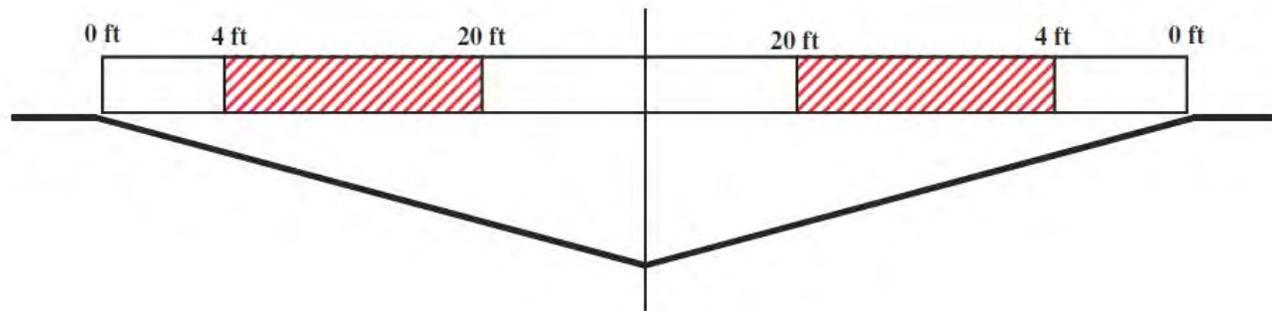
- Underride: vehicle slides under the cable
- Override: vehicle vaults over the cable





(b) Medians steeper than 6H:1V slope

**Figure 6.1.** *Underride criteria for V-shaped medians.*



**Figure 6.2.** *Override criteria for V-shaped medians steeper than 6H:1V slope.*

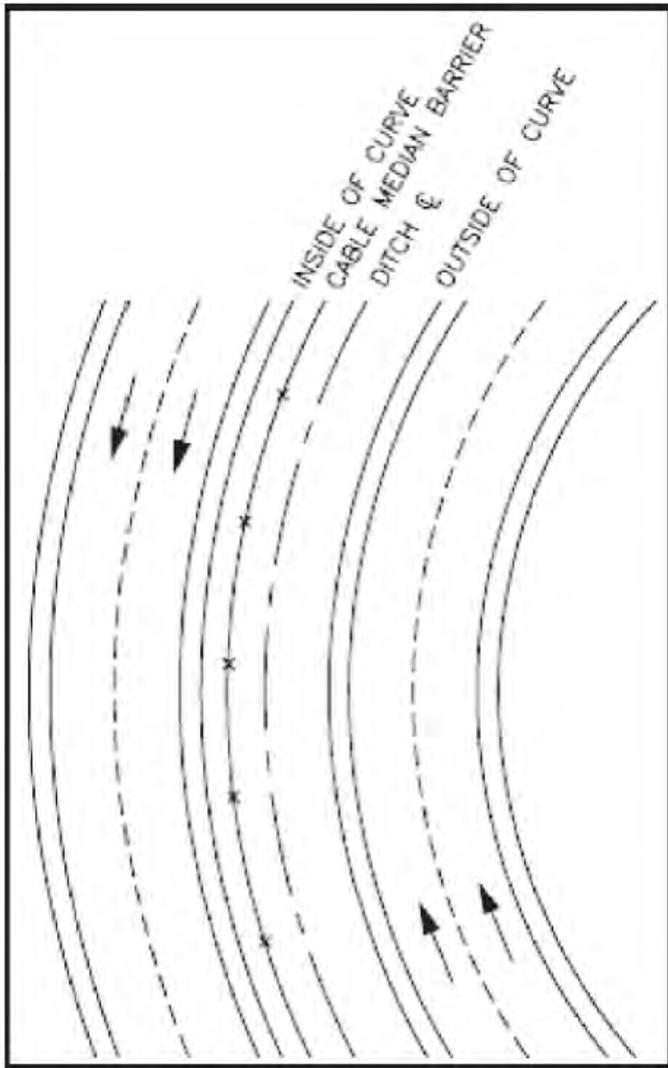


FIGURE 4 Recommended cable barrier placement on a horizontal curve (Figure 2-26 from Cooner et al. 2009).

**HORIZONTAL CURVES:**  
Cable median barrier should be located on the side farthest away from the outside of curve.



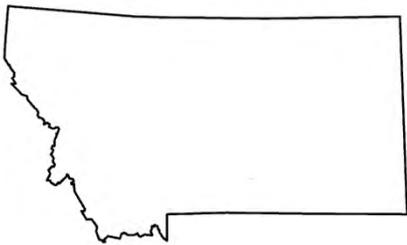
### WISCONSIN:

- TL-3 or TL-4 NCHRP 350 equipment
- 15' maximum post spacing



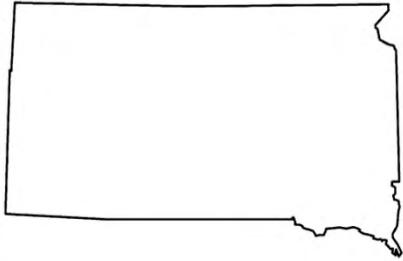
### OHIO:

- NCHRP 350 equipment
- Installing 12' from edge of traveled way



### MONTANA:

- TL-4 NCHRP 350 equipment on 6:1 slopes
- Socketed line posts with 16.5' max post spacing
- Installing 8' from bottom of ditch



### SOUTH DAKOTA:

- TL-3 NCHRP 350 equipment
- Steel socketed line posts
- 16' maximum post spacing



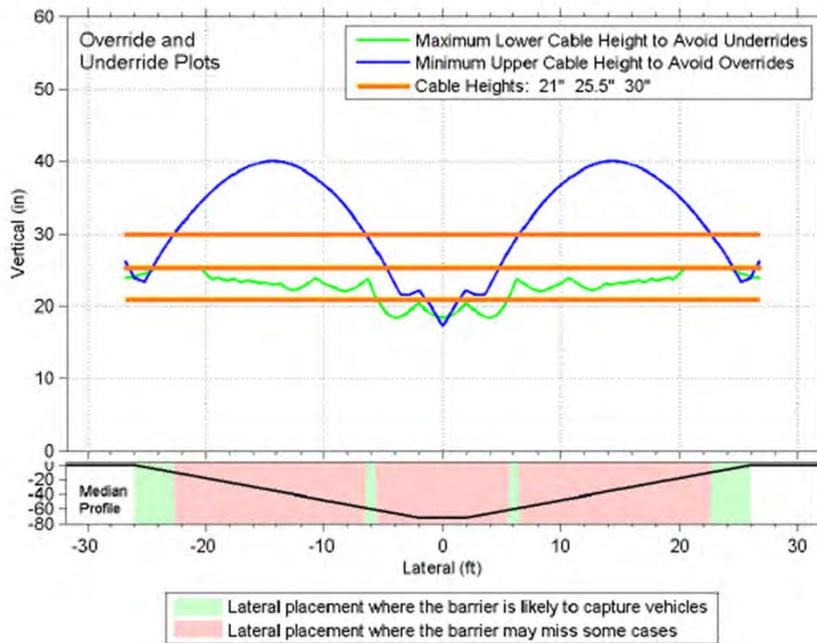
### MINNESOTA:

- TL-3 and TL-4 NCHRP 350 and MASH equipment
- Steel socketed line posts
- Four pre-stretched cables
- 10' maximum post spacing
- Installing 4' from top of inslope (using 4:1 slope)

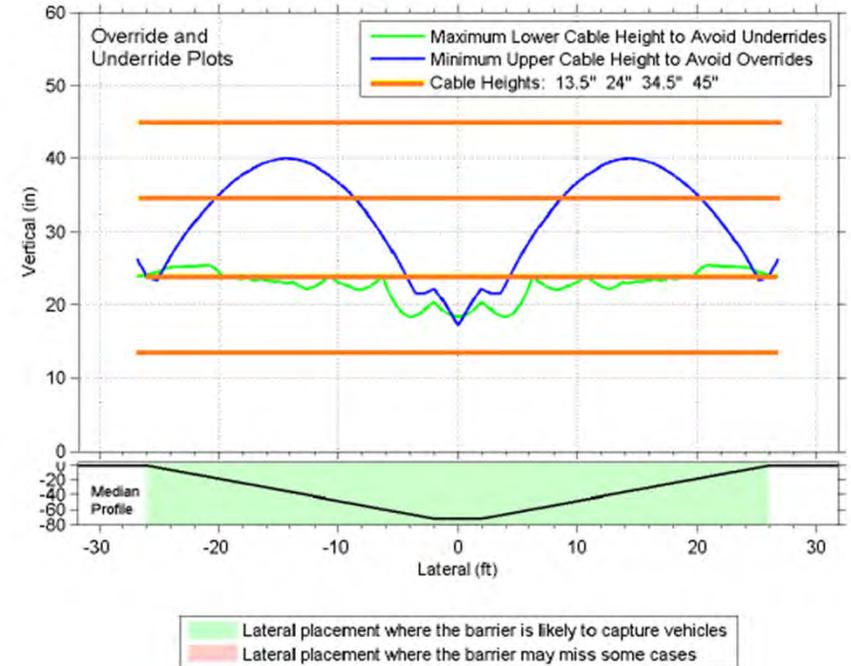
# WHAT WE USE IN NORTH DAKOTA:

- TL-3 MASH for length of need / TL-3 MASH for end terminals
- Four cable system

Flat-bottom Median - 4H:1V Slope - 4ft FB Width - 6ft Depth



Flat-bottom Median - 4H:1V Slope - 4ft FB Width - 6ft Depth



## WHAT WE USE IN NORTH DAKOTA:

- Driven steel socketed line posts with soil plates



## WHAT WE USE IN NORTH DAKOTA:

- 10' post spacing
- 10' maximum deflection
- 6:1 inslopes
- Installing posts 8' above the inslope/ditch bottom intersection
- Target offset 14' from edge of shoulder



## WHAT WE USE IN NORTH DAKOTA:

- Concrete anchors
  - target minimum = 1000'
  - target maximum = 1 mile
- Place on inside of horizontal curves
- Anchor behind bridge's guardrail
- Effects of snow
  - Place near South roadway for I-94
  - Place near East roadway for I-29



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