High Tension Cable Barrier

Michigan Traffic & Safety Summit
March 31, 2010

Carlos Torres, P.E.
Division of Operations
Michigan Department Of Transportation

Purpose of High Tension Cable Barrier Installation

- *Reducing frequency and severity of cross-median crashes in a safe, reliable, and economical manner*
- Cross-median crashes have severe and catastrophic consequences
  - Fatalities and severe injuries are the norm

Cross-Median Crash

Cross-Median Crash

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Cross-Median Crash

Benefits of High Tension Cable Barrier

- Highly effective at capturing and redirecting impacting vehicles
  - Meets federally-mandated crash testing standards
  - Approximately 95% effective at capturing and redirecting impacting vehicles

Benefits of High Tension Cable Barrier

- Low Installation Cost
  - Cable Barrier: $12 to $15 per foot
  - Median Guardrail: $28 to $33 per foot
  - Concrete Barrier: $80 per foot and more

Benefits of High Tension Cable Barrier

- Ease of Maintenance
  - Usually remains operative after a typical impact
  - Utilizes features that simplify repairs

Benefits of High Tension Cable Barrier

- May be installed on slopes that are too steep for other barrier types
  - Extensive re-grading and drainage structures usually are not required
    - Earthwork and drainage structures are very costly!!

Win-Win Condition

Low Installation Cost + Minor Re-Grading + No Drainage Structures

=

Huge Savings!!!

BRIFEN USA INC.

WIRE ROPE SAFETY FENCE

12501 N. Santa Fe Ave.
Oklahoma City, OK 73114
Toll Free: 1.866.427.4336
www.brifenusa.com

Cable Barrier History

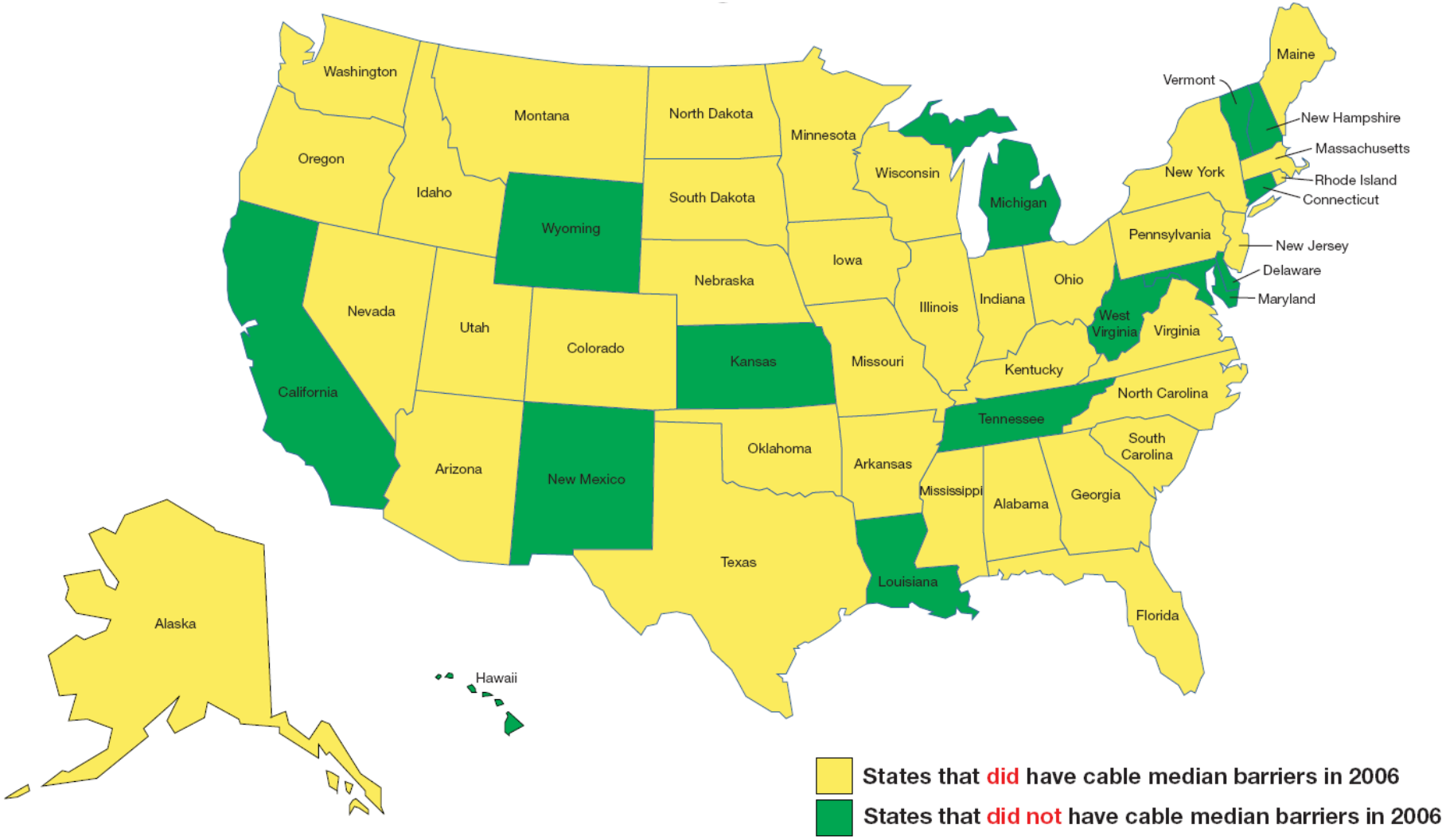
History of High Tension Cable Barrier

- Developed in Europe in the 1980s
  - Great Britain
  - Sweden
- Used in Europe, Asia, and Australia before it was implemented in the U.S.

History of High Tension Cable Barrier

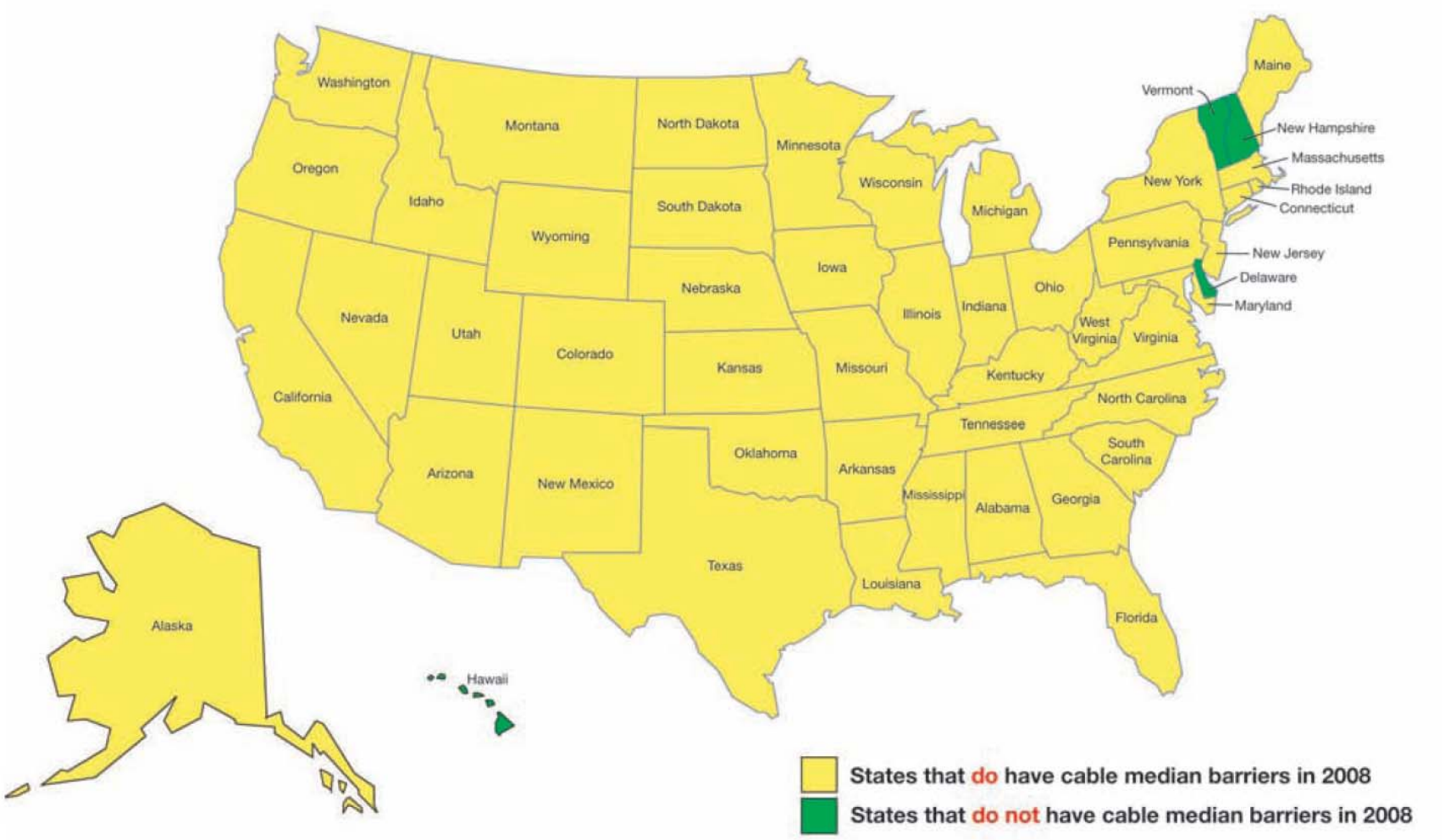
- Began to appear in the U.S. in the 1990s
  - Oklahoma
  - North Carolina
  - Ohio
  - Missouri
  - Texas
  - Minnesota
  - Utah
  - Washington
  - Many others!!

Cable Median Barrier Usage in 2006



Source: Washington State DOT

Cable Median Barrier Usage in 2008



Source: Washington State DOT

Feedback from Other States

North Carolina

- Installed median barrier on 1,000 miles of freeway between the years 2000 and 2006
  - $120 million dollar investment
  - 58 median barrier projects
  - Estimated 95 fatal cross-median crashes avoided
  - Estimated 145 lives saved

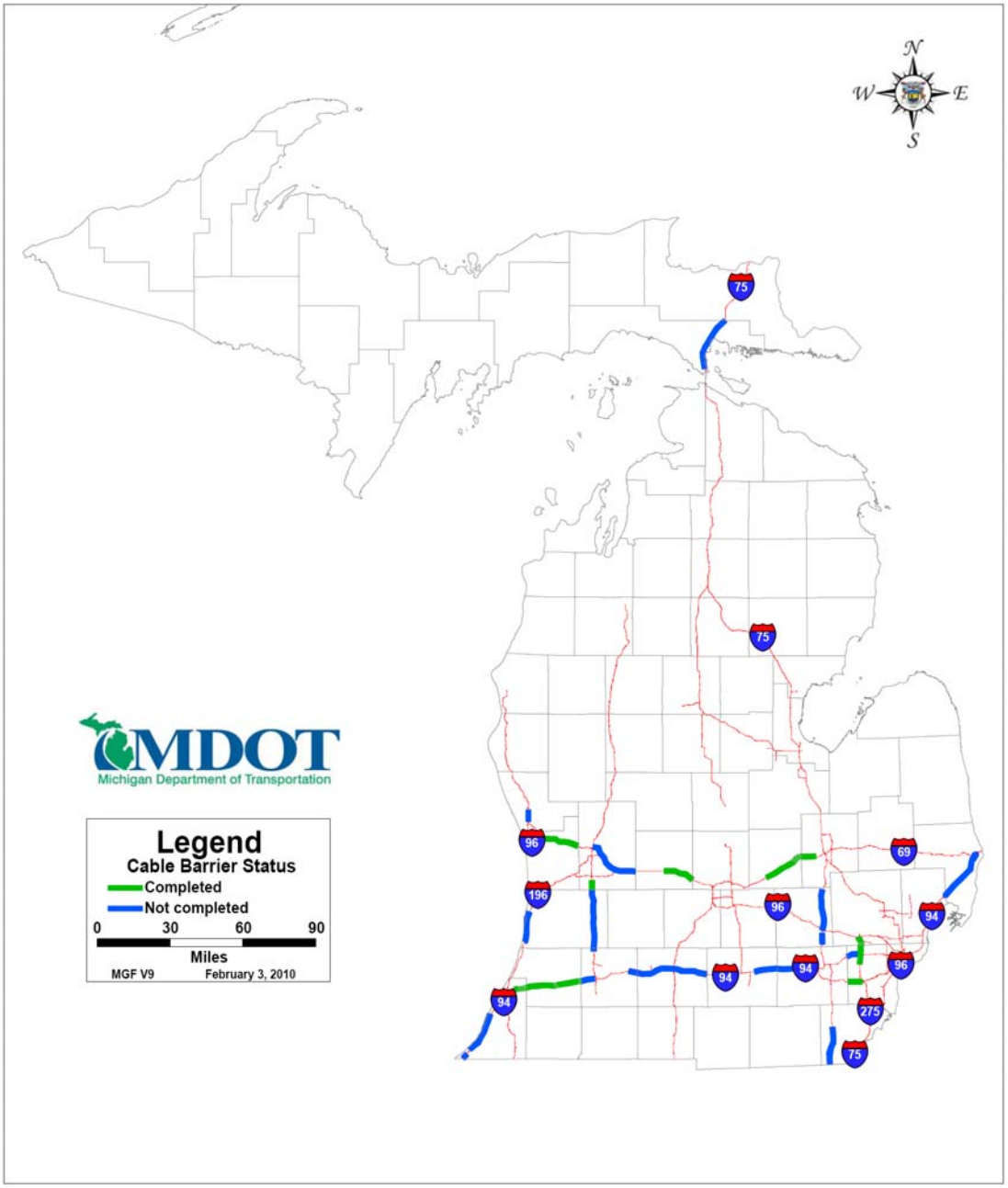
Ohio

- Before cable (July 2001 - June 2003):
  - 9 cross-over crashes (11 fatalities)
- After cable (July 2003 - June 2006):
  - No cross-over fatalities

Michigan's Cable Barrier Initiative

- Purpose
  - Reduce frequency and severity of cross-median crashes on Michigan roadways
- Method
  - Target roadway sections with a history of cross-median crashes
  - Justify barrier installation based on cost-benefit analyses
- Scope of Initiative
  - Install 280 miles of median barrier over a three-year period
  - $40 million investment
  - Construction began in 2008
- Goal
  - Save 13 lives and prevent 51 incapacitating injuries PER YEAR

Cable Barrier Program FY 2008-2012



Initial Results from Michigan's Cable Barrier Initiative

- Statewide Status (as of February 2010)
  - 120 miles of cable barrier have been installed
  - 160 miles of cable barrier scheduled for installation
- Too early to conduct a comprehensive before-after analysis
  - However, the following observations have been made:
    - Reported increase in Property Damage Only Crashes
    - No reported cross-median fatalities in areas where cable barrier has been installed

Education Regarding Cable Barrier in Michigan

- Public Service Announcements
  - "Median Man"
  - MDOT Informational Videos
- Informational Flyers
  - "Cable Guardrail in Michigan"
  - "Please Don't Cut the Cables"
- Project-Specific Training
  - Provided on Each Project
  - Law Enforcement, EFRs, Maintenance
- Presentations
  - Michigan Association of Chiefs of Police
  - Michigan Traffic & Safety Summit
  - MDOT Regional Workshops
- MDOT's Cable Barrier Website

Median Cable Guardrail

Meet Median Man, the new superhero who is dedicated to educating Michigan motorists about the lifesaving benefits of hundreds of miles of new cable guardrail being installed on Michigan highways.

Median Man, who is made of strong steel cable barriers, is featured in radio spots throughout the state. You can listen here: :30-second spot

Median cable guardrails keep vehicles from going through medians and crashing into on-coming traffic.

Median cable guardrail consists of steel wire ropes mounted on posts. It is designed to prevent a vehicle from leaving the roadway and striking an object which would create a potentially more dangerous situation. They function by capturing or redirecting vehicles while absorbing impact energy.

Resources

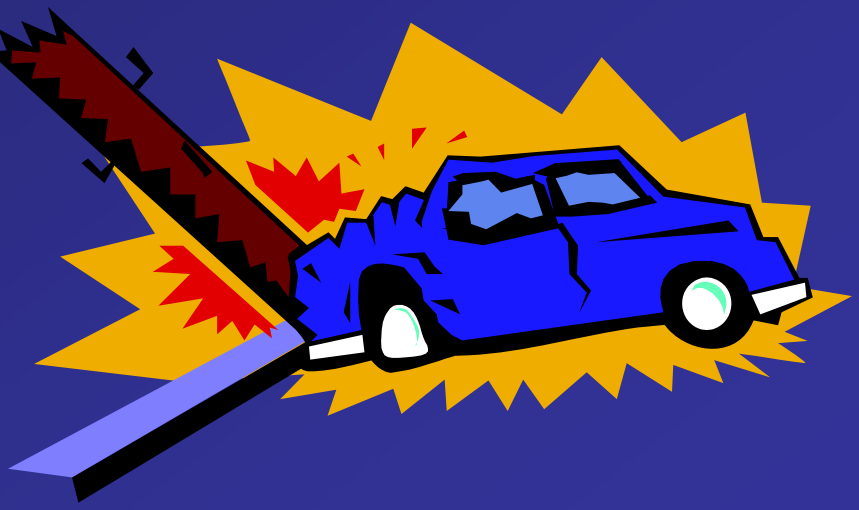
View MDOT's Cable Guardrail Video News Release on YouTube
Additional Cable Guardrail Information: www.roadwaysafety.org
MDOT Guardrail System Brochure
First Responder Flyer
MDOT's cable guardrail system helps save 10 lives in I-94 crash

Cable Barrier Placement in Michigan

"Why isn't the barrier placed in the center of the median?"

Cable Barrier Placement in Michigan

Placing the barrier in the center of the median would be ideal from the standpoint of minimizing impacts with the barrier, HOWEVER…



Cable Barrier Placement in Michigan

Placing the barrier in the center of the median is not recommended in most cases for the following reasons:

- Water accumulation at the bottom of the ditch
  - Maintenance would be extremely difficult or impossible

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- Presence of poor soil conditions
  - Saturated (wet) soil, muck, etc.
  - Affects performance of cable barrier foundations

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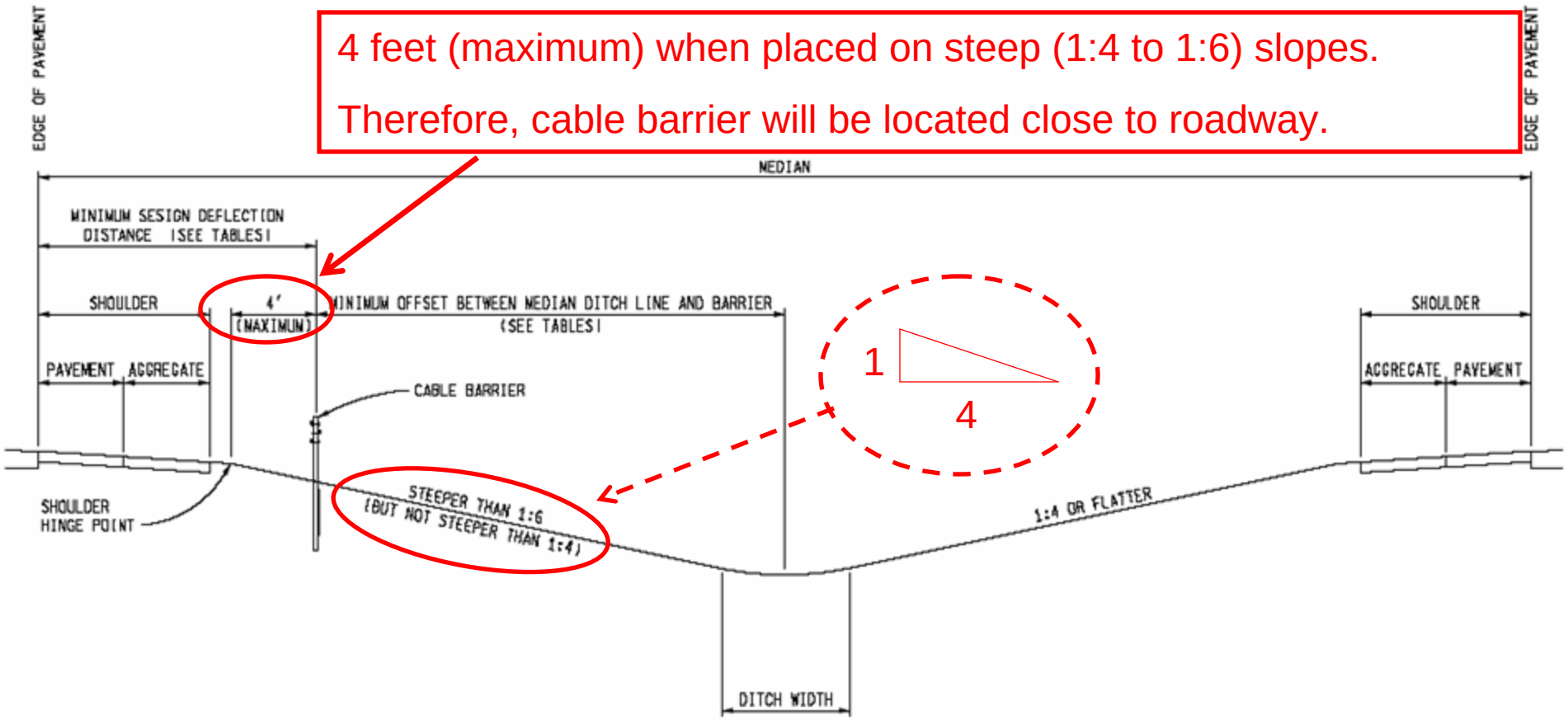
- Water accumulation at the bottom of the ditch
  - Maintenance would be extremely difficult or impossible
- Presence of poor soil conditions
  - Saturated (wet) soil, muck, etc.
  - Affects performance of cable barrier foundations
- Steepness of Median slopes
  - Slopes may be too steep to place barrier at the ditch bottom
  - Restrictions on barrier placement

4 feet (maximum) when placed on steep (1:4 to 1:6) slopes.

Therefore, cable barrier will be located close to roadway.



MEDIAN SLOPES 1:4 OR FLATTER

FOR CABLE SYSTEMS RATED FOR INSTALLATION ON 1:4 SLOPES

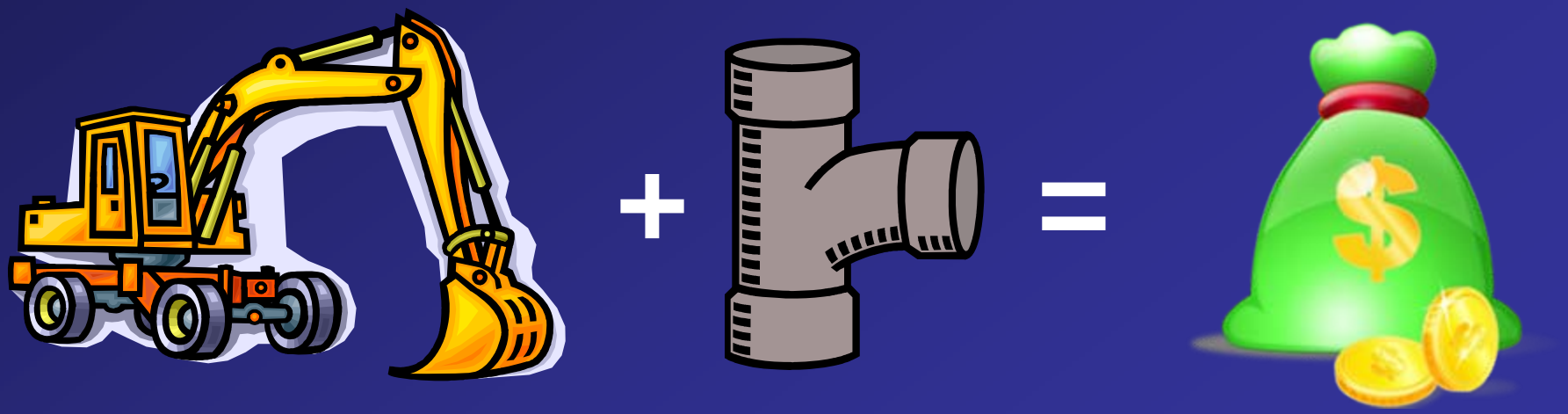
Cable Barrier Placement in Michigan

Usually required in order to place the barrier in the center of the median:

- Extensive Slope Flattening
- Installation of Drainage Structures

Cable Barrier Placement in Michigan

- In most cases, slope flattening and drainage structures are too costly
  - Usually several times more expensive than the barrier itself !!



Recent Crashes in Michigan

I-94 Berrien County - 01/09/09

Vehicle lost control, traveled through the median, and impacted the cable barrier on the opposite side of the median.

Vehicle after it came to rest. Only a few posts were knocked out, but the cable barrier is still intact and operational.

Recent Crashes in Michigan

I-69 Genesee County - 01/13/09

Tractor-trailer traveled through the median and impacted the cable barrier on the opposite side of the median. Cable barrier captured the tractor-trailer and prevented it from entering the opposing traffic stream.


01/13/2009 12:23 AM

Recent Crashes in Michigan

I-94 Berrien County - June 2009

Van carrying 10 church group members from Minnesota. Van rolled during crash, but cable barrier prevented van from entering the opposing traffic stream. Only minor injuries were reported.

No fatalities or incapacitating injuries !!

Recent Crashes in Michigan

I-275 Wayne County - 09/15/09

Recent Crashes in Michigan

I-94 Van Buren County - 01/7/10

Cable barrier captured school bus full of children.

No fatalities or incapacitating injuries!!

Questions?