

## How the tension cable barriers work

By ODOT

### Background:

•Between 2001 and 2005, Ohio averaged 17 fatal cross median crashes per year. These types of crashes are commonly caused by a variety of factors including:

- Impaired drivers
- Secondary crashes (vehicle crosses median due to contact with another vehicle or motorist swerves to avoid a crash)
- 83 percent of the crashes were the result of driver error and avoidance maneuvers
- Icy or wet road conditions
- Half of the crashes during bad weather involved hydroplaning
- There do not need to be extenuating circumstances for a cross median crash to occur.
- 78 percent of the crashes between 2001 and 2003 occurred when the vehicle's speed was within five miles per hour of the speed limit.
- Weather conditions were good in 75 percent of the crashes.
- Because of these statistics, Ohio is exploring tension cable median barriers to enhance safety by reducing the chance for cross median crashes.
- In appropriate locations, cable barrier is far more affordable for tax payers than concrete median barrier and has shown to be extremely effective at preventing cross median crashes. Cable barrier is about four times cheaper than concrete median barrier.
- Tension cable barrier was first approved for use in Ohio in 2003 on Interstate 75 between Cincinnati and Dayton.
- Since its installation, there have been no fatalities due to cross median crashes in areas where there is

cable barrier.

### **How It Works:**

- The cable median barrier helps "capture" vehicles to prevent them from traveling across the median into oncoming traffic and from bouncing back into same direction traffic (a possible secondary crash issue with other types of barrier).
- The cable median barrier systems available to ODOT today are more cost-effective and less damaging to vehicles than many other median barrier systems.
- Tension cable median barrier systems are capable of being effective in multiple hits and have been used in other states and Europe for several years.
- Note: Other states, specifically North Carolina and South Carolina, have also explored the use of untensioned cable barrier. While ODOT does have a limited amount of this barrier in northeast Ohio, the barrier the department is now exploring is tension cable barrier.
- There are three proprietary tension cable barrier systems approved for use on Ohio's highways:
  - BRIFEN USA – developed by Brifen Ltd. In the United Kingdom in 1989.
  - In use in more than 30 countries around the world
  - First installed in United States in September 2000
  - Four-strand cable system
  - Used in Butler/Warren and Clermont/Hamilton County ODOT projects
  - SAFERoads – US high tension system, developed by Marion Steel/Bryson Products.
  - Three-strand cable system
  - Used on ODOT Interstate 71 corridor projects and in Franklin County project
  - CASS – Cable Safety System – U.S. high tension system developed by Trinity Industries.
  - Three-strand cable system
  - Tested in United States and Europe
  - Used on ODOT Lorain County Projects

### **Research:**

- While there are no national standards on cable median barrier yet, the National Transportation Safety Board, the American Association of State Highway Transportation Officials, the Federal Highway Administration (FHWA) and many state transportation agencies agree there is a need for another way of preventing cross median crashes. Several states, including California, North Carolina, Georgia,

Pennsylvania, Washington, Maryland, Arizona and Florida have undertaken their own studies.

- In all cases, the use of cable median barriers has been shown to reduce the incidence of fatal crashes.
- Cable median barriers are not a cure-all and cannot be installed in all locations.
- The frequency of injury and property damage crashes can increase with cable barrier; however, these incidents are much less severe than cross over accidents.
- There are many cases where a motorist hit the cable barrier and sustained so little damage, they drove away before police were on the scene.
- Cable barrier must be evaluated according to each individual location and its accident history.
- Preliminary FHWA recommendations are that it is not optimal to place cable barrier less than eight feet from the upslope of a ditch. ODOT's practice has been, and will continue to be, to place the barrier no closer than eight feet from the upslope of a ditch – meeting or exceeding the recommended guideline.
- Cable median barriers are not rated to stop semi trucks. Very few barriers, with the exception of large concrete walls, will stop semi trucks.
- The most common type of median barrier found in Ohio is center guardrail, which is also not rated to stop a semi truck.
- All types of barrier have pros and cons. ODOT studies each situation and uses the most appropriate form of barrier for that situation.
- Concrete barrier is four times more expensive than cable barrier, making it unrealistic that ODOT and taxpayers could afford to place concrete barrier in all locations.
- ODOT is currently evaluating locations for cable barrier on a case by case basis and determining where the cable barrier could be most effective using past accident history and the geometry of the roadway. Cable Barrier is still considered a pilot program in Ohio.

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