



**NTSB** National Transportation Safety Board

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*Office of Highway Safety*

# **Sight Distance and Roadway Condition**

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# Summary

- Sight distance and variable speed limit signs
- Roadway conditions
- Wet Weather Accident Reduction Program

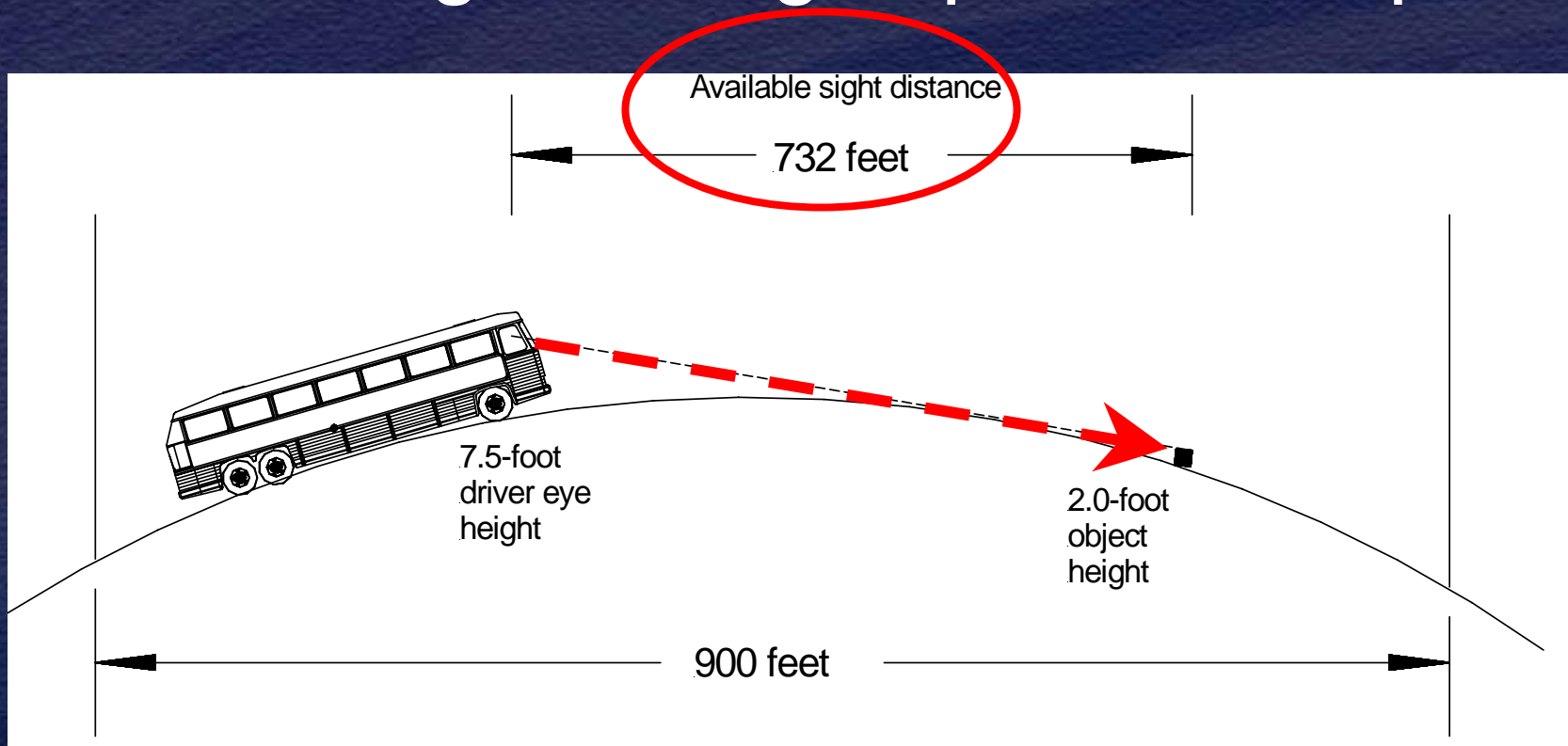


# Interstate 35

- I-35 constructed in 1955
- No change in vertical profile
- 60 mph design speed
- Design speed is maximum safe speed
- 70 mph posted speed limit
- 74 mph 85<sup>th</sup> percentile speed

# Sight Distance

- Roadway ahead visible to driver
- Long enough to allow a vehicle traveling at design speed to stop





Available sight distance  
767 feet







# Stopping Sight Distance

- Distance traversed from object detection to stop
- Should be less than available sight distance
- 900 feet at 60 mph
- 1,293 feet at 70 mph
- Exceeds available sight distance of 732 to 767 feet

# Variable Speed Limit Signs

- Alert drivers to reduce speeds in hazardous conditions
- Increase safety
  - Washington (Snoqualmie Pass)
  - New Jersey Turnpike
- More cost-effective than reconstruction





# Macrotexture Pavement Depth

- Affects water drainage
- No national standards
- TxDOT research recommended 0.035 inch
- Accident site
  - 0.017 to 0.018 inch in right lane
  - 0.024 to 0.027 inch in left lane

# Rut Depth

- Water accumulation
- TxDOT recommends resurfacing when ruts greater than 0.5 inch
- Shallow rut depth problem
  - Right wheel path: 0.25 to 0.35 inch
  - Left wheel path: 0.40 to 0.42 inch
- Differing rut depths can lead to rotational forces on vehicle



# Roadway Friction

- FHWA does not specify minimum
- Texas Pavement Management Information System
  - Accident site coefficient of friction 0.12 in 2000
  - Half of interstates in Texas have coefficients of friction 0.26 or below
- Coefficients of friction on ice range from 0.12 to 0.25

# Texas Wet Weather Accident Reduction Program

- Identify locations overrepresented in wet weather accidents
- 5 accidents within 1/10 mile segment
- Short distance for interstate highways



# Texas Wet Weather Accident Reduction Program

- Weighted toward identifying locations in high population areas
- I-35 accident location
  - 16 percent of accidents in wet weather
  - 2.35 percent wet weather exposure
- Poor geometry, rutting, low macrotexture, and low friction

# Wet Weather Accident Reduction Program

- Limited guidance from FHWA
- Each State has its own method
- Illinois DOT relies on friction





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