# LIFE-CYCLE DAMAGE MODELING OF INDIANA BRIDGES DUE TO OVERWEIGHT TRUCKS

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Sponsor: Joint Transportation Research Program- Indiana Department of Transportation

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# Research Objectives

- The project aims at studying the relationships between:
  - overweight trucks,
  - load rating and damage of bridges due to the realistic traffic including overweight trucks
  - associated maintenance costs, and
  - the reduction of service-life due to damage.
  - condition rating

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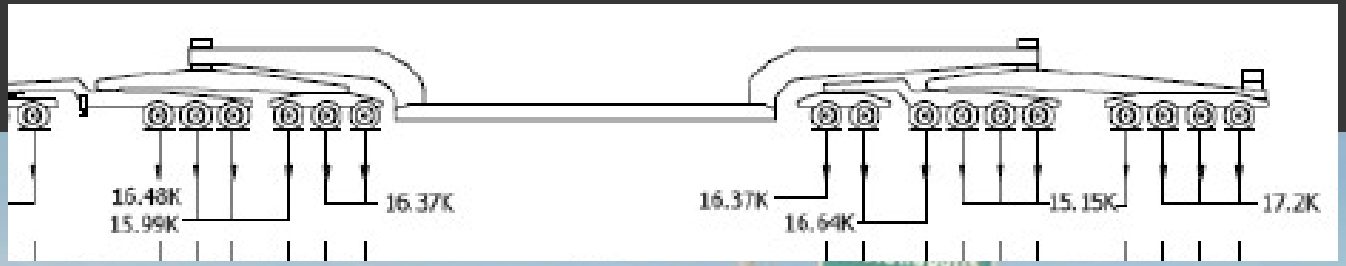
# Research Objectives




b) Deck Joint Deterioration

c) The end part section loss of Steel frame are associated with Durability Problems

a) Damage due to overweight truck is initiated on Structural Elements and affects E.

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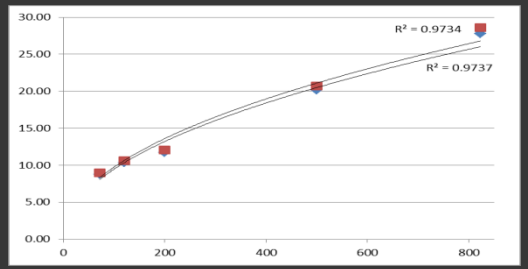
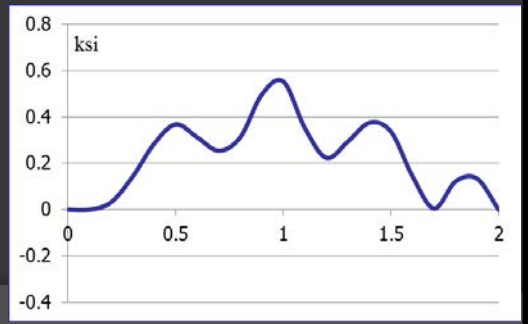
# Research Objectives

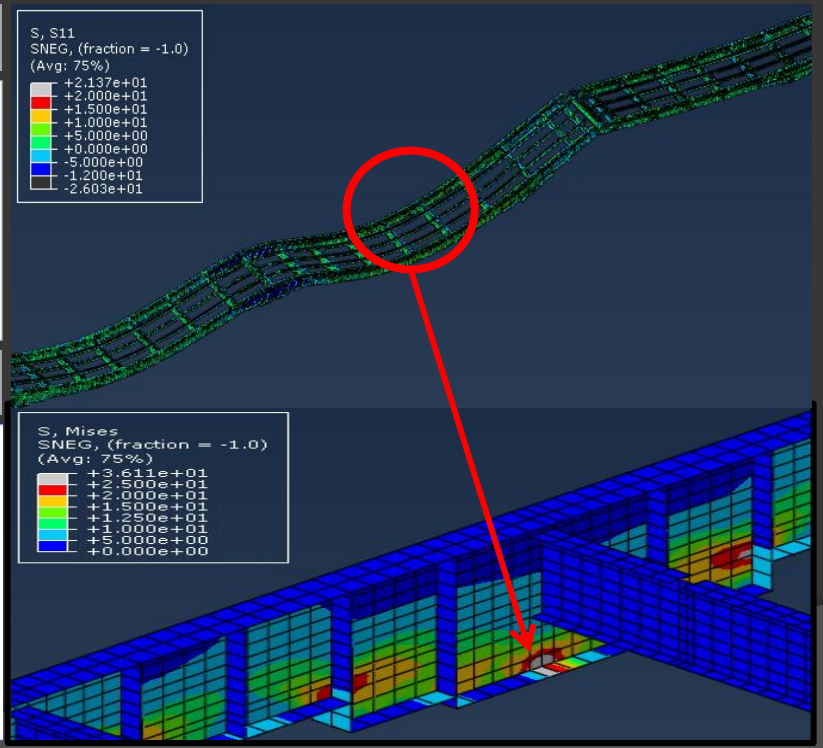
Development of Damage Model subject to Overweight Trucks

## Analysis of Localized damage

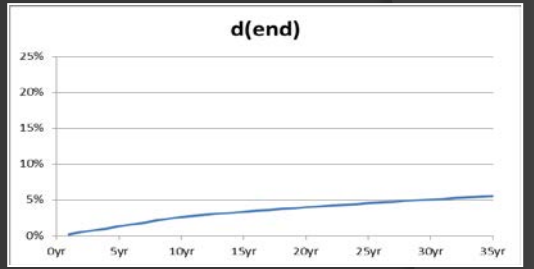



## Analysis of Stress History

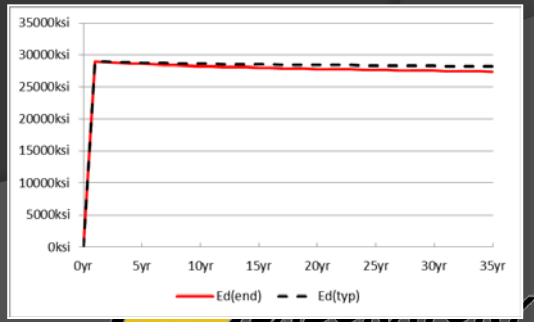



## Evaluation of Damage, d




## Development of Damaged, E



# Research Objectives

Condition Rating
of First one cycle

Formulas and relationships quantifying
reduction in service-life

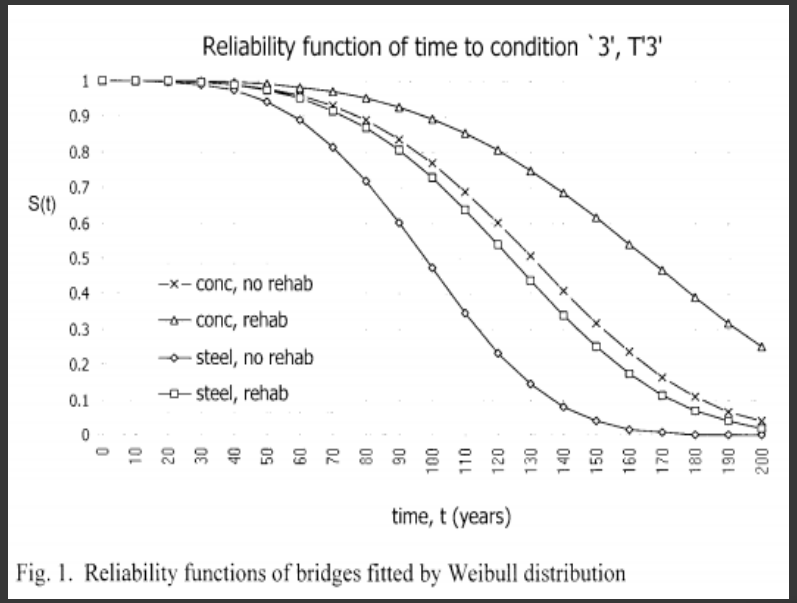
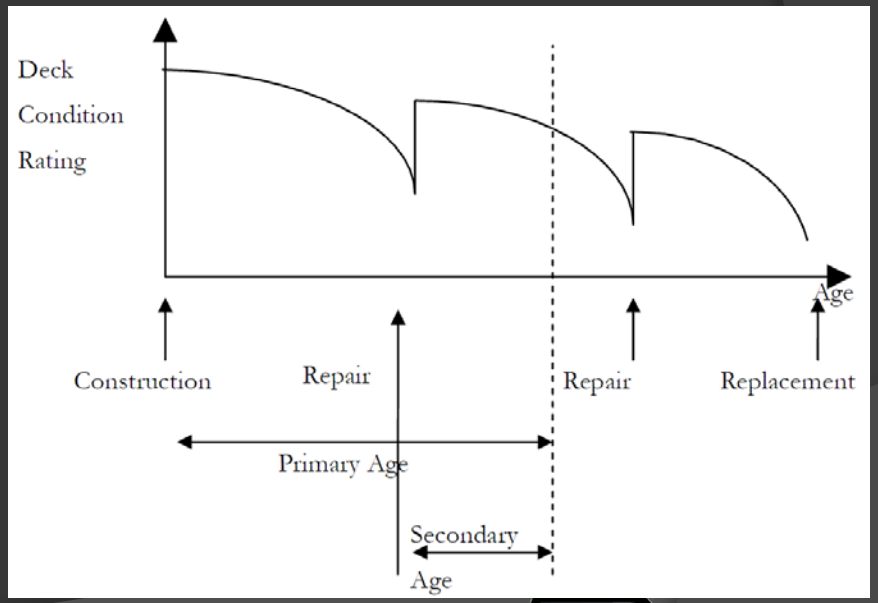



Fig. 1. Reliability functions of bridges fitted by Weibull distribution

F. MOSES et al. (1996)




Sinha et al. (2005)

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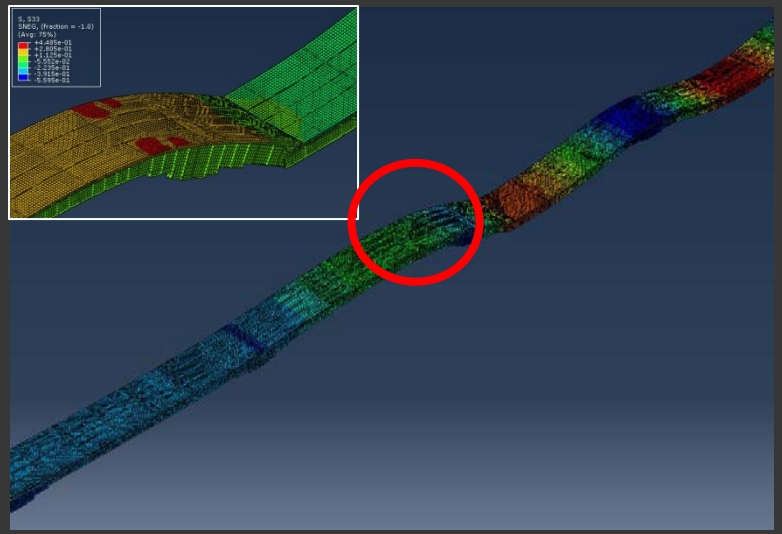
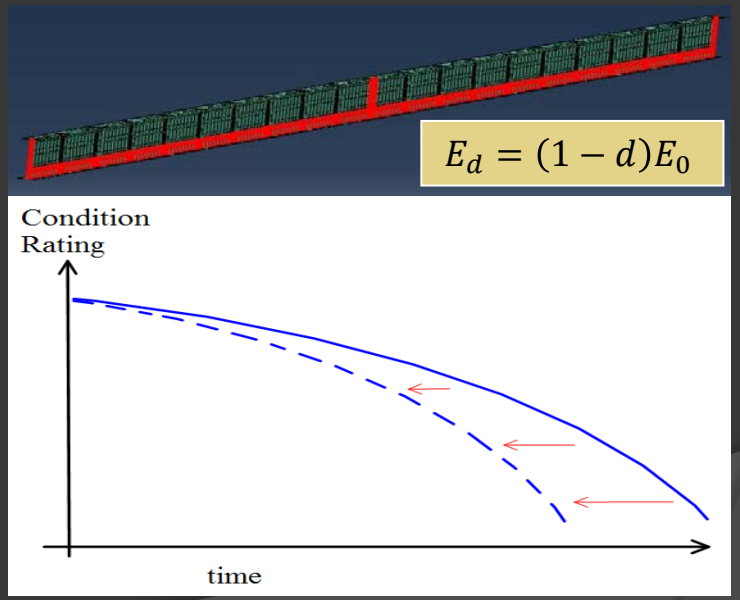
# Research Tasks or Findings

- Damage Evaluation



- Development of Damage Model

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