A Bridge Not Too Far: Toward Efficient Asset Management and Maintenance

There are over 617,000 bridges in the US. 42% are at least 50 years old. 46,154 bridges (7.5%) are considered structurally deficient, meaning in poor condition.

In ASCE’s 2021 Report Card for America’s Infrastructure, the Bridges category scored a ‘C’.

The Federal Infrastructure Bill was recently passed. It is crucial to assist stakeholders and state Departments of Transportation (DOTs) in asset management and bridge maintenance to maximize use of this funding.

Infrastructure Investment and Jobs Act:
- Contains both a 5-year surface transportation reauthorization that increases investments, as well as an additional $40 billion in investments for the nation’s bridges.

State DOTs and engineering firms need to be prepared for asset management, and this collection of studies will help them achieve better infrastructure maintenance.

**ASCE collection of studies focused on bridge maintenance and management**

- **Effect of stakeholders’ behavioral patterns**
  - Risk perception
  - Risk attitudes
  - Time preference

- **Bridge testing and inspection**
  - Review on the state-of-the-practice of bridge load testing
  - Load rating planning framework using deep reinforcement learning

- **Climate change**
  - Understanding increased risks due to more frequent extreme weather events
  - Incorporating climate change in the decision-making process

- **Decision-making frameworks**
  - Network-level analysis
  - Cost–benefit analysis
  - Budget and performance constraints
  - Managing uncertainty

- **Life-cycle management (LCM)**
  - Risk/reliability indices
  - Overview of LCM for infrastructure networks
  - Planning and optimization

- **Case study**
  - Rehabilitation/replacement of approach spans of I-78 bridge at Hamburg, PA

These studies will help decision-makers and engineers working on designing, managing, and rehabilitating bridges, leading to:

- Safer infrastructure
- Higher bridge resilience and sustainability
- Smarter spending by minimizing life-cycle cost and maximizing bridge performance
- Optimal life-cycle inspection, monitoring, maintenance, and management

Bridge Asset Management
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ASCE Infrastructure Report Card