Risk-Based Prioritization and Multi-Objective Optimization for Long-Term Network-Level Preservation Planning of Bridges in Iowa

Transportation agencies are under increasing demand to spend their limited dollars in the most efficient manner possible. Development of Bridge Management Systems (BMS) to assist transportation agencies has been a slow and argues process. A systematic risk based approach is needed to quantify future bridge needs. The Iowa D.O.T Bridge Office was approached by Infrastructure Data Solutions, Inc. (IDS) in early 2014 with a proposal to perform risk-based project prioritization and multi-objective optimization with a new software system they were developing.

The system uses historic data from the National Bridge Inventory (NBI) to perform deterioration modeling to provide a 20 year optimized list of projects at different funding levels and condition targets. This presentation will show the decision making process when selecting bridge projects to be programmed. I will show what the future needs for maintaining the bridge inventory are, based on the program output.