National Working Group Bridge Management Systems

Membership: Co-Chair: Todd Springer, Virginia DOT

Co-Chair: Dave Juntunen, The Kercher Group.

Vice-Chair: Jeff Milton, Virginia DOT

Secretary: John Hooks, NCPP

How This Group Got Started

- South East Bridge Preservation Partnership Started

- Wrote Proposal – BMS Working Group

- Then National Working Group formed

Working Group Scope

- Promote the development and / or adoption of best practices for Bridge Management Systems (BMS) to extend the service life of bridges and demonstrate the value of preservation.

- Develop general guidance and examples to help practitioners nationwide identify best practices for Bridge Management Systems that meets the needs of the agency and establish a process **that makes implementation less intimidating.** This can be organized into basic, intermediate, and advanced BMS activities as detailed in the Attachment A.

- Monitor and share the national development of management systems as they evolve.

Deliverable Products

- Develop a white paper that defines a tiered approach (basic, intermediate, and advanced as described above) to implementing and utilizing a Bridge Management System for driving agency bridge program and project level decision making.

- Develop a proposal for a National BMS Scan specifically to determine the state of the practice..

- Instructions, how to guides, and examples of the various bridge management steps/tasks shown above to make the process better understandable and less intimidating.

- Presentation of an annual review of the Working Group progress at the Regional TSP-2 Bridge Meetings and other related venues.

TSP 2
BRIDGE
PRESERVATION

BMS Working Group - Attachment A

Basic

- Desired End Product from BMS
  - <mark>Inventory and condition data</mark> that is accurate and meets the needs of an agencies BMS.
  - <mark>Goals and performance measures</mark>.
  - <mark>Monitor condition and performance trends</mark>.
  - Reports showing network bridge condition with respect to agency goals and performance measures.

BMS Working Group -Attachment A

Basic

- Required BMS Input
  - Collect National Bridge Inventory (NBI), element level, and agency specific inventory, condition and element data supportive of an agency's Bridge Management System and preservation program.
  - Recording inspector recommendations and maintenance needs
  - Develop and use performance measures (national, state, and local) to support bridge management.

BMS Working Group - Attachment A

- **Intermediate (Network Level)**
  - Desired End Product from BMS
    - Deterioration models for bridge, major components, or elements.
    - Network level preservation actions, quantities and costs.
    - Strategic plan with short-and long-term budgets for the agencies' major categories of work such as preservation, rehabilitation, and replacement.
    - Forecast of future network bridge condition and performance measures.
    - Gap analysis of target condition versus desired goals.
    - Data to support and validate agency rules for network level bridge preservation policies.
    - Reports that effectively communicate recommendations and expected outcomes based on network level analysis.

BMS Working Group - Attachment A

- **Intermediate (Network Level BMS)**
  - Required BMS Input
    - Methodology and analysis to create deterioration models (examples Markov chain, deterministic models, expert elicitation) and educate how and why these models are used to forecast element and major component deterioration within the BMS.
    - Trends relevant to BMS such as action effectiveness, action costs, benefits, and inflation.
    - Assign actions into major work categories consistent with agency policies and practices.
    - Bridge project cost data.
    - Agency rules/decision trees, and treatment strategies/decision frameworks that drive preservation, rehabilitation, replacement decisions.
    - Short and long term budgets.
    - Needs analysis to determine major categories of work.
    - Condition improvement from projects

BMS Working Group – Attachment A

- **Advanced (Project Level)**
  - Desired End Product from BMS
    - Based on element level inspection data, identify the most appropriate actions for individual bridges with an estimated cost for the work and indicate when the work should be done utilizing benefit-cost analysis that can also include life-cycle cost and user cost analysis.
    - Prioritize and optimize projects and programs to achieve optimal network budget efficiencies, progress towards agency goals, reduction of risk, and coordination with other infrastructure work.
    - Scenario comparisons
    - Reports that effectively communicate recommendations and expected outcomes based on bridge and/or element level analysis.

BMS Working Group – Attachment A

- **Advanced (Project Level)**
- Required BMS Input
  - Agency rules that evaluate specific bridge element, component, and overall bridge needs and make project specific decisions.
  - Actual selected/funded projects into the system for inclusion in the analysis.
  - Prioritization and optimization rules.
  - Project cost data including inflation.
  - Life cycle cost variables.
  - Project specific costs including mobilization and marginal costs.
  - User delay inputs
  - Project specific costs including mobilization and marginal costs.
  - Investment strategies.
  - Project and program plans.
  - Refined deterioration models, action effectiveness, and action costs to support advanced project analysis.

Next Steps

- Distribute survey to identify bridge management system best practice and pain points agencies are having
- Develop general guidance and examples
- Looking for More State DOT members (Want two from each TSP-2 Region)

Thank You!