2018 Purdue Road School
Introduction to INDOT Bridge Asset Management Procedures

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Outline

• Asset Management Definitions
• INDOT Bridge Asset Management
  • Statistics
  • Function
  • Bridge Asset Team
  • Project Scoring
  • Integration of Bridge Management System (BMS)
What Is Transportation Asset Management?

**AASHTO’S Definition:**

The definition according to the American Association of State Highway and Transportation Officials’ (AASHTO’s) Subcommittee on Asset Management is:

“Transportation Asset Management is a **strategic and systematic process** of operating, maintaining, upgrading and expanding physical assets **effectively throughout their lifecycle**. It focuses on **business and engineering practices** for resource allocation and utilization, with the objective of **better decision making based upon quality information and well-defined objectives**.”
Transportation Asset Management Definition

• FHWA’s Definition:

According to FHWA’s website: “Transportation Asset Management is a process used for managing transportation infrastructure with the objective of improved decision making for resource allocation”. It explains further that the Asset Management aides in making ‘informed decisions’ about managing your network over the whole life-cycle considering network performance, economic, and engineering.

Transportation infrastructure assets includes; pavements, bridges, culverts, signs, pavement markings and other roadway and roadside features.

This presentation only focuses mainly on bridge and culvert assets.
Background:
- INDOT initiated the Asset Management Program in 2010.
- Pavement Asset management
- Bridge Asset Management
- Safety Asset Management
- Mobility Asset Management
- Statewide Asset Management (Rest Area, Environmental Study…,etc.)

Asset Management Teams:
- Individual Asset Management Teams, i.e. Bridge Asset Management Team (BAMT)
- Program Management Group (PMG)/Team
- Executive Funds Team (EFT)
INDOT Asset Management
Bridge Asset Management (BAM) is one of the sub-elements of the Transportation Asset Management (TAM).

(BAM) uses Asset Management principles to make decisions based on accurate data and sound engineering & economic analysis. Therefore, it is essential to have good accurate information regarding asset condition, performance and other required data needed with a long term view of the asset.

**BAM’s Goal:**
To provide a desired level of service and performance for the network in a most cost effective manner.
INDOT and LPA Bridge Statistics

- Approximately 330 Toll Road Bridges
- Approximately 5900 INDOT Bridges
- Approximately 13200 Local Bridges (LPA)
- Approximately 2900 NHS Bridges
- 19 Border bridges
- Approximately 9000 INDOT Culverts
- 6 Complex Bridges
- 5 Tunnels
Proposed Bridge Projects

- Inspection
  - At least once every two years
  - Data entered into BIAS
- Forecasting w/ BMS (dTIMS)
  - NBI Data from BIAS
  - Data from scheduling for committed costs from projects (SPMS)
- Spreadsheets / Collector App
  - Bridge Asset Engineers review and possibly alter data
  - Bridge Asset Engineers score projects
- Scope
  - Establish scope and documents for potential projects
Funding during the Bridge Asset Management Call

- The bridge funding is divided into following:
  - 3-5 year Call for Projects per budget year
  - Bridge/Culvert Preventive Maintenance Agreement (BCPMA)
  - Border Bridges
  - other

- Programming Steps
  1. Call for Projects
  2. Each District submits their list
  3. Deliberations / Project Rankings
  4. BAMT submits prioritized list to Program Management Group (PMG)
  5. PMG recommends a funding level
  6. Goes to a committee for final approval
INDOT Bridge Asset Management Office Function:

- Perform bridge data analysis using Bridge Management System (BMS) software tools such as Deighton Transportation Infrastructure Management System (dTIMS).
- Develop criteria to analyze bridge data for evaluating bridge condition.
- Continually monitor and report on conditions of INDOT bridge assets.
INDOT Bridge Asset Management Office Function (cont’d):

• Develop and recommend policies to enhance the bridge network conditions.
• Develop and/or update the current models in the BMS to forecast statewide bridge network needs with estimated costs.
• Prepare bridge condition annual reports.
INDOT Bridge Asset Management Office Function (cont’d):

- Interact with key partners including FHWA, consultants, research institutions and others to advance the bridge issues.
- Affect individual bridge or large culvert projects by providing support in the data analysis, project identification and development process.
- Chair the INDOT Bridge Asset Management Team in Bridge & Large Culvert (4’-20’) Project Selection and Prioritization Process.
- Involved with Change Management of projects under development due to scope, funding, or letting changes.
INDOT Bridge Asset Management Team (BAMT):
- 10 member team w/ 6 district representatives, one rep. from bridge maintenance div. plus 3 from bridge div (bridge inspection, bridge rehab groups and the bridge asset group).
- All senior professional engineers.
- Developed a set Business Rules and Scoring System to compare and prioritize projects.
- Business Rules and Score sheets were based on principle Work Types.
- It was “Worst first” approach then adjusted to a “life-cycle” costing.
- More of a focus on Preservation projects.
- Spreadsheets were developed to score projects more efficiently.
Bridge Asset Management

Bridge Asset Team Role:
- Meet Regularly (Monthly)
- Propose & Score projects
- Deliberate on proposed projects for the following programs
  - BCPMA (2 years out) – Preservation projects
  - Short term call / Placeholder (3 years out)
  - Long term call (5 years out)
- Prioritize projects based on 0-100 score
- Submit projects to next team (PMG) for approval for funding.
Project Scoring Factors:

- Preservation projects (BCPI-Now BCPMA) were given high priority with score of 100 automatically. Projects don’t compete against each other. Only have to meet preservation rules from BCPMA document and Chapter 412 from design manual.
Project Scoring Factors:

- There are several bridge scoring systems:
  - Bridge projects
    - Thin Deck Overlay
    - Rigid Deck Overlay
    - Deck Replacement
    - Super Replacement
    - Bridge Replacement
  - Bridge Painting projects
  - Scour projects
  - Culverts
    - Replacements
    - Liners
### BRIDGE SCORE INPUT

<table>
<thead>
<tr>
<th>Item</th>
<th>Value</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Det #</td>
<td>001-04-000523</td>
<td></td>
</tr>
<tr>
<td>HAADT</td>
<td>1000 &lt; HAADT &lt; 3000</td>
<td></td>
</tr>
<tr>
<td>Functional Classification</td>
<td>Other Principal Arterial (Urban)</td>
<td></td>
</tr>
<tr>
<td>Total Estimated Cost</td>
<td>$600,000</td>
<td></td>
</tr>
<tr>
<td>Fiscal Year</td>
<td>2003</td>
<td></td>
</tr>
<tr>
<td>Proposed Treatment</td>
<td>Deck Overlay</td>
<td></td>
</tr>
</tbody>
</table>

### BRIDGE SCORE SHEET

<table>
<thead>
<tr>
<th>Bridge #</th>
<th>001-04-000523</th>
<th>Location</th>
<th>UI 34.25/54, mi 0.40 S 1R 881</th>
</tr>
</thead>
<tbody>
<tr>
<td>Project Status</td>
<td>Not Found</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Area of Deck</td>
<td>14644.40 SF</td>
<td></td>
<td>Deck Overlay</td>
</tr>
</tbody>
</table>

#### CONDITION SCORE

<table>
<thead>
<tr>
<th>Cost Effectiveness Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>8 X 3 = 24</td>
</tr>
</tbody>
</table>

#### FUNCTIONAL CLASSIFICATION

<table>
<thead>
<tr>
<th>AAQI Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>3 X 1 = 3</td>
</tr>
</tbody>
</table>

#### TOTAL PROJECT SCORE

| 78          |

---

**Note:** The proposed treatment for this structure is Deck Overlay.
## Four Main Scoring Factors

<table>
<thead>
<tr>
<th>Scoring Factor Number (SF)</th>
<th>Bridge Scoring Factor Description</th>
<th>Score</th>
<th>Weights to Convert to 100 Point Scale (W)</th>
<th>Maximum Possible Weighted Score</th>
</tr>
</thead>
<tbody>
<tr>
<td># 1</td>
<td>Condition</td>
<td>0-10</td>
<td>5</td>
<td>50</td>
</tr>
<tr>
<td># 2</td>
<td>Cost-Effectiveness</td>
<td>0-10</td>
<td>3</td>
<td>30</td>
</tr>
<tr>
<td># 3</td>
<td>Functional Classification Priority</td>
<td>0-10</td>
<td>1</td>
<td>10</td>
</tr>
<tr>
<td># 4</td>
<td>AADT Impacts</td>
<td>0-10</td>
<td>1</td>
<td>10</td>
</tr>
<tr>
<td><strong>Sub-Total</strong></td>
<td></td>
<td></td>
<td></td>
<td><strong>100</strong></td>
</tr>
</tbody>
</table>

**Supplementary (S) Factor**

**Earmarks & Other Financial Contributions by External Means**

<table>
<thead>
<tr>
<th>Score</th>
<th>Weight</th>
<th>Maximum Possible Weighted Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-5</td>
<td>7</td>
<td>35</td>
</tr>
</tbody>
</table>

**Grand Total**

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td><strong>135</strong></td>
</tr>
</tbody>
</table>
Scoring Factor #1 : Condition

- Scoring Factor #1 specifically captures the condition of the asset.

<table>
<thead>
<tr>
<th>Scoring Factor Number</th>
<th>Principal Element Bridge Scoring Factor Description</th>
<th>Weights to Convert to 100-Point Scale</th>
<th>Maximum Possible Weighted Score</th>
</tr>
</thead>
<tbody>
<tr>
<td># 1</td>
<td>Condition</td>
<td>5</td>
<td>50</td>
</tr>
<tr>
<td>(1) Wearing Surface</td>
<td></td>
<td>5</td>
<td>50</td>
</tr>
<tr>
<td>(2) Deck</td>
<td></td>
<td>5</td>
<td>50</td>
</tr>
<tr>
<td>(3) Superstructure</td>
<td></td>
<td>5</td>
<td>50</td>
</tr>
<tr>
<td>(4) Substructure</td>
<td></td>
<td>5</td>
<td>50</td>
</tr>
<tr>
<td>(5) Deck Geometry</td>
<td></td>
<td>5</td>
<td>50</td>
</tr>
</tbody>
</table>

Table 2. List of Condition Factor Elements and Weights
## Scoring Factor #1: Condition

### Superstructure Scoring Table (Use for Superstructure Replacement Projects)

<table>
<thead>
<tr>
<th>Superstructure Condition</th>
<th>Deck Condition</th>
<th>Score Values for Superstructure Condition Assuming Substructure &gt; 4 (0 otherwise)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>0</td>
<td>10</td>
<td>10</td>
</tr>
<tr>
<td>1</td>
<td>10</td>
<td>10</td>
</tr>
<tr>
<td>2</td>
<td>10</td>
<td>10</td>
</tr>
<tr>
<td>3</td>
<td>10</td>
<td>10</td>
</tr>
<tr>
<td>4</td>
<td>10</td>
<td>10</td>
</tr>
<tr>
<td>5</td>
<td>10</td>
<td>10</td>
</tr>
<tr>
<td>6</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>7</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>8</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>9</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

Table 6. Superstructure Scoring Table
Scoring Factor #2: Cost Effectiveness

There may be many different ways and methods to determine bridge project cost-effectiveness, but their purposes are the same which is “best bang for the buck” or dollars well spent. Scoring Factor #2 captures the merits of the investment in the bridge as it relates to its deficiencies.

<table>
<thead>
<tr>
<th>From</th>
<th>To</th>
<th>Cost Effectiveness Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>$0.00</td>
<td>&lt;$1.00</td>
<td>10</td>
</tr>
<tr>
<td>$1.00</td>
<td>&lt;$2.00</td>
<td>8</td>
</tr>
<tr>
<td>$2.00</td>
<td>&lt;$3.00</td>
<td>8</td>
</tr>
<tr>
<td>$3.00</td>
<td>&lt;$4.00</td>
<td>6</td>
</tr>
<tr>
<td>$4.00</td>
<td>&lt;$5.00</td>
<td>6</td>
</tr>
<tr>
<td>$5.00</td>
<td>&lt;$6.00</td>
<td>4</td>
</tr>
<tr>
<td>$6.00</td>
<td>&lt;$7.00</td>
<td>4</td>
</tr>
<tr>
<td>$7.00</td>
<td>&lt;$8.00</td>
<td>2</td>
</tr>
<tr>
<td>$8.00</td>
<td>&lt;$9.00</td>
<td>2</td>
</tr>
<tr>
<td>$9.00</td>
<td>&lt;$10.00</td>
<td>0</td>
</tr>
<tr>
<td>$10.00</td>
<td>&gt;$10.00</td>
<td>0</td>
</tr>
</tbody>
</table>

Table 8. Cost Effectiveness Table
Scoring Factor # 3 : Functional Classification Priority

- Priority will be given to bridges which are more important in term of functional classification and volume of traffic carried.

<table>
<thead>
<tr>
<th>Scoring Factor Number</th>
<th>Bridge Scoring factor Description</th>
<th>Functional Classification Points</th>
</tr>
</thead>
<tbody>
<tr>
<td># 3</td>
<td>Functional Classification</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Principal Arterial –Interstate (Urban)</td>
<td>10</td>
</tr>
<tr>
<td></td>
<td>Principal Arterial –Interstate (Rural)</td>
<td>9</td>
</tr>
<tr>
<td></td>
<td>Principal Arterial –Other Freeways and Expressways (Urban)</td>
<td>8</td>
</tr>
<tr>
<td></td>
<td>Principal Arterial –Other (Rural)</td>
<td>7</td>
</tr>
<tr>
<td></td>
<td>Other Principle Arterial (Urban)</td>
<td>6</td>
</tr>
<tr>
<td></td>
<td>Minor Arterial (Urban)</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td>Minor Arterial (Rural)</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>Collector (Urban)</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Major Collector (Rural)</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>Minor Collector (Rural)</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Local</td>
<td>0</td>
</tr>
</tbody>
</table>

Table 9. List of Road Functional Classifications and Points
Scoring Factor # 4 : Annual Average Daily Traffic (AADT)

- Scoring Factor #4’s points will be based on traffic volume.

<table>
<thead>
<tr>
<th>Annual Average Daily Traffic (AADT)</th>
<th>From</th>
<th>To</th>
<th>AADT Points</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>0</td>
<td>999</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>1,000</td>
<td>1,999</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>2,000</td>
<td>3,499</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>3,500</td>
<td>4,999</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>5,000</td>
<td>6,999</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>7,000</td>
<td>8,999</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td>9,000</td>
<td>9,999</td>
<td>6</td>
</tr>
<tr>
<td></td>
<td>10,000</td>
<td>13,999</td>
<td>7</td>
</tr>
<tr>
<td></td>
<td>14,000</td>
<td>19,999</td>
<td>8</td>
</tr>
<tr>
<td></td>
<td>20,000</td>
<td>34,999</td>
<td>9</td>
</tr>
<tr>
<td></td>
<td>35,000</td>
<td>&gt;35,000</td>
<td>10</td>
</tr>
</tbody>
</table>

Table 10. AADT Point Table
## BRIDGE SCORE INPUT

<table>
<thead>
<tr>
<th>Bridge ID</th>
<th>2020</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Estimated Cost</td>
<td>$600,000</td>
</tr>
<tr>
<td>Proposed Treatment</td>
<td>Deck Overlay</td>
</tr>
</tbody>
</table>

### Bridge Inspection Information

<table>
<thead>
<tr>
<th>Structure Length</th>
<th>282.2 ft</th>
</tr>
</thead>
<tbody>
<tr>
<td>Weights Out-of-Out</td>
<td>50.3</td>
</tr>
<tr>
<td>Weights In-Out</td>
<td>50.3</td>
</tr>
<tr>
<td>Mean Surface Rating</td>
<td>8.6</td>
</tr>
<tr>
<td>Deck Rating</td>
<td>8.6</td>
</tr>
<tr>
<td>Substructure Rating</td>
<td>8.6</td>
</tr>
<tr>
<td>Culvert Rating</td>
<td>8.6</td>
</tr>
<tr>
<td>Geometry (Overhead only)</td>
<td>N/A</td>
</tr>
<tr>
<td>Materials</td>
<td>8.6</td>
</tr>
<tr>
<td>Condition</td>
<td>8.6</td>
</tr>
<tr>
<td>Criticality</td>
<td>8.6</td>
</tr>
<tr>
<td>Site Criticality</td>
<td>8.6</td>
</tr>
<tr>
<td>Hydrastic Adequacy</td>
<td>8.6</td>
</tr>
<tr>
<td>Historical Significance</td>
<td>8.6</td>
</tr>
</tbody>
</table>

---

## BRIDGE SCORE SHEET

**Condition Score**: 9 x 5 = 45

**Cost Effectiveness Score**: 8 x 3 = 24

**Functional Classification**: 6 x 1 = 6

**AADT Score**: 3 x 1 = 3

**Supplementary**: 0 x 7 = 0

**Total Project Score**: 78
Use of dTIMS as BMS Analysis Tool

ASSET INVENTORY
- Bridge Type
- Bridge Width & Length
- Bridge Install Date

INTERVENTIONS
- Thin Deck Overlay
- Deck Overlay
- Super Replacement
- Bridge Replacement

Deterioration Curves

Analysis & Optimization

Process Flow / Decision-Rules

Expenditure Profiles

Network Condition

Unit Cost Tables

Drill-Down to Asset Level
BMS Inputs - Data

• NBI data set
• INDOT own data fields
• Work History
  • This includes as many historical projects as possible for each bridge.
  • Used to determine component age and number of historical overlays
• Committed projects from SPMS
• NBE in future?
BMS Inputs – Analysis Parameters

• Key Performance Indicators
  • NBI condition ratings such as Deck, Super, Sub, Wearing Surface, Culvert
  • Bridge Quality Index
  • Project Scoring
  • Cost effectiveness
  • Overlay count
  • Component age
Deterioration Models

Uncontrolled deterioration of asset (little or no maintenance) vs. Controlled deterioration of asset (by wise investment of funds)

- Date of construction
- Level of maintenance required to control deterioration and extend life
- Standard of maintenance
- Major maintenance - resurfacing, deck overlay
- Minimum tolerable condition
- Remaining service life
- Remaining actual life
- Condition

Age Year X
BMS Inputs – Analysis Parameters

• Deterioration modelling for KPIs
  • Curves developed using historical data for each NBI rating
  • Purdue participated in some curve development
  • Deterministic curves are used (example on next slide)
Deterministic curves are useful when predicting a rating into the future.

### Table 5.1 Summary of the Deterministic Models for Bridge Deck Deterioration

<table>
<thead>
<tr>
<th>BRIDGE COMPONENT</th>
<th>DISTRICTS</th>
<th>FUNCTIONAL CLASS</th>
<th>DETERIORATION MODEL</th>
</tr>
</thead>
<tbody>
<tr>
<td>NHS</td>
<td>NORTHERN</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>DCR = 8.55637 − 0.24129 * AGE − 0.00096 * AGE² − 0.0001667 * AGE³ − 0.04301 * SERVUNDER + 0.01218 * SPANNO + 0.51375 * DECKPROT − 0.05182 * FRZINDEX − 0.01872 * ADTT</td>
<td></td>
</tr>
<tr>
<td>NHS</td>
<td>CENTRAL</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>DCR = 8.18961 − 0.16459 * AGE + 0.00681 * AGE² − 0.0001464 * AGE³ − 0.06213 * INT + 0.04249 * SERVUNDER − 0.005587 * LENGTH + 0.50755 * DECKPROT − 0.06769 * NRFTC</td>
<td></td>
</tr>
<tr>
<td>NHS</td>
<td>SOUTHERN</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>DCR = 8.58845 − 0.09752 * AGE + 0.00341 * AGE² − 0.0990655 * AGE³ − 0.0811691 * SKEW − 0.0041603 * LENGTH + 0.51671 * DECKPROT − 0.06989 * FRZINDEX − 0.04431 * ADTT</td>
<td></td>
</tr>
</tbody>
</table>

**Curve plotted using the following values:**
- Service under = 1 (Waterway)
- Number of spans = 3
- Deck protection = 1 (Protected)
- Freeze Index (1000s) = 0.73 deg-days
- ADTT (1000s) = 1.68

**R² = 0.49**
BMS Inputs – Analysis Parameters

• Treatments
  • Decision trees
    • can use both condition data (e.g. NBI rating) and applicability data (e.g. overlay count)
  • Costs
    • Empirically derived based on historical costs
    • Include both material cost and maintenance of traffic (MOT)
  • Resets
    • Impact to KPIs as a result of applying the treatment
    • Can improve condition or hold condition constant (such as thin deck overlay)
BMS Inputs – Analysis Parameters

• Economic contributors
  • Discount and inflation rate
  • Constraints such as available budgets
    • Optimization routine
  • Analysis period for life-cycle costing
  • Work already committed to
BMS Outputs – Project Level

- Detailed work program for every bridge
- Cost and benefit of each strategy
- Condition projection for each KPI
BMS Outputs – Program Level

- Condition Distribution (Good/Fair/Poor) for entire network or any subset of network for any funding level for next 10 years or beyond
- Average condition trend for entire network or any subset of network for any funding level for next 10 years or beyond
- Data to support federal reporting requirements – percent deck area in Good, Fair and Poor condition
- Funding predictions required to achieve INDOT target criteria
BMS Program Level Sample Outputs

Length in Backlog

CHART DATA

Year


Length

0 20 40 60 80 100 120

BMS_Network_200M  BMS_Network_300M  BMS_Network_DoNothing  BMS_Network_Unlimited

$300k Annual  DoNothing  Unconstrained
BMS Outputs – Program Level, Federal Reporting

Bridge: State of the System Report

Budget Scenario: Bridge_30yr_235

CURRENT CONDITION DISTRIBUTION BY FHWA DECK AREA

- GOOD (7-9)
- FAIR (5-6)
- POOR (0-4)
BMS Cycle

- Inspection data
- Other NBI data
- Analysis data
- Improvement made based on recommendations from field and office staff
- Agree? Disagree? Recommendations for improvement
- Strategy results including treatment recommendations, costs, projections
- Central office and District review
Expected Benefits

- Recommended annual spending profile for any budget amount
- Quantified inspection budget
- Identification and filling in of data gaps
- Better buy-in from District staff
What’s Next

• Inclusion of cost effectiveness in optimization
• Inclusion of economic importance in bridge strategies to Indiana economy
• Inclusion of risk in analysis
• Inclusion of NBE data
• Inclusion of small culverts
• Trade-off analysis with pavement program
  • BMS and PMS becomes AMS
  • Move away from silo based analyses to holistic analyses
  • dTIMS is used for both BMS and PMS at INDOT
Concluding Remarks

• Use of an effective BMS is a key tool in effective asset management. dTIMS has been essential in this process in evaluating our assets on a program level instead of a project level.
• Use of this BMS has helped INDOT to show future bridge conditions with varying funding scenarios to help gain legislative support.
• BMS has support from high level management and will also be used as a tool to support the new requirements of the TAMP required by FHWA.
• Important to move away from a “worst first” investment strategy and adopt the principle of life cycle costing with more of a focus on Preservation Projects.
• INDOT’s Bridge Asset Management Team has been effective when used along side BMS in providing a strong program of “doing the right projects at the right time” to improve the overall condition of the State’s important bridge assets.
Questions??

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