REMAINING SERVICE LIFE ASSET MEASURE, PHASE 1

Jhenyffer Matias de Oliveira

Outline

- Background
- Research Objective
- Research Approach
- Assessment of Current Practice
- Conclusions and Recommendations
Background

MnDOT has several types of assets:

- There is a critical need to use current data that is generated using different methods and convert it to a common metric that can be used across many different types of assets.
- Using a common parameter can provide planners with efficient tools to make more informed decisions and optimize the use of available funds.
Research Objective

The purpose of this study was:

• to investigate and document how condition parameters are estimated across different MnDOT assets;
• to examine what other agencies and countries have been using as tools and methodologies when determining condition measures for different assets;
• to investigate the use of Remaining Service Life as a common measure.

Research Approach

- A literature search was performed to assess procedures and methodologies done in other states and countries.
- A survey was sent to several state DOT’s.
- Meetings and interviews were done to gather information on MnDOT procedures.
Pavement Practices

Minnesota Department of Transportation (MnDOT) uses its collected data to obtain four pavement condition indices:

- Ride Quality Index (RQI),
- Surface Rating (SR),
- Pavement Quality Index (PQI), and
- Remaining Service Life (RSL).

Each index describes a specific aspect of pavement performance.

International Roughness Index (IRI)

- Translates the vertical movement of a “standard” vehicle caused by imperfections in the pavement.
- Is normally reported in units of inches/mile or m/km.
Assessment of Current Practices

- **Ride Quality Index (RQI)**
  - An independent rating by an individual(s), i.e., customers.
  - An indication of the roughness of a pavement on a 0 – 5 scale.

- **Surface Rating (SR)**
  - Relates to the amount of surface distress (cracking, rutting, faulting, etc).
  - Ranges from 0 to 4
  - 4: No Defects
  - 3
  - 2
  - 1
  - 0: Lots of Defects
Assessment of Current Practices

➢ **Pavement Quality Index (PQI)**

- Is used to gauge whether or not the state highway system meets the performance requirements of the Government Accounting Standards Board, Standard 34 (GASB 34).
- Ranges from 0 to 4

\[
PQI = \sqrt{(RQI)(SR)}
\]

Assessment of Current Practices

➢ **Remaining Service Life (RSL)**

- Is an estimation of the time until the next major rehabilitation of the pavement section.
- Calculated from RQI
- 2.5 in the RQI = zero RSL

Remaining Service Life Distribution
Survey Results

- About 23% of the surveyed offices use RSL.

States that responded to the survey

Conclusions

- Remaining Service Life (RSL)
  - Good communicating parameter for pavements, but NOT for bridges.
  - Using a numeric value for RSL in pavements does not offer a clear picture of the condition of the network.
  - May promote worst-first approaches to correcting pavement deficiencies.
Recommendations

➢ Reformulated Pavement Remaining Service Life

• It is recommended that the numeric value is replaced with a percent value that normalizes the RSL over different types of pavements.
• Since an RSL of zero does not represent an unsafe condition of bridges and pavements, it is recommended that the name changes to remaining service interval (RSI) or (%RSI).

Thank you!