Trade-off in Pavement Management

Trade-off Considerations within the context of Pavement Management

Charles Pilson, PhD, P.E.
Senior Principal Consultant
AgileAssets Inc.
Background

- We’ve all seen the standard graph – preservation at top, reconstruction at the bottom.
Condition Distribution

- Pavements are often in a range of conditions
- Some in relatively good condition; some not so much...

- Gary Hicks I believe
Mix of Fixes

- Need to take care of poor conditions
- But as importantly, we KNOW we still need to keep up with preservation
How do we justify this?

• Need to model (and take out of the realm of intuition...)
• Not just immediate jump – but long term prediction
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Tradeoff on year by year basis

- Treatment by year using benefit (area) is good
Strategy Tradeoff

- But trading off between whole life strategies is better
- How much better?
  - Want to show some results from a study we did...
Strategy Tradeoff

Strategy Analysis Savings vs Treatment Analysis model when keeping network in the same condition
Strategy Tradeoff

Strategy Analysis better identifies and uses preventive treatments vs Treatment Analysis

Treatment Analysis

Strategy Analysis

Reactive  Proactive
Strategy Tradeoff

Spending distribution across budget groups

- **Budget Requirements, Billions**
  - Rehab
  - Reactive
  - Proactive
  - Total

- **Strategy Analysis**
- **Treatment Analysis**
Cost profile Tradeoff

• Another type of Tradeoff
  – Imagine we could be flexible about cost/budget strategy?
  – Remember ‘Good Roads cost less’!
  – Classic ‘backlog’
  – So how much better could we do with this flexibility?
Cost profile Tradeoff

- ‘Even’ or continuous budget
  - $623m (deviation <20%)

- Optimal Budget
  - $520m
Long term...

• Based on our running of the numbers here, you can see the budgets leveling off when you get into the preservation treatments.

  – Obviously not all roads are ‘perpetual’ and under-designed roads or roads with unforeseen loads go down hill regardless because of structural issues, but...

  – If the structure and construction are good, you can keep a lot of roads going a long time if you take care of them up front!

  – Preservation treatments should really be part of Pavement Management
Thank You!

Charles Pilson, PhD, P.E.
Senior Principal Consultant
AgileAssets Inc.
Office: +1 (919) 573-5217
Cell: +1 (919) 523-2588
e-mail: cpilson@agileassets.com
Web: www.agileassets.com