Engineering the Pavement Life-Cycle

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Our Chat Today…

- Let’s define some terms
- The pavement life-cycle
- Key questions/statements
- Where do we go from here?
“Performance” ??

What constitutes pavement performance?
Are all your folks on the same page when defining “performance”?
“Life” ??

How long does a NEW pavement last?
“Life” ??

How do YOU define a pavement’s “life” ?

Google Images: accessed 11-3-14
“Life” ??

STRUCTURAL Performance

FUNCTIONAL Performance
Are all your folks on the same page when defining “life”? 

- Design 
- Materials 
- Pavement Management 
- Maintenance 
- Construction
The Pavement Life Cycle (simplified)

Which of these stages is the MOST important to pavement performance?
Opportunities

What are our opportunities to extend the life-cycle here?
Opportunities

What are our opportunities to extend the life-cycle here?
Opportunities

What are our opportunities to extend the life-cycle here?
Opportunities

What are our opportunities to extend the life-cycle here?

- Rehabilitation
- Structural Design
- Materials/Mix Design
- Construction
- Preservation
- Maintenance
Opportunities

What are our opportunities to extend the life-cycle here?
Opportunities

What are our opportunities to extend the life-cycle here?
What if…

We DESIGNED the Life Cycle – intentionally?
Put the RIGHT materials in the RIGHT place for the RIGHT purpose.
Nice theory – but future maintenance, preservation, and rehab treatments depend on how the pavement actually performs!

Question

What if…

We PREVENTED distresses rather than simply PREDICT distress?
Do these people know what these people do?
Do these people know what these people do?
Do these people know how their role ‘fits’ with design & materials?
1. Clearly define performance expectations. *Functional and structural*

2. Discussions regarding pavement ‘life’ must start by defining terms;
   a. A better (?) discussion relates to a pavement’s life cycle.

3. There are opportunities to extend a pavement’s life at every stage of the life cycle.

4. Specific *actions* for extending pavement life should be tied to specific performance *goals*.

5. A pavement’s life cycle represents a *system* - not a collection of unrelated activities.

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Take-Aways for Today (so far)...

*the “duh” statements*
The best way to predict the future is to create it.

Peter Drucker

The future belongs to those who prepare for it today.

Malcolm X
We have issues needing solutions NOW

What does the “next generation” of pavements look like?
Where are we going?

- BALANCE: not “either…or” – but “and”

- INTEGRATION of life stages
  - materials…and…structure…and…construction
  - …and…maintenance…and…preservation…and
  - …rehabilitation

- R – D – \textit{and I}
Questions

Do we actually engineer the pavement? How about the life-cycle?

Do we empower our people to make judgements and decisions?

“We engineer our systems so that it does not require an engineer to use them.”

-- Kevin Hall, TRB 2018
“There will be days…when you step out of the phone booth and try to fly, and the very people you want to save are the ones standing on your cape.”

Sarah Kay
TED 2011
Questions?

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