

FHWA Pavement Design Policy Review Update

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Pavement Design Policy

§626.2 Definitions.

Pavement design means a project level activity where detailed engineering and economic considerations are given to alternative combinations of subbase, base, and surface materials which will provide adequate load carrying capacity. Factors which are considered include: **Materials, traffic, climate, maintenance, drainage, and life-cycle costs.**

§626.3 Policy.

Pavement shall be designed to accommodate current and predicted traffic needs in a **safe, durable, and cost effective** manner.

Pavement Design Guidance

Pavement Design Considerations, Formerly Federal-aid Policy Guide Non-Regulatory Supplement NS 23 CFR, Part 626

April 8, 1999, Transmittal 25

General Pavement Design Considerations

FHWA Evaluation of Pavement Design Procedures

Pavement Design Factors

- Traffic
- Foundation
- Shoulder Structure
- Engineering Economic Analysis (Portion Superseded by [Technical Advisory T 5040.39A Use of Alternate Bidding for Pavement Type Selection](#), December 20, 2012)
- Rehabilitation Pavement Design
- Safety

Pavement Design Policy Review

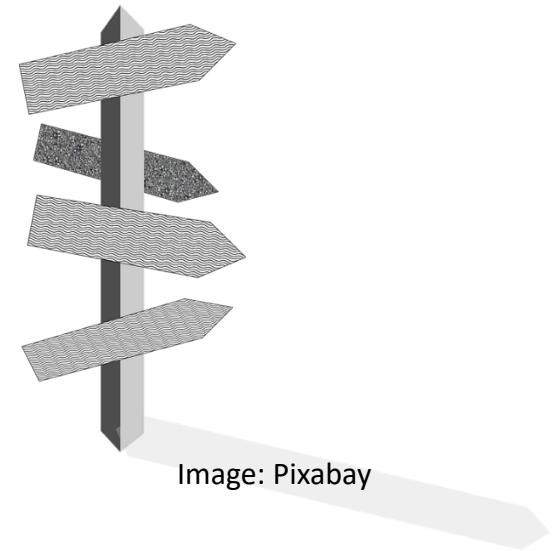
Goals:

- Discuss concerns and recommendations on FHWA's Pavement Design Policy (23 CFR Part 626)
- Discuss and document best practices and barriers to designing cost effective pavements with state agencies

Outreach/Activities

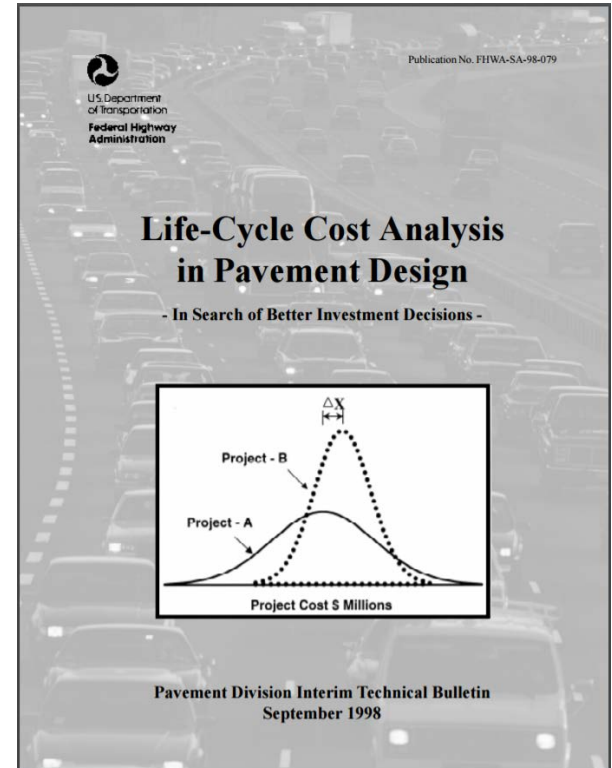
Gain a better understanding of where we are today ...

- Internal FHWA Review
- Industry Listening Session
- Regional Peer Exchanges



Internal FHWA Review

- Reviewed Technical Guidance
 - 1998 Tech Bulletin Life-Cycle Cost Analysis (LCCA) in Pavement Design
 - 2015 Tech Bulletin Supplement
- Potential Areas for Improvement
 - Discount Rate
 - User Costs
 - Remaining Service Life
 - Communication of results
- Emphasized need for further stakeholder outreach



Industry Listening Session

FHWA-Hosted Listening Session on December 14, 2018

- Advanced Concrete Pavement Consultancy LLC (ACPC)
- American Concrete Pavement Association (ACPA)
- American Council of Engineering Companies (ACEC)
- Interlocking Concrete Pavement Institute (ICPI)
- National Asphalt Pavement Association (NAPA)
- National Ready Mixed Concrete Association (NRMCA)
- National Stone, Sand, and Gravel Association (NSSGA)
- American Association of State Highway and Transportation Officials (AASHTO)

Industry Listening Session Feedback

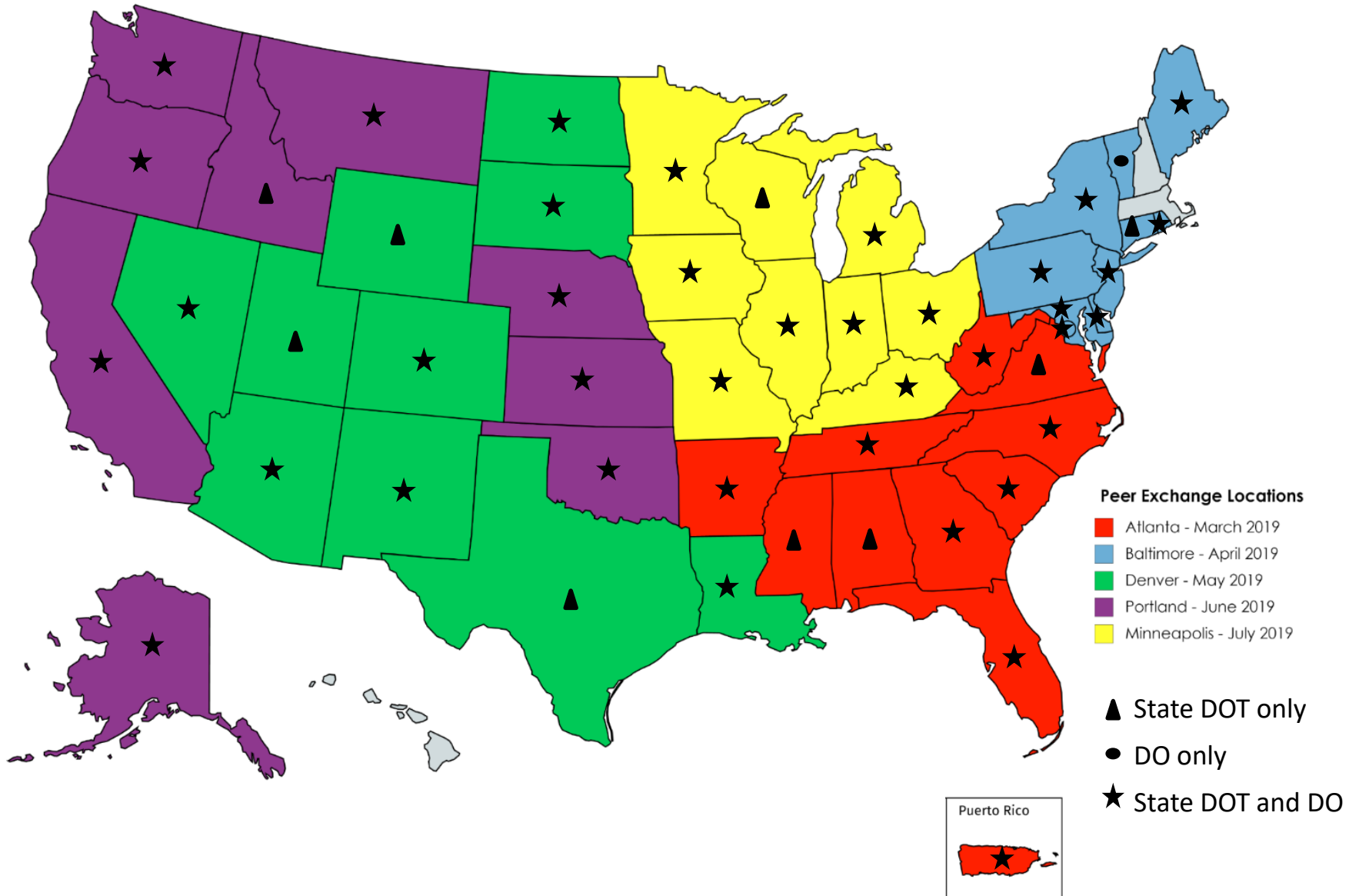
Flexible

Consistency



Relationship (with other Regulations)
Context (Maintenance/Rehabilitation)
Resiliency Sustainability
Expected Service Life

Regional Peer Exchanges



Peer Exchange Discussion Topics

Education

Statute

- Rules/Regulations
- Large group discussion

Technical Guidance

- Best Practices in Pavement Design
- Small group discussions on current practice and barriers

Research

- Knowledge Gaps
- Noted throughout all discussions

Regional Peer Exchange Feedback:

General Comments

- Pavement design policy is consistent with State DOTs' mission and goals
- State DOTs like the flexibility in the policy; however, there is some ambiguity
 - Do “life-cycle costs” and “cost-effective” = LCCA?
 - Should “Project level” be clarified?
 - Interpretation of “Factors which are considered...”
- Non-regulatory supplement and LCCA guidance are outdated

Regional Peer Exchange Feedback: Challenges/Barriers

- Staffing/expertise, workforce development
- Communication – internal and external
- Industry/political pressure
- Funding and current condition of infrastructure
- Changes coming to future – disruptive technologies such as autonomous/connected vehicles, resiliency, resource supply

Regional Peer Exchange Feedback: Challenges/Barriers

- Mechanistic-Empirical Pavement Design Guide (MEPDG)
- Obtaining accurate traffic counts
- Overweight loads
- Does LCCA always result in most cost effective design?
- Estimating future maintenance and costs for LCCA
- How do you make user costs in LCCA meaningful?
- Friction data and liability



Regional Peer Exchange Feedback: Examples of State DOT Best Practices

- Use pavement management data to feed into LCCA
- NY uses a catalog approach for MEPDG
- MO and IA have been using alternate pavement type bidding for 12 and 15 years, respectively
- UT's pavement design is decentralized, but implemented QC policy for consistency
- WY has safety management program that feeds into design process



Regional Peer Exchange Feedback: State DOT Communication Examples

- Work with industry when making spec changes
 - Maintain good relationship, open communication
- PA held research symposium with academia to communicate research needs/ideas
- MN creates a “book of knowledge” to document guidance/experience
- WI maintains a performance scorecard that is available to the public



Regional Peer Exchange Feedback: State DOT Research Needs

- Autonomous vehicles/platooning
- Friction measurement
- Does recycled materials = sustainability? Or cost-effective?
- Performance testing
- Mechanistic-empirical (M-E) pavement design
- NCHRP Synthesis – best practices used on long-term successful projects (performance, maintenance, costs)
- Use of geotextiles in pavements
- Cross-asset allocation
- Another round of Long-Term Pavement Performance (LTPP)?

Regional Peer Exchange Feedback:

Views of FHWA's Role

- Conduct more peer exchanges related to pavement design
 - face-to-face meetings are very valuable
- Provide education and training – be stewards for quality
- Promote innovation and research
- Develop clear policies that remain consistent despite changes in leadership
- Develop best practices clearinghouse
- Review guidance regularly
- Provide Division Office (DO) guidance for reviewing State DOT pavement design policy
 - Programmatic review versus project review

Next Steps



Image: Pixabay

- Follow-up meeting with stakeholders
 - Scheduled for October 24, 2019 in DC
- Finalize and share executive summaries
- FHWA may use information from all activities to develop priorities for future program efforts
 - Regulatory changes? Guidance? Training? Research?
- Create clearinghouse of SHA current practices
- Other ideas
 - How does LCCA tie to transportation asset management plans (TAMP)?
 - Tie pavement design to materials?

Questions?

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