A New 23 CFR 772/ Quieter Pavement Policy and Research

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SEAUPG, December 7, 2010

Overview

- Regulation overview
- Changes in the rule
- Quieter Pavement Policy/Research
  - Arizona – Quiet Pavement Pilot Program
  - Virginia – Quiet Pavement Research
  - Washington – Quiet Pavement Research
  - Others
  - Future Considerations

Regulatory Overview

- Background
  - Federal-Aid Highway Act of 1970
  - FHWA required to develop noise standard
  - First Federal regulation addressing traffic noise
  - Entire regulation is the standard (23 CFR 772)
  - Applies to Federal/Federal-aid highway projects

Regulatory Overview

- General Requirements
  - Projects on new alignment
  - Capacity adding projects
  - Projects that substantially change the alignment
  - Establishes impact thresholds by land use category
  - Requires consideration for abatement where impacts occur
  - Provides abatement alternatives
  - Requires use of the FHWA Traffic Noise Model v. 2.5

The New 23 CFR 772

- Published July 13, 2010
  - States to submit new noise policies
  - Approval by FHWA division offices with HQ and RC review
  - Implementation July 13, 2011

- Additions
  - Eliminates regulation through guidance
  - Defines terms that were in guidance
    - Feasible and reasonableness – key terms
  - Includes industry practice within the regulation

The New 23 CFR 772

- Additions
  - Establishes minimum design goal for noise abatement
  - Reorganizes noise abatement criteria table
  - Emphasizes focus on exterior areas
  - Abatement focus on noise barriers – others are optional
  - Consideration for design build projects
  - Eliminates use of TNM Lookup Tables
  - Clarified information required for local officials
  - Clarified “planned, designed or programmed” – now permitted
  - National consistency while maintaining flexibility for states
Measurement Types

- Acoustic longevity
- Inconsistent results
  - Site bias
  - Construction variability
  - Measurement bias
  - Errors
- Does RAC-O = OGAC-AR?

Opportunities & Challenges

Quiet Pavement Pilot Program
- Allows states to consider pavement as noise abatement
- Arizona only state with QPPP
- Requires extensive pre and post research and monitoring program
- State agrees to quantify, achieve and maintain noise reduction

Arizona - QPPP
- Allows a 4 dBA adjustment to modeled results where ARFC is used
  - May understate benefit to nearby receptors
  - May overstate benefit to distant receptors
- Adjustment based on pre-QPPP research results
- Ongoing monitoring – at least 10 years

Arizona - QPPP
- 115 miles of 1" open-graded Asphalt Rubberized Friction Course (ARFC) overlay
- Old Pavement – random or uniform transverse tined PCC
Arizona – QPPP

ARFC Overlay

Volpe Center Updates on Tire/Pavement Noise Studies

Quiet Pavement Pilot Program Progress Report #2

Arizona – QPPP Results Site 3

Determine noise effects of pavement
* Could focus on quieter or louder pavements
* Ohio DOT currently studying louder pavements
* Several other states looking at quieter pavements – California, Florida, Texas, Washington, Virginia...

Quiet Pavement Research

Two key issues
* What is the noise level of the pavement?
* How long does it stay at that noise level?

Virginia - QPR

Sponsored by FHWA and Virginia DOT
Tested April 2008 and November 2008
4 nominal surfaces
* Old DGA – VA 234 Bypass, Manassas
* Optimized PFC – VA 234 Bypass, Manassas
* New DGA – VA 234 Bypass, Manassas
* New SMA – US 15/29, Warrenton
Before-after evaluation of PFC
Comparison of PFC to DGA to SMA with same (9.5 mm) NMAS
Virginia - QPR

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Virginia - QPR Results

• Noise reduction of 6 to 8 dBA before-after PFC (vs. older DGA)
• PFC approx. 2 dBA lower level than Newer DGA/SMA with same NMAS
• Outside lane 1 to 1.5 dBA higher level for older HMA

Washington - QPR

Research Study: Evaluation of Long-Term Pavement Performance and Noise Characteristics of Open-Graded Friction Courses

• Studied two pavement types
  • OGAC-AR (Rubberized)
  • OGAC-SBS (Polymer)
  • HMA (Control)
  • Pre-overlay
  • Old HMA
  • New HMA
Initial measurement shows OGAC pavements quieter than HMA
- One year measurement shows some degradation of acoustical benefit
- Measurements indicate negative effect of studded tire use
  - Reduction of noise benefit occurred in wheel path measurements
  - Measurement results between wheel path similar to initial wheel path measurements

Future Considerations
- Encouraging states to use additional pavements in TNM
- Adding more pavements to TNM
- Consider policy implications of more pavements
- Continue acoustic longevity studies

Other research
- Pavement Effects Implementation Study (PEI)
- Tire/Pavement Noise Research Consortium
- NCHRP 10-76
- Other OBSI Pavement Studies
  - North Carolina, Florida, Montana, Ohio, Kansas, Texas
  - NCAT