Application of the Long Term Pavement Performance LTPP DataBase

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LTPP History

• Largest Pavement Study EVER
• Began in 1987
• Establish Pavement Database
• SHRP → FHWA
• SHA’s: 50 States, DC, PR, & 10 Provinces
LTPP Database

- 2,528 Testing sections in-service roads
- USA & Canada
- 714 Active
- NEW Experiments!

- GPS – General Pavement Studies
- SPS – Specific Pavement Studies
Core Functions

• Data Collection & Management
• Data Analysis
• Product Development
• Communication
LTPP Benefits

• Database:
  • Almost 3 Decades of Research-Quality Data
  • Geographic Diversity of Data

• Test methods, guidance, and data processing procedures:

• The LTPP database has played a critical role in:
  • Evaluation of 1993 and 1998 AASHTO design procedures,
  • Development of AASHTO’s Mechanistic-Empirical Pavement Design Guide.

• Material Reference Database
Infopave®

• Designed for access LTPP database
https://infopave.fhwa.dot.gov/
Maps

- Sections by location
- Data by location

- Geospatial Analysis
Data

- Section summary reports
- State/Province summary reports
- Visual Data Selection
- Data selection and download
- Standard Data Release (SDR)
- Ancillary Data
- SQL export
- Table export
Analysis

• Analytical reports
• Correlation analysis
• Interactive data analysis plan
Visualization

- Inspection Videos
- Pavement Cross section viewer
- Manual Distress survey viewer
- Section timeline
LTPP Tools (web based)

- LTPP Climate tool and MERRA Climate Data
- FWD Calibration
- Rigid Pavement design
- WIM Cost Analysis
- Pavement Performance Forecast (~800 sections)
- Dynamic Modulus Prediction (ANNACAP)
- LTPPBind Software
- Distress Identification Manual
- Pavement Loading User Guide (LTPP-PLUG)
- National Pavement Performance Measures
- Forward Calculated Stiffness
LTPP Climate Tool and Merra Database

- MERRA is a physics-based reanalysis model that combines computed model fields and satellite-based observations (NASA)

- It provides at an hourly temporal resolution and a 0.5 degree by 0.67 degree (latitude/longitude) spatial resolution from 1979 to the present.

- Data Attributes
  - Temperature
  - Precipitation
  - Humidity
  - Wind
  - Solar

- Data Range
  - Hourly
  - Daily
  - Monthly
  - Annually
LTPP Climate Tool and Merra Database

- MERRA data for MEPDG input and LTPPBInd online
LTPPBind

- LTPPBind software provides a platform for selecting asphalt binder Performance Grade (PG).

- The asphalt binder PG grade is selected based on pavement temperature along with maximum rut depth, desired level of risk, level of traffic loading and speed.

- This tool will allow use climatic data from MERRA, LTPP CLM, and user input.
LTPPBind

- The Multiple Stress Creep Recovery MSCR testing and concept are implemented to account for the extensive use of modified asphalt binders.
- Same to LTPPBind 3.1, asphalt binders are selected incorporating the integrated climatic model, asphalt stiffness and MEPDG rutting concepts.
Conclusions

• LTPP has a new user friendly interface Infopave®
• New experiments SPS-10, SP-11 and SPS-12
• More analysis alternatives
• New tools
• Material references library
• LTPP library
• Non-LTPP data (WestTrack, Interstate Condition Sampling Data).
Thank you!

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