

# Long Life Asphalt Pavement LLAP

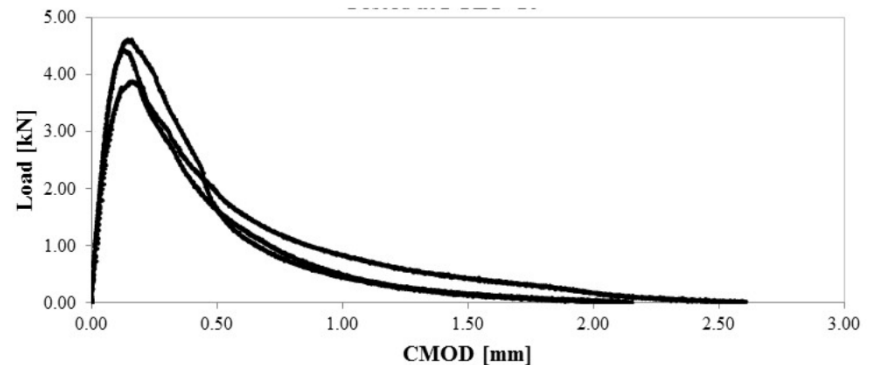
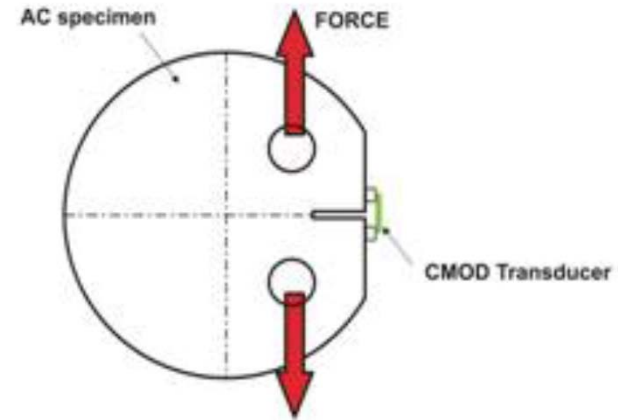
Neal Fannin  
Pavement Materials  
ISSD

# LLAP Current Features

- Written as a series of special provisions.
  - Overlay projects
  - Structural overlay projects
  - Full depth reconstruction
- Will only be used on interstate or interstate look alike projects initially.
- Performance testing is the most important and different part of this specification.

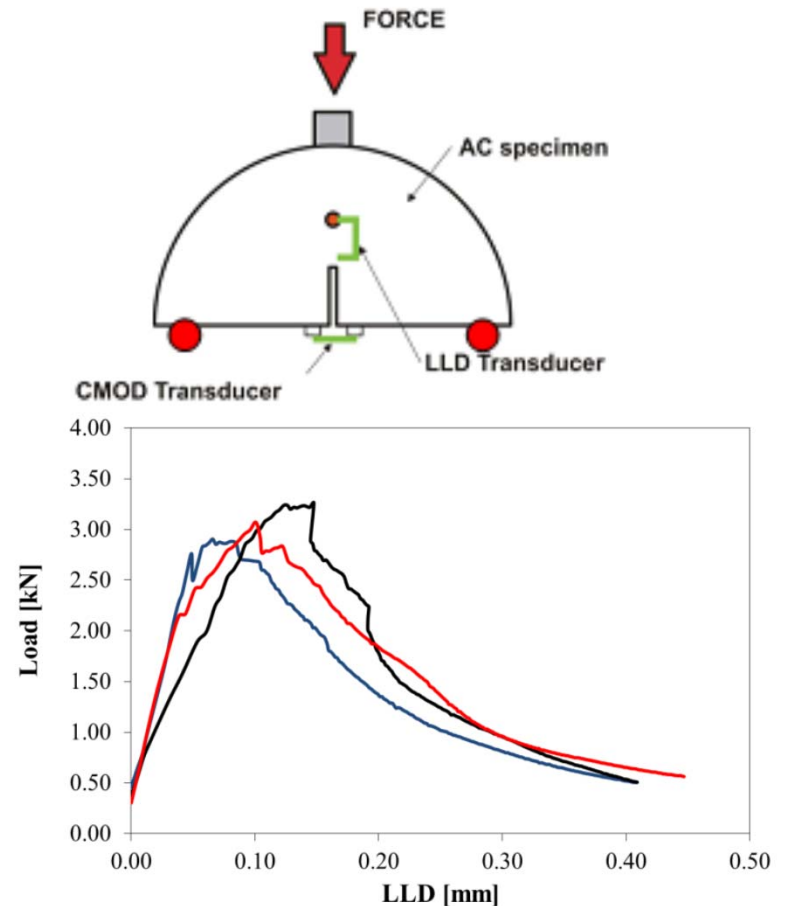
# LLAP Current Features

- Disk-Shaped Compact Tension (DCT) testing. (ASTM D7313)
  - Measures fracture energy
  - Samples fabricated from gyratory samples or cores.
  - Test run at 10<sup>0</sup> C below the low PG mix designation.
  - Fracture energy requirements vary depending on mix type (SMA) and layer (wearing, binder)



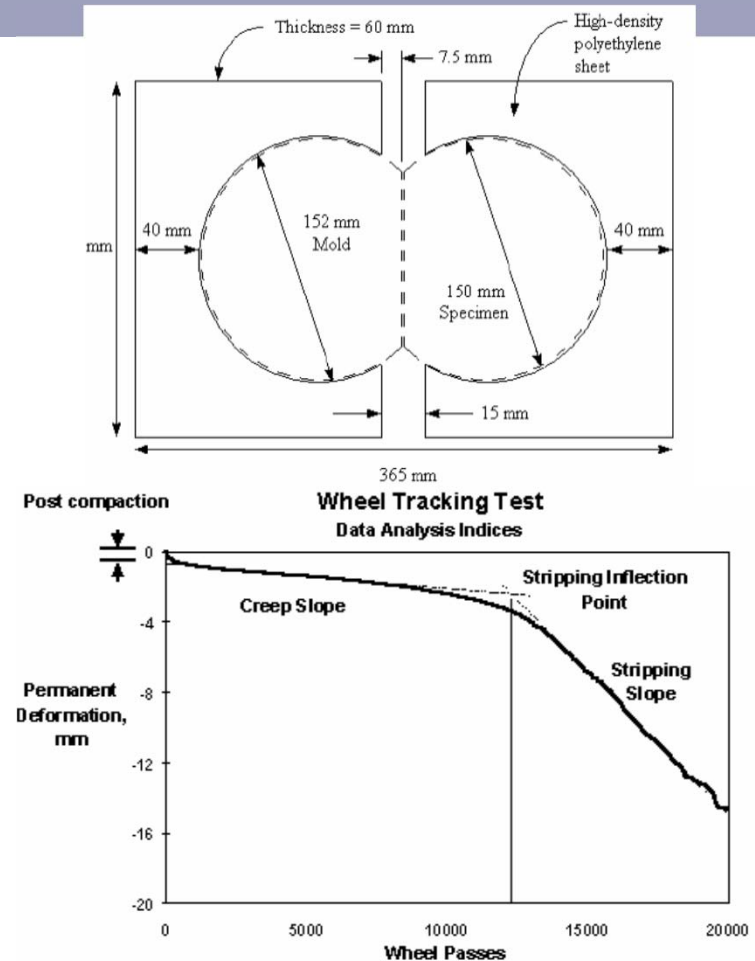
# LLAP Current Features

- Semi-Circular Bending (SCB) testing. (AASHTO TP 105) **For information only during pilots.**
  - Measures fracture energy
  - Samples fabricated from gyratory samples or cores.
  - Test run at 10<sup>0</sup> C below the low PG mix designation.
  - Fracture energy requirements vary depending on mix type (SMA) and layer (wearing, binder)



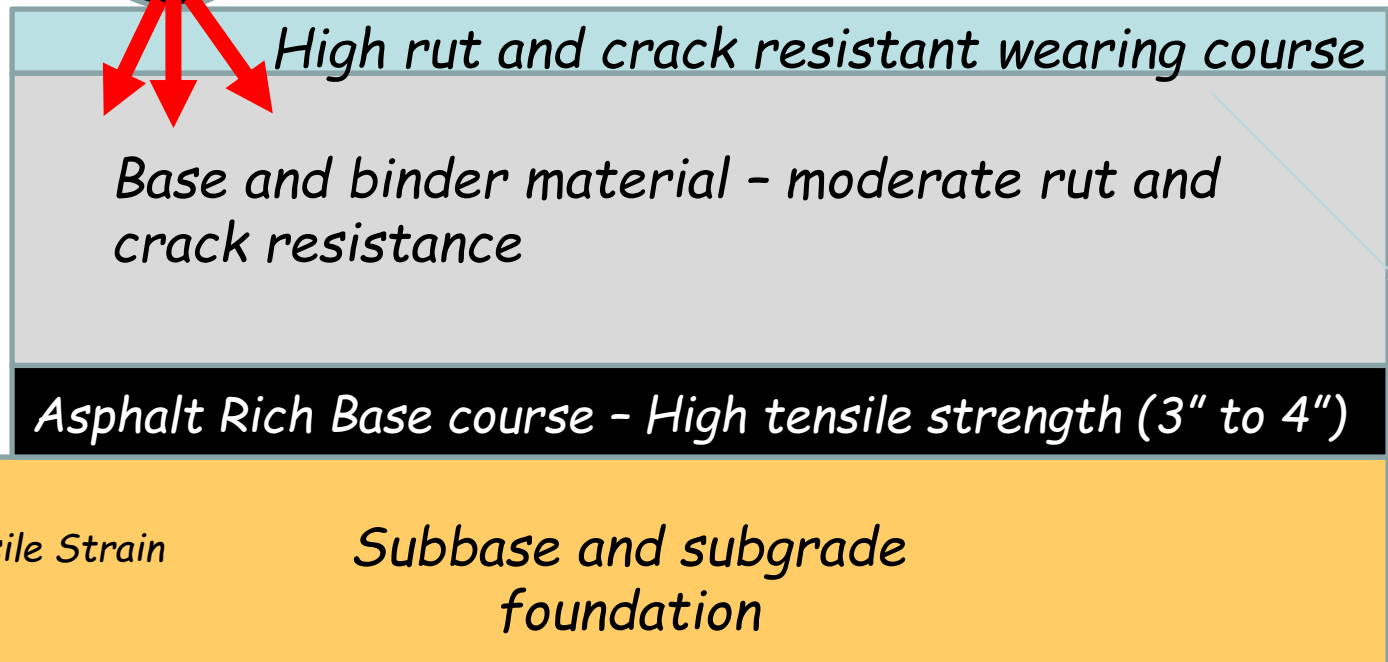
# LLAP Current Features

- Hamburg Wheel Tacking Test. (AASHTO T 324)
  - Measures rutting potential
  - Samples fabricated from gyratory samples or cores.
  - Test run at 131° F (55° C)
  - Required cycles and rut depth limits vary depending on mix type (SMA) and layer (wearing, binder)





*Wheel Load*



*Maximum Tensile Strain*

# LLAP Current Features

- **Wearing Course**
  - SMA only
  - Tack all layers
  - MTV required
  - 2% density incentive possible.
  - DCT and Hamburg Wheel track test required as performance testing.
- Need for very high rut and crack resistance.
- Very high DCT fracture energy requirement (690 J/m<sup>2</sup>) for crack resistance.
- Very High Hamburg requirement (6.25mm at 20,000 cycles) for rut resistance

# LLAP Current Features

- Binder Course
  - PWT acceptance includes incentive /disincentive.
  - Tack all layers
  - MTV required
  - DCT and Hamburg Wheel track test required as performance testing.
- Need for moderate rut and high crack resistance.
- High DCT fracture energy requirement (460 J/m<sup>2</sup>) for crack resistance.
- High to moderate Hamburg requirement (12.5mm at 20,000 cycles) for rut resistance.



# LLAP Current Features

- Base Course
  - Tack all layers
  - PWT acceptance includes incentive /disincentive.
  - DCT and Hamburg Wheel track test required as performance testing.
- Need for low rut and moderate crack resistance.
- Moderate DCT fracture energy requirement (400 J/m<sup>2</sup>) for crack resistance.
- No Hamburg testing requirement.

# LLAP Current Features

- Asphalt Rich Base Course

- PWT acceptance includes incentive /disincentive.
- Tack all layers
- Design at 3% voids
- Design 1 gyration level lower than other courses.

- Need for low rut and high crack resistance.
- high DCT fracture energy requirement (460 J/m<sup>2</sup>) for crack resistance.
- No Hamburg testing requirement.

# LLAP Current Features

- Ride incentive will be required.
- Joint incentive / disincentive will be required.

# Items not included in LLAP

- Intelligent compaction.

# Many Incentives

- SMA wearing
  - Possible 2% incentive for Density.
  - Possible incentive for ride.
  - Possible incentive for joints.
- Binder
  - Possible 4 % for mix under PWT.
  - Possible incentive for joints.
- Base
  - Possible 4 % for mix under PWT.
- Asphalt Rich Base
  - Possible 4 % for mix under PWT.

Questions?

