Thin Asphalt Overlays

Topics

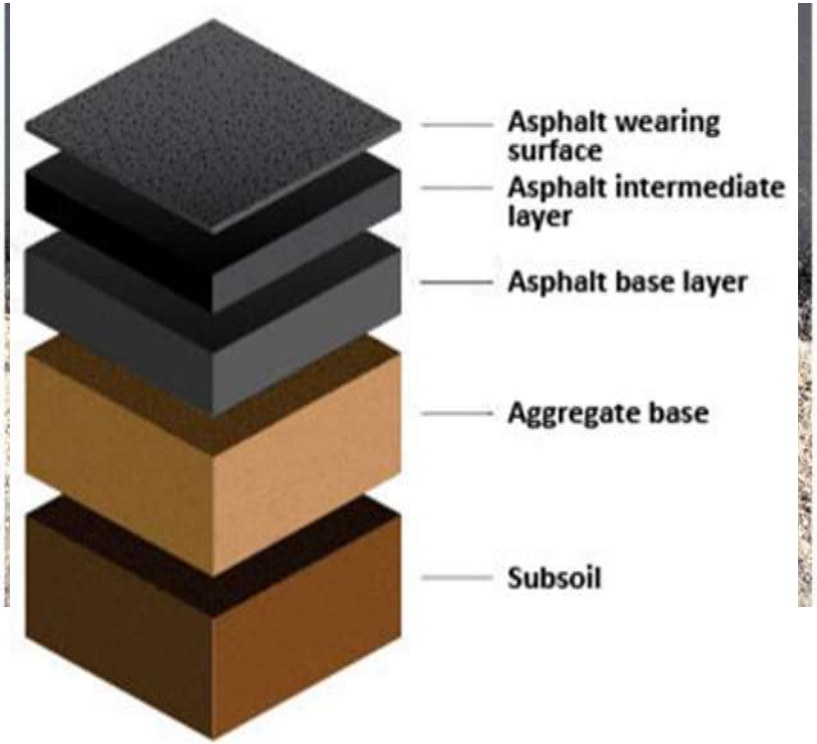
- Project Selection
- Materials Selection and Mix Design
- Construction and Quality Control
- Performance
- Conclusions

Project Selection

Avoid Projects Needing Structural Rehabilitation!! Not a cure all!

Why Thin Asphalt Overlays?

- Shift from new construction to renewal and preservation
- Functional improvements for safety and smoothness needed more than structural improvements
- Perpetual Pavement fit
- Material improvements
  - Better Binders and Mix design
  - SMA, OGFC and Dense-Graded options
  - Warm Mix
  - Reclaimed Asphalt Pavement (RAP)



How do we know if Thinlay's are a fit?

- Visual Survey
- Structural Assessment
  - No structural improvement required
- Drainage Evaluation
  - What changes are needed
- Functional Evaluation
  - Ride quality
  - Skid resistance
- Discussion with Maintenance Personnel

Types of Distress

- Raveling
- Longitudinal Cracking (not in wheel path)
- Longitudinal Cracking (in wheel path)
- Transverse Cracking
- Alligator Cracking
- Rutting

Hwy 80 Grant County, Wisconsin

Materials Selection - Aggregate

- Thin overlays need small NMAS
  - Thin overlays $\leq$ 1.5 inches thick
  - Aggregate size between 4.75mm and 9.5mm NMAS (5 & 6)
  - Ratio of lift thickness to NMAS range 3:1 to 5:1
- Mix Designs (Typical)
  - 3/8” Chip
  - Washed Man. Sand
  - Natural Sand
  - RAP and/or RAS
  - 5.8% - 6.6% Total AC
  - Fibers (Cuba City 2016)

Construction – Paving Surface Preparation

- Milling
  - Remove defects
  - Roughen surface
  - Improve smoothness
  - Provide RAP
- Patching – required for localized, deep distresses
- Tack
  - Emulsion
  - Be sure to attain even coverage

Construction – Paving and Compacting

- Paving
  - Best to move continuously
  - MTV or windrow can help
  - Cooling can be an issue
    - 1″ cools 2X faster than 1.5″
  - Warm mix
- Compaction
  - Seal voids & increase stability
  - Low permeability
  - No vibratory on < 1″

Thinlay Mix Project

Durable designed 4.75-9.5 MM Mix placed ¾" - 1½", mainly used as a maintenance treatment.

- Polymer PG Grade
- Project Selection KEY!
- 10-12 year life

Questions?