

Guidance on Thinlay as a Pavement Preservation Technique

Description:

Several pavement preservation techniques are available; of those Thinlays offer a high value to public and private pavement owners alike. Thinlays are asphalt mixes that can be placed at a thickness between 5/8 and one inch. Thinlays for pavement preservation offer economic, engineering, and sustainability benefits. Thinlays were developed for structurally sound pavements that are showing signs of aging, oxidation or minor surface distresses.

Thinlays share many of the benefits seen in overlays and inlays: extended pavement life, smooth ride, a modest improvement in pavement strength, enhanced safety, and responsible use of natural resources through reuse and recycling. Thinlays are versatile, cost beneficial and compatible with asphalt pavements.

When specifying a Thinlay, use the current Minnesota Department of Transportation (MnDOT) Spec Book and include two special provisions. Special Provisions for 2360 and 3139 were developed and reviewed by MnDOT and the Minnesota Asphalt Pavement Association (MAPA). They are on-file with MnDOT and MAPA. The ride specification (2399) should be deleted except 2399.3.D.3 (straightedge evaluation). Critical components of a successful Thinlay include a properly placed tack coat, minimum ambient temperature of 60°F, and following best practices. It is highly recommended to use PaveCool software to determine the temperature required for proper density.

Project Selection Criteria:

Thinlays are designed as a pavement preservation tool for use on low volume roadways including traffic levels 2 and 3 with low traffic counts. Surface distresses and structural adequacy of the road must be evaluated prior to using Thinlays. Thinlays are asphalt mixes that can be placed at a thickness between 5/8 and one inch on a well prepared surface. The pavement being overlaid may be milled or not depending on surface distresses. The pavement should not show signs of structural distress requiring a more extensive rehabilitation. The surface should be clean and a tack coat placed prior to paving.

Pavements suitable for a surface treatment overlay show the following distresses:

- Dry-looking, "bony" pavements that are porous or permeable
- Pavements that have begun to ravel
- Pavements with extensive cracking too fine for crack sealing
- Pavements with cracking of the surface too extensive for crack sealing alone
- Pavements with minor rutting ($\leq 1/4''$)

Suitable candidate projects will have no unrepaired structural (fatigue or rutting) damage and will have sufficient remaining structural capacity to last the expected life of the preventive maintenance treatment. Rapidly deteriorating pavements are not good candidates for preventive maintenance as the rapidly declining condition may be indicative of structural inadequacy. Thinlay should be used wherever pavement preservation is the objective of a treatment. It should be placed on structurally sound pavements that are exhibiting only surface distress. Raveling, minor cracking due to oxidation and minor rutting are the types of distresses for which Thinlay is ideally suited.

If significant rutting exists ($>1/4$ inch) in a candidate pavement, the cause must be determined and corrected. Pavement layers exhibiting plastic deformation must be removed and replaced with materials having sufficient stability to resist the stress being applied. Pavement deformation is an indicator of the need for a structural overlay (i.e. thick overlay) or pavement reconstruction.

Resources

<http://www.dot.state.mn.us/app/pavecool/>

http://www.asphaltpavement.org/index.php?option=com_content&view=article&id=465&Itemid=1021

