



Modified Asphalt Market Survey 2005 - 2006

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The Association of Modified Asphalt Producers Meeting

February 14, 2006



Modified Asphalt Survey



- Review DOT Survey & Results
- Actual Reported Usage in 2005
- Forecast 2006 Modified Usage
- State's Views on Modified Asphalt

The Survey

- Expanded for 2005
- More comprehensive questions soliciting detailed responses
- Revised & web cast the end of March
- History: Several consistent years are available

The Survey History

- Several consistent years of this survey which enable the comparison of trends
- Identified a couple of inconsistencies in reporting that need clarification and/or correction
- Trends accurately reflect breakdown of percentages
- Volumes require clarification from 3 States

Clarifications & Correction

- Some were minor
 - Pennsylvania, w/o vs. w Penn Turnpike Authority
 - no corrections were required
- South Carolina & Texas in specific were improperly reported in 2004
- Actual Results were corrected as follows:

• 2004 Binder	8,333,819 Liquid ton
• 2004 Modified	1,787,127 Liquid ton

2005 State DOT in Review

32 States participated in the Survey or 64%

- 18 States did not respond, which are:
 - **Alaska**, **Hawaii**, Idaho, **Kansas**, Maine, Massachusetts, **Michigan**, New Jersey, New York, Ohio, **Oklahoma**, Oregon, Rhode Island, Tennessee, Utah, **Vermont**, Wisconsin, **Wyoming**

(**Bold** indicates omissions from 2004 survey)

2005 DOT in Review

Total Binders: Reported: **7,795,831** liquid tons

- 61% of responses used **More** in 2005 vs 2004
- 19% of responses used **Less** in 2005 vs 2004

- 42% of responses Expect to use **More** in 2006
- 23% of responses Expect to use **Less** in 2006

2005 DOT in Review

Total Modified reported:

Reported: **2,023,512** liquid tons

- **25%** of Binder reported was Modified
- Reported volume reflects an Increase from 2004

Modifiers Used (of the respondents)

- 80% SBS Modified
- 45% SB Modified
- 45% SBR Latex Modified
- 19% Other Polymer Modified (EVA, etc)
- 12% Chemical Modified (oils, etc)
- 16% Other (GTR)
- 16% PPA
- 13% Other Chemical (Air Blown)

Most Common Binders Reported

- 81% PG 64-22 32% are Modified
- 58% PG 76-22 100% are Modified
- 49% PG 58-28 58% are Modified
- 45% PG 64-28 97% are Modified
- 38% PG 70-22 90% are Modified
- 29% PG 70-28 100% are Modified
- 19% PG 58-34 100% are Modified
- 16% PG 76-28 100% are Modified
- 16% PG 58-22 84% are Modified

Other Binders Reported

- PG 82-22 Modified
- PG 76-34 Modified
- PG 76-16 Modified
- PG 70-40 Modified
- PG 70-10 Modified
- PG 64-16 Modified
- PG 67-22 87% are Modified

2005 DOT in Review

- 45% specify for Modification
- 65% must be Modified to Meet Specification.
- 42% Specify Type of Modifier
- 3% Specify Percent of Modifier

- 26% have a Stability Specification

Modes Of Failure Addressed with Modified Binder

- 68% Rutting
- 44% Fatigue Cracking
- 47% Thermal Cracking
- 12% Other

2005 DOT in Review

Plus Specifications

- 81% of those responded have *Plus Specs*

However:

- 50% of **ALL** States have *Plus Specs*

Plus Specifications & the DOTs

- 81% have *Plus Specifications*
 - 60% are Elastic Recovery
 - 40% are Dynamic Shear Rheometer
 - 24% are Forced Ductility
 - 20% are Other (Ring & Ball; FTIR; etc)
 - 12% are Toughness & Tenacity
 - 8% are Direct Tension

Direct Tension vs. M320 Table 2

- 17% of responses are using the DT
 - 35% to better predict Thermal Cracking
 - 57% to identify Modification
 - 20% to identify Modification Type
- 11% of responses are using M320 Table 2

Would Consider Specifications...

To Improve or Reduce:

- 64% Compaction
- 71% Rutting Resistance
- 81% Fatigue Cracking

Experiences with Modified Asphalt

- Very Satisfied 32%
 - Satisfied 41%
 - Neutral 13%
 - Unsatisfied 0%
- No Comment 14%

Experiences with Modified Construction

- Very Satisfied 16%
 - Satisfied 50%
 - Neutral 16%
 - Unsatisfied 3%
- No Comment 13%

2005 DOT Spending Expectation

- 39% Expect to Spend **More** on Paving
- 28% Expect to Spend the **Same** on Paving
- 19% Expect to Spend **Less** on Paving

2005 Forecast Summary

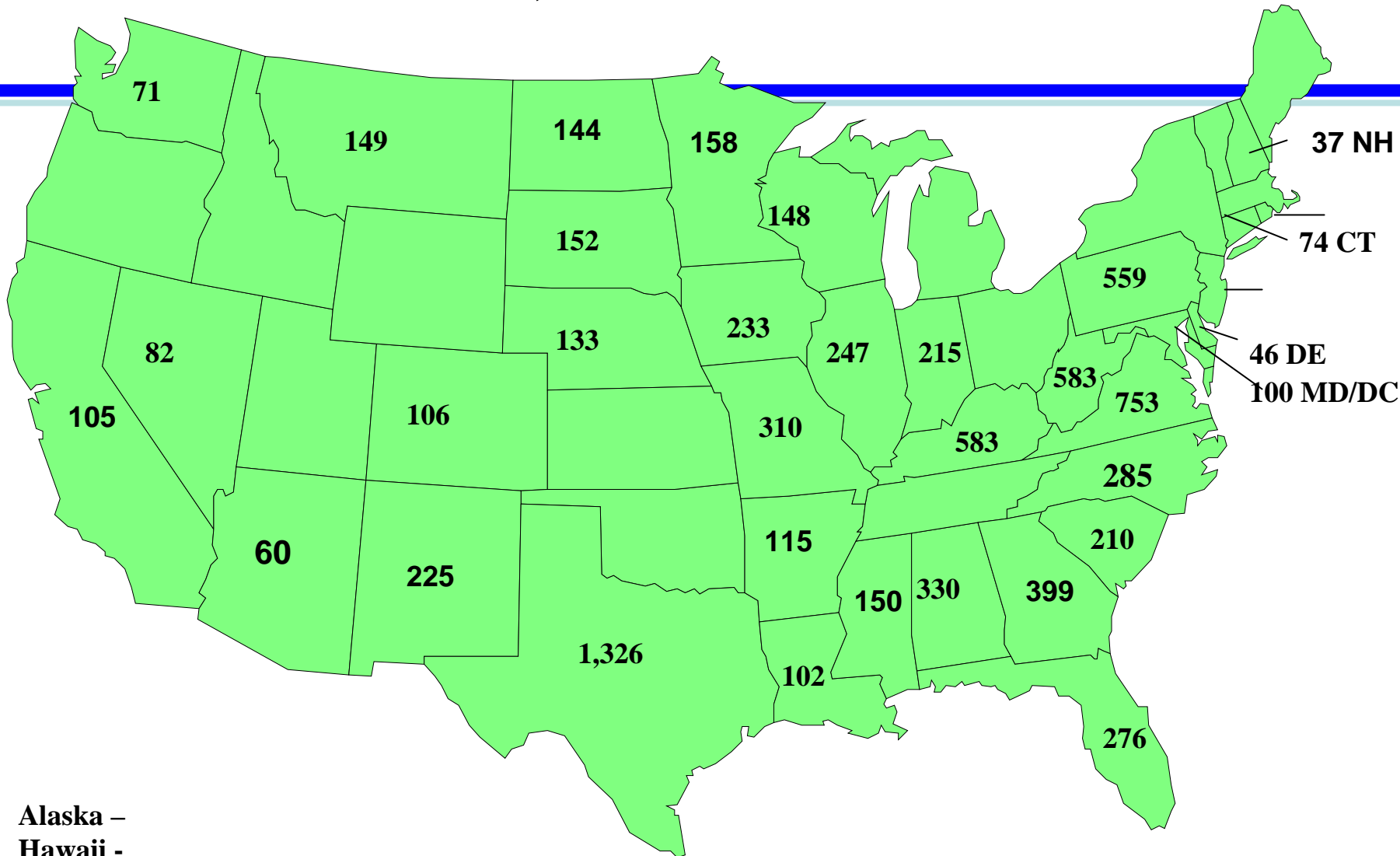
- **55%** Expect to Use **More** Binder in 2006
- **26%** Expect to Use **Less** Binder in 2006

- Total Binder: **8,100,811**
- Modified Binder: **2,042,345** or **25%** of total

- Volume **Binder Increase** from 2005: **3.9%**
- Volume **Modified Increase** from 2005: **1.1%**

Reported Asphalt Usage

2005, DOT(000 TONS)

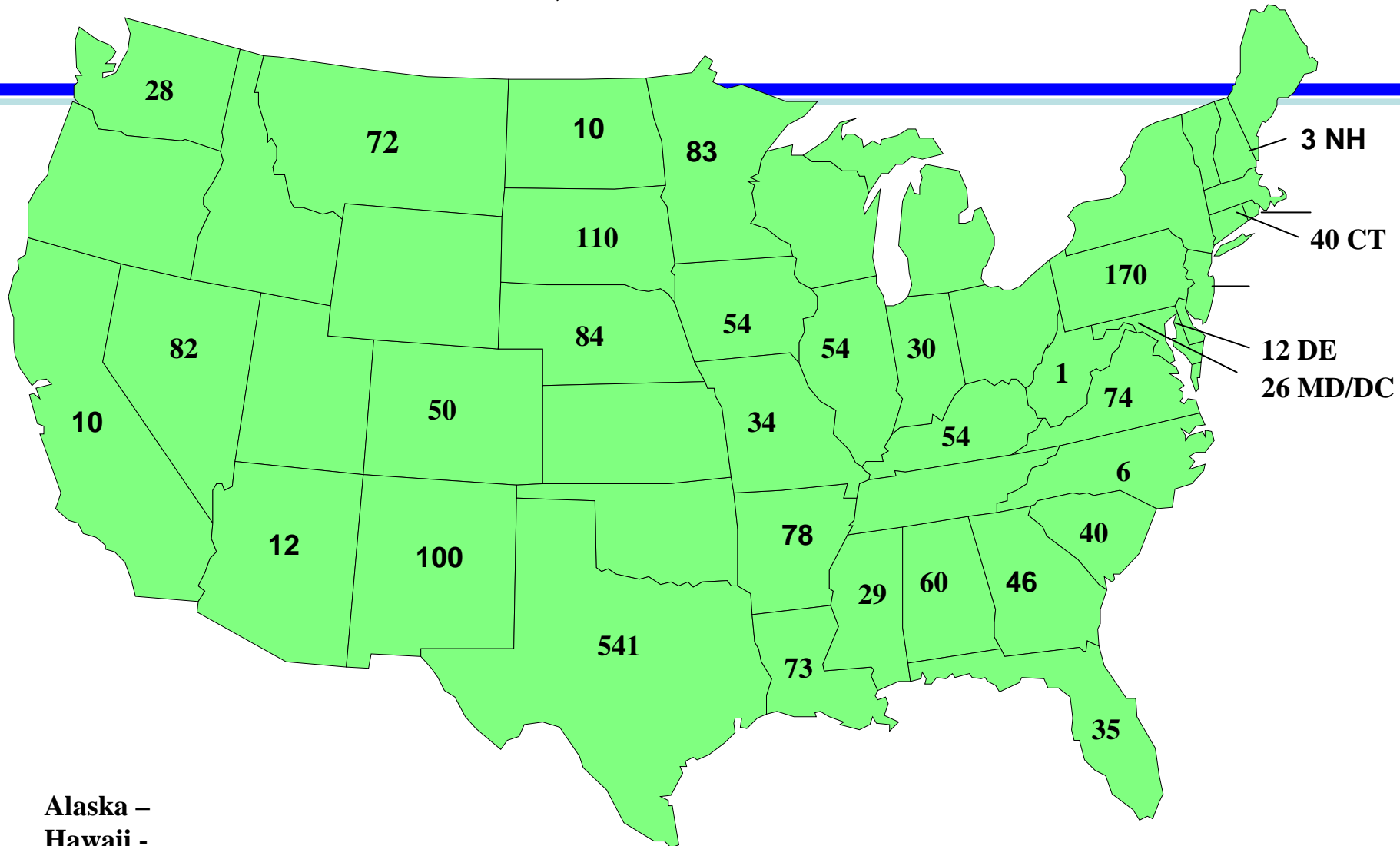


Alaska -
Hawaii -

Total 7,795,831

Reported Modified Asphalt Usage

2005, DOT(000 TONS)

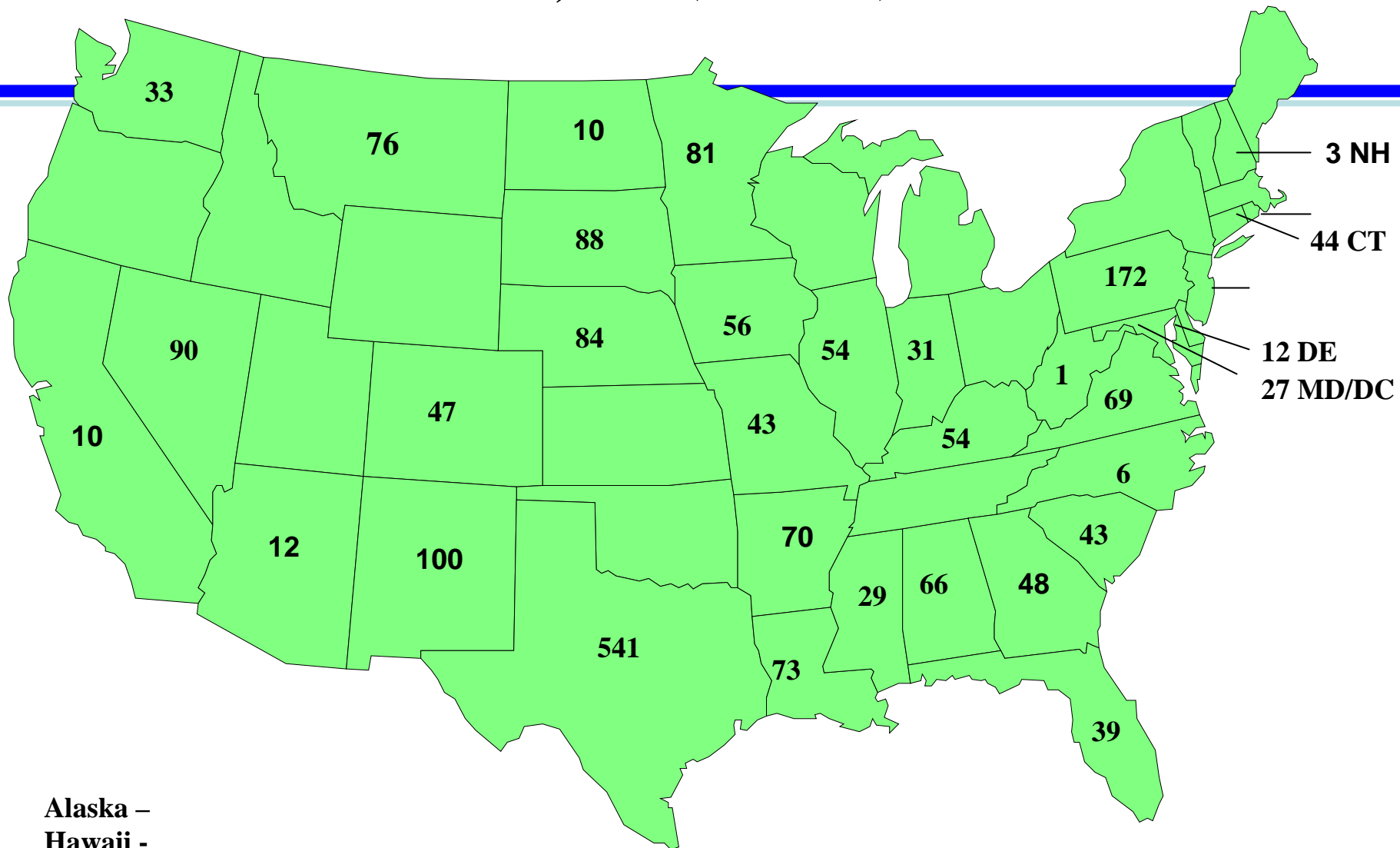


Alaska -
Hawaii -

Total 2,023,512

Forecast Modified Asphalt Usage

2005, DOT(000 TONS)



Alaska -
Hawaii -

Total 2,042,345

This Survey...

- Will be updated as additional information is received.
- Webinar to be scheduled for late March
- Will be located on the AMAP website
www.ModifiedAsphalt.org



Questions?

www.modifiedasphalt.org





Many thanks

- To all the participating States DOTs for their responses
- To all the members that helped collect all the information
- Specifically, to Ray Gore for all his personal commitment

www.modifiedasphalt.org





Who is AMAP?

A not-for-profit organization comprised of a diverse collection of industry leaders involved in all aspects of the modified asphalt market.

Asphalt suppliers, modified asphalt producers, additives suppliers, contractors, lab equipment & testing services, consultants, even some DOT Engineers comprise the AMAP membership.

www.modifiedasphalt.org





What is our mission?

An association committed to informing owners, contractors and all specifying agencies of the performance and economic benefits of modified asphalt binders for bituminous pavements

www.modifiedasphalt.org





AMAP Provides Industry Solutions

Information: Modified Asphalt technology Clearinghouse.

Support: Industry experts are available to answer questions.

Education: Provide training courses, workshops and seminars specific to Modified Asphalt..

www.modifiedasphalt.org

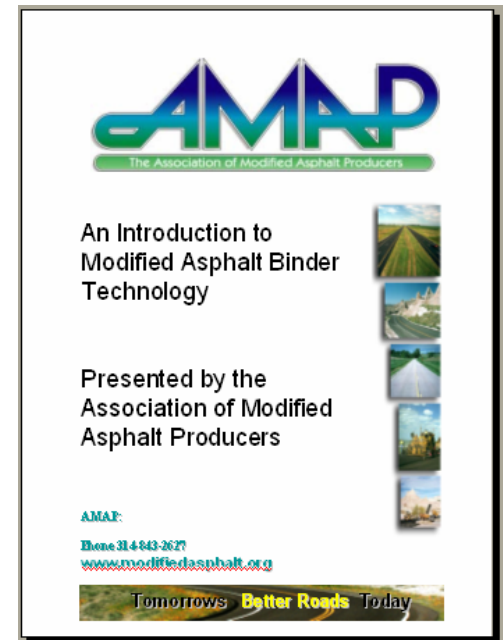




Workshops:

An Introduction to Modified Asphalt Binder Technology

Covers all the basics from chemistry, asphalt rheology, testing, specifications, handling, and background to life cycle cost analysis.



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