

**TEXAS DEPARTMENT OF TRANSPORTATION**

DESTINATION ZERO DEATHS

Choose your ride. Drink, Drive, Go to Jail.

U DRIVE, U TEXT. U PAY

DRIVE ARKANSAS

DRIVE SOBER OR GET PULLED OVER

TOWARD ZERO DEATHS

#drivesmartms


Click it or Ticket TEXAS

## WEST REGION UPDATE






Southeast Asphalt User-Producer Group

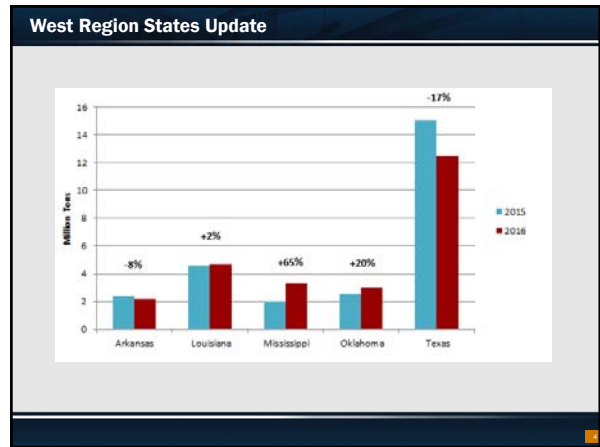
### Specification Changes and Updates

- Arkansas
  - None
- Louisiana
  - New asphalt mixture and binder specifications
  - Performance based testing required for mixture design
  - Multiple stress creep recovery (MSCR) testing required for modified binder acceptance
  - Contractor data for mixture acceptance
- Mississippi
  - None
- Oklahoma
  - New special provision for non-tracking tack coats
- Texas
  - Looking at different binder quality tests ( $\Delta T_c$ )
  - MSCR
  - XRF
    - REOB restricted to 5%
    - PPA restricted to 0.5%
  - Research related to recycled binder limits and substitution





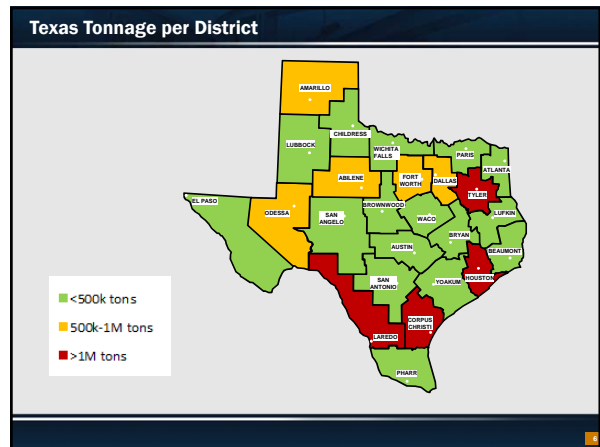
### West Region States Update

	Mix (Tons)		
	2015	2016	
Arkansas	2.4 M	2.2 M	
Louisiana	4.6 M	4.7 M	
Mississippi	2.0 M	3.3 M	
Oklahoma	2.5 M	3.0 M	
Texas	15.1 M	12.0 M	




### Funding Shortage Effect

- Arkansas
  - Slight decrease in tonnage
- Louisiana
  - None
- Mississippi
  - Tonnage has decreased\*
  - Jobs are being cancelled/delayed to later letting dates
- Oklahoma
  - None
  - Overall increase in production
- Texas
  - None
  - Consistent funding last year
  - Future - Proposition 1 and 7
    - Additional \$70 Billion over 10 years



### Warm Mix Asphalt Experiences

- Arkansas
  - To date: 1 million tons of WMA
  - Option on all jobs, but no jobs designed as WMA
- Louisiana
  - Foaming used throughout state
  - Used for most mixtures
- Mississippi
  - Contractor has option to use on most jobs
  - 33% of jobs used some form of WMA technology
- Oklahoma
  - Permissive specification since 2009
  - 1.6 million tons
    - 77% of total production
    - 69% foamed
    - 31% additive
- Texas
  - 4.7 Million Tons in 2016
  - WMA allowed on all projects and required when shown on plans
  - Useful
    - Long hauls
    - Late season paving
    - Compaction aid (SMA)
  - Issues
    - Temperatures vs. high recycled contents





### RAP/RAS Experiences

- Arkansas
  - None
- Louisiana
  - RAP percentages increased by 5%
  - Must pass laboratory performance tests for approval
  - Ongoing pooled fund study for high RAP/RAS evaluation
- Mississippi
  - Allowed
    - 30% RAP in underlying lifts of 12.5mm, 19mm, and 25mm dense graded mixtures
    - 20% RAP in all surface lifts
    - 10% RAP in SMA
  - Disallowed
    - No RAP in OGFC
  - Currently, no specification to allow RAS
- Oklahoma
  - Seldom use high RAP or RAS
  - Starting to use fatigue testing to evaluate mix performance
- Texas
  - Cracking distresses
    - Looking at lowering allowable recycled binder ratios
    - Rejuvenator research
      - 3 separate projects each with 4 different rejuvenators
    - Districts disallowing recycled materials in surface mixes



### AMPT and Performance Testing

- Arkansas
  - APA for rutting
  - None for cracking
- Louisiana
  - Implemented at intermediate temperatures for mixture design approval
    - Hamburg for rutting
    - Semi-circular bending (SCB) for cracking
- Mississippi
  - Database collection for most mixes that come through laboratory
    - Dynamic modulus
    - Flow numbers
  - APA for rutting
- Oklahoma
  - Hamburg for rutting
  - Near future (2017)
    - Using SCB to evaluate fatigue
    - Use of AMPT for dynamic modulus
    - Other cyclic direct tension tests
- Texas
  - Looking at semi-circular bending (SCB)
  - AMPT
    - Collecting dynamic modulus data
    - Performing overlay testing
      - Testing jig compliance
  - Texas Overlay Test
    - Large database for all mixes. Some mixes require testing per specification.
    - Research changed our gluing procedure and our analysis method - large reduction in variability
  - Hamburg for rutting

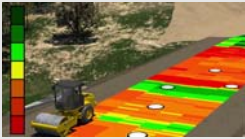
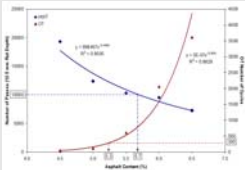
### Methods to Reduce Costs

- Arkansas
  - Preventative maintenance agreement
    - Use of federal funds to assess and design the best methods and solutions
- Louisiana
  - Increased the durability of asphalt mixtures
- Mississippi
  - Low volume: chip seal
  - Mid-high volume: mill and overlay
  - Occasionally use of fog seal or scrub seal to seal road
- Oklahoma
  - Performed 3-4 hot-in-place projects in 2016
  - Used chemical WMA additive in PFC and SMA projects
    - Replaced fibers and maintained higher quality
- Texas
  - Use of thin mixes
  - Ensure uniformity with thermal imaging
  - Tack material bond quality
    - Less tracking
    - Proposed test procedure for bond strength
  - Approved material producer lists for repair material





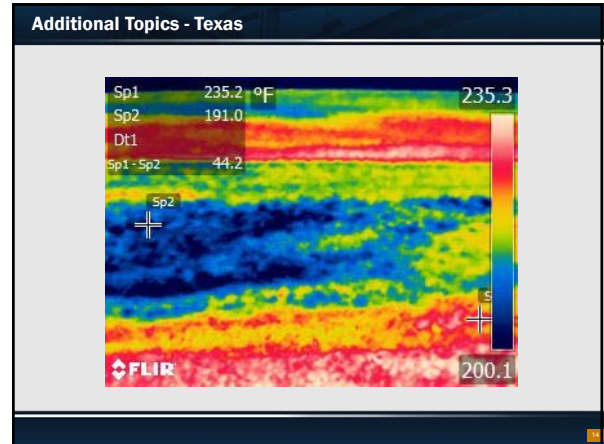
### Additional Topics

- Arkansas
  - None
- Louisiana
  - None
- Mississippi
  - None
- Oklahoma
  - Special provisions
    - Intelligent compaction
      - 3rd generation percent within limits (PWL) has been successful
  - Under Construction Control Directive
    - Statistical method to accept contractor test results
    - 3 projects with bleeding/flushing and/or fat spots this year (pictures)
- Texas
  - Research
    - Binder performance testing
    - Enhancing binder qualities with additives
    - Optimizing designs for sustainable perpetual pavements
    - Nondestructive QOQA testing
      - Tack vs. underseal
    - Balanced mix design approach
    - Rehabilitation with existing moisture damage
  - Training on thermal camera - thermal profiles

### Additional Topics - Oklahoma





 TEXAS DEPARTMENT OF TRANSPORTATION



**THANK YOU**

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