Bump Formation in Hot Mix Asphalt Overlays

TIM MORRIS
CRAFCO INC.
AREA SALES MANAGER
INTERNATIONAL SALES GROUP
SPEED OF THE ROLLER

THE ROLLER SHOVES THE HMA FORWARD OF THE COMPACTION PROCESS

SLOWER SPEED = REDUCES OR ELIMINATES BUMPING/SHOVELING

FASTER SPEED = MORE BUMPING/SHOVELING
TYPE OF ROLLER

SINGLE DRIVE

DUAL DRIVE

PNEUMATIC TIRE
COMPACATION PROCESS

DO NOT OVER ROLL

EXCESSIVE PASSES CAN CONTRIBUTE TO BUMPS/SHOVING
SURFACE CHARACTERISTICS
UNIFORM CONDITION
NO BUMPS/SHOVING

IRREGULAR / NON-UNIFORM CONDITION
MORE OPPORTUNITY FOR BUMPING/SHOVING
HOT MIX TYPE

OPEN, DENSE OR GAP GRADED

ANGULAR / FRACTURED AGGREGATE = LESS BUMPS/SHOVING

LOW ANGULAR/FRACTURED AGGREGATE = MORE BUMPS/SHOVING

WARM MIX

NO HISTORY OF BUMPING
HOT MIX TEMPERATURE

NEWER MODIFIED HMA’s REQUIRE ELEVATED TEMPERATURES FOR PLACEMENT AND ROLLING
STIFFNESS OF THE TACK COAT

STIFFER TACK COATS = LESS BUMPING / SHOVING
CRACK SEALANT

AGE OF THE SEALANT

SEALANT TYPE

APPLICATION METHOD
Reservoir
Reservoir
History

Colorado and Nevada conducted projects to determine what causes bumps in new HMA pavement.
They could not make the pavement bump.

University Road about 15 years ago
Between McClintock and Rural. Bumping near the intersection.
SOLUTION

• SLOW THE ROLLER DOWN – 3 TO 5 mph MAX
• USE THE PROPER ROLLER
• DO NOT OVER ROLL
• CORRECT SURFACE INCONSISTANCIES
• USE STIFFER TACK COATS
• USE 2 LIFT PAVING WHEN POSSIBLE
SOLUTION

• CRACK SEAL AS EARLY AS POSSIBLE
• REMOVE EXCESSIVE SEALANT FROM PAVEMENT
• APPLY CRACK SEALANT IN A ROUTED RESERVOIR WITH A 3/8” RECESS
THANK YOU