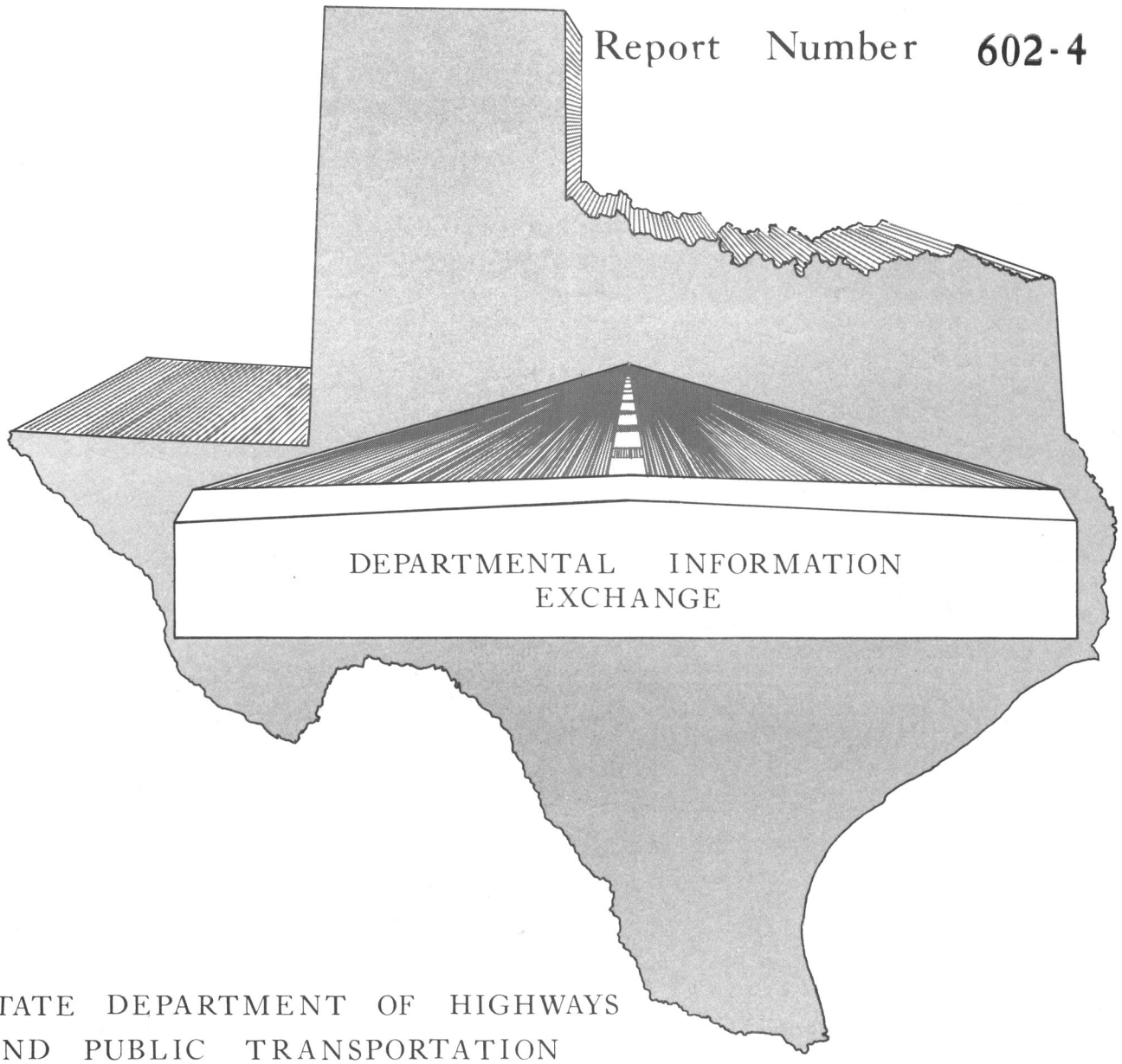
EXPERIMENTAL PROJECTS

PLANT MIX SEAL IN DISTRICT 3

Report Number 602-4



STATE DEPARTMENT OF HIGHWAYS
AND PUBLIC TRANSPORTATION

PLANT MIX SEAL IN DISTRICT 3

US Highway 287

Montague, Clay and Wilbarger Counties

1976

by

Leiland L. Jett

Supervising Resident Engineer

Bowie, Texas

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DISCLAIMER STATEMENT

The material contained in this report is experimental in nature and is published for informational purposes only. Any discrepancies with official views or policies of the DHT should be discussed with the appropriate Austin Division prior to implementation of the procedures or results.

In July-September, 1976, Zack Burkett Company of Graham, Texas, placed plant mix seal on 37 miles of US 287 in Montague, Clay and Wilbarger counties. Asphalt used was AC-20. Aggregate was dolomitic sandstone with a polish value of 41, an average unit weight of 93 pounds per cubic foot, a specific gravity of 2.61, and conformed to the following specified gradation:

	Percent by Weight
Retained on 5/8" sieve	0
Retained on 1/2" sieve	0-5
Retained on 3/8" sieve	20-50
Retained on #4 sieve	92-100
Retained on #10 sieve	96-100

Six test areas on FM 1288 in Bellevue, Texas were placed with plant mix seal of varying asphalt content. As determined by laboratory trial mixes, initial asphalt content was 7.5% by weight. In successive tests, asphalt content was decremented by 0.5% to a minimum 5%. Visual inspection of the mat density and its drainage characteristics after water flooding suggested a mix utilizing 6.0% asphalt.

EA-11M emulsion was used as tack coat. Application rates ranged to .10 gal/S.Y. Thorough pneumatic rolling and a time lag between tack coat placement and placing of plant mix seal controlled the sliding of the spreading and finishing machine experienced with earlier placement.

The typical roadway section was 24.0' plus a 1.5' taper at each edge. Average mat thickness was 0.06'. Mix temperatures between 190°F and 210°F were found to be desirable at the screed. Optimum temperature seemed to be 190°F. Colder mixes pulled; hotter mixes segregated, leaving pools of asphalt. Because of the high asphalt content, the mix entered the hopper of the spreading and finishing machine as a fluid, and excessive spillage between truck and spreading and finishing machine occurred until an apron constructed of belting material was attached across the front of the hopper as a header.

Yield was controlled without difficulty.

With atmospheric temperature at 95°F, down times of as long as 30 minutes between trucks were experienced with no discernible reduction of surface quality.

On two occasions several truck loads of mix were enroute when thunderstorms occurred. This mix was placed during some rainfall and on wet pavement. No problems were experienced with these sections.

The mat was rolled with a two axle 8 ton tandem roller. The full weight of the roller was utilized to seal the center joint. Two passes were made on the center joint and on each taper.

On one one-half mile section, because of a tandem roller breakdown, rolling was done with a medium pneumatic roller. The mat was cooling before the pneumatic roller was placed on it. No difference in the quality of appearance of surface could be detected.

Isolated spots requiring improvement, a thin area resulting from pulling of cold mix or a slick spot left where a pool of asphalt collected between truck and spreading and finishing machine, were successfully treated by removing and patching with hot material.

Considerable improvement of riding quality of pavement was observed. Mays Meter tests run on southbound US 287 between FM 1288 and the Montague County line in 1974 and again in 1976 after placement of the plant mix seal showed an increase from 3.0 to 3.9 in the average Serviceability Index. In Wilbarger County, Mays tests run one week before application of plant mix seal indicated an average S.I. of 3.4; average S.I. after application was 3.8. These increases compare favorably with some previous hot mix asphaltic concrete overlays.

A total of 54 skid tests performed resulted in extremely uniform skid numbers with an average skid number of 47.

Photographs, enclosed with this report, were taken of US Highway 287 in Montague County approximately four months after plant mix seal was placed.