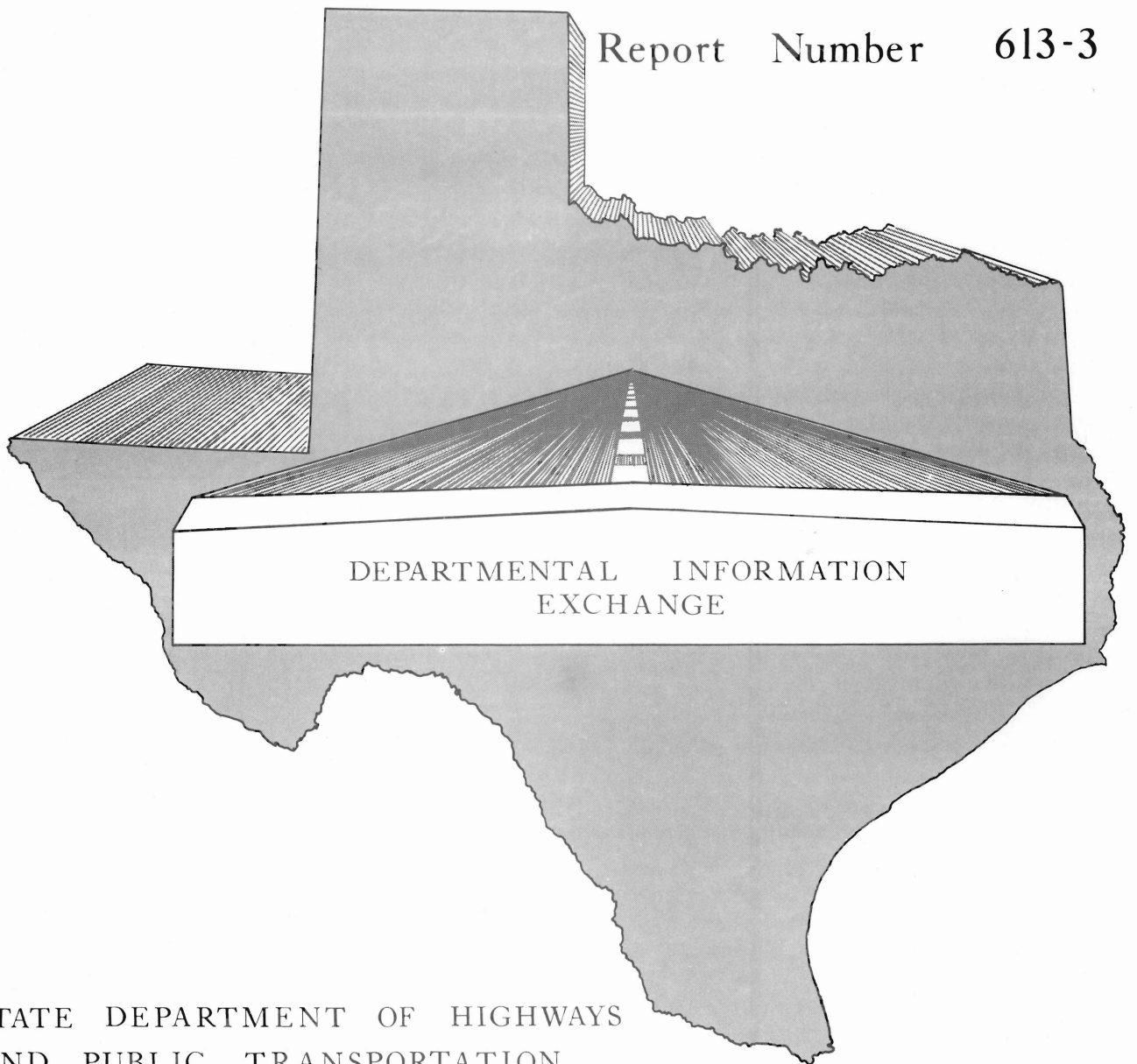


EXPERIMENTAL PROJECTS

SOME EXPERIENCES IN REUSING ASPHALT CONCRETE TAILINGS CREATED BY COLD MILLING

Report Number 613-3



STATE DEPARTMENT OF HIGHWAYS
AND PUBLIC TRANSPORTATION



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16. Abstract This report describes the experiences of District 15 in recycling asphalt concrete tailings created by cold milling. The procedure for making and placing the mix is described as well as the results of an on-site recycling of the material near Comfort, Texas, and an experimental deep patch on a bridge approach on IH 10.					
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Some Experiences in
Reusing Asphalt Concrete
Tailings Created by Cold Milling

Experimental Projects Report
No. 613-3

by

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January, 1982

DISCLAIMER STATEMENT

The material 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 the implementation of the procedures or results.

The contents of this report reflect the views of the authors who are responsible for the facts and accuracy of the data presented herein. The contents do not necessarily reflect the views or policies of the Federal Highway Administration. This report does not constitute a standard, specification or regulation.

District 15 is located in South Central Texas, and consists of the 12 counties surrounding San Antonio.

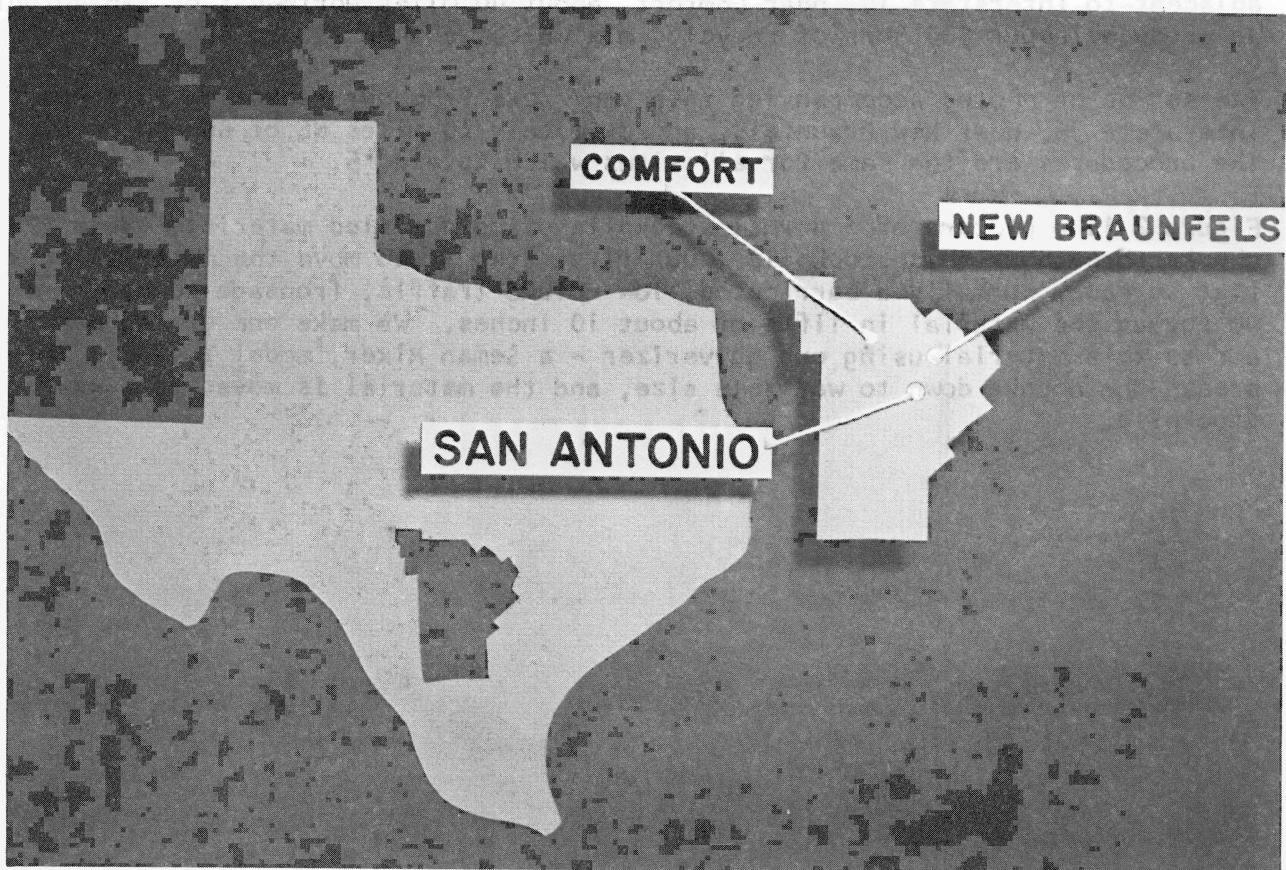


Figure 1

We have total responsibility for about 3,600 miles of highways - from two lane Farm to Market roads, thru State Highways, US Highways, and about 500 miles of multi-lane interstate. Of this total mileage, approximately 15% has a Chip Seal Surface, 80% has an asphaltic concrete surface and 5% is Portland Cement concrete.

We have been using the Cold Surface milling procedures to improve the skid resistance of our pavements for the last 5 years.

The concrete tailings mill to dust, and are discarded; however, we have been stockpiling our asphalt tailings.

Between 1978 and 1981, we molded and tested approximately 150 laboratory specimens, and reached the conclusion that unless we screened 100% of each stockpile, it would be next to impossible to arrive at a uniform laboratory design to re-use this material.

So we decided to play it by ear.

In October, 1981, we began an on-site recycling of this material stockpiled adjacent to Interstate 10, near Comfort, about 40 miles Northwest of San Antonio. We produced about 500 tons of recycled mix which we then stockpiled.

The series of photos accompanying this paper are from our recycling site on Interstate 35, near New Braunfels, approximately 20 miles NE of San Antonio. The procedures are the same for all sites which totaled 5.

Figure 2 is a picture of a normal stockpile of cold milled material. Note the chunks throughout this stockpile. Our first step is to move the material to a flat surface, normally a barricaded, low volume traffic, frontage road, where we spread the material in lifts of about 10 inches. We make one or two passes across this material using our pulverizer - a Seman Mixer, model T0-730. This breaks the chunks down to workable size, and the material is moved to a new stockpile.



Figure 2

Figure 3 is a close up of the material after pulverization.



Figure 3

We then feed this material into a Kolberg cold pug mill, which is owned by the State.

By varying the rate of the cold feed belt, we can vary the amount of material flowing into the cold pug mill.

Figure 4 shows the principal equipment used. In the left foreground is a State owned water truck holding AES-300R. This emulsion, with reclimate, is sprayed on the material as it enters the pug mill, is mixed for about 3 seconds, and is continuously discharged into a waiting dump truck, where it is again moved to a stockpile.

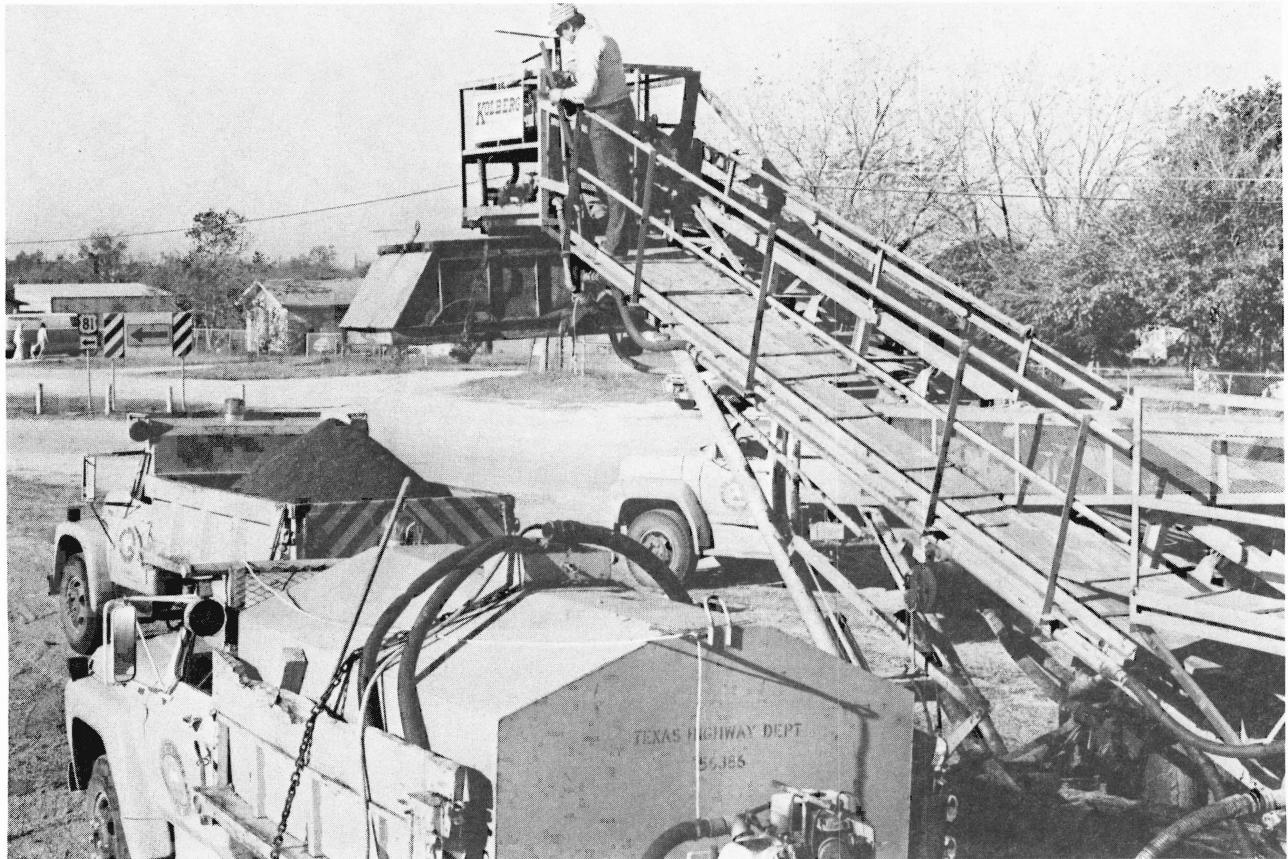


Figure 4

Figure 5 is a close up of the stockpiled mix, not quite ready for the road.



Figure 5

About the best lesson learned during our lab testing was that in order to make the material look good, we would frequently use too much emulsion. We found that about 2% by volume was optimum, but the material has to "season" in the stockpile. This "seasoning" will allow the emulsion to uniform itself throughout the stockpile. The material should "season" about one week in hot weather, to three or more weeks in cold weather, before use.

About three weeks after recycling of the material near Comfort, we placed a deep patch (average $1\frac{1}{2}$ "') on the bridge approaches to the Guadalupe River on Interstate 10, located about $\frac{1}{2}$ mile from the mixing site. The patch has withstood 80°F weather in November, some mild freezing and back to the 70's in December, then 0°F temperature, heavy ice and snow in January. Several light rains have fallen on the patch, but as of this writing, it is holding.

We are cautiously optimistic, but feel we have a winner in reusing these roto-milled tailings. At attachment is a breakout of the AES-300R as manufactured by Texas Emulsions.

Texas Emulsions, Inc.
Port Neches, Texas

Materials Report

Type: AES-300R*

Type of Asphalt Used: AC-3
Producer : Exxon

Test Results

Furol Viscosity @ 77°F,	Sec	46
Residue by Distillation,	%	70
Oil Portion of Distillate,	%	4
Rejunivator,	%	30
Float,	Sec	1200+
Gravity,		1.003
Weight per Gallon		8.35
Residue: Pen @ 77°F, 100 g, 5 Sec		300+

*The "R" denotes rejunivator. Reclimite was actually used.