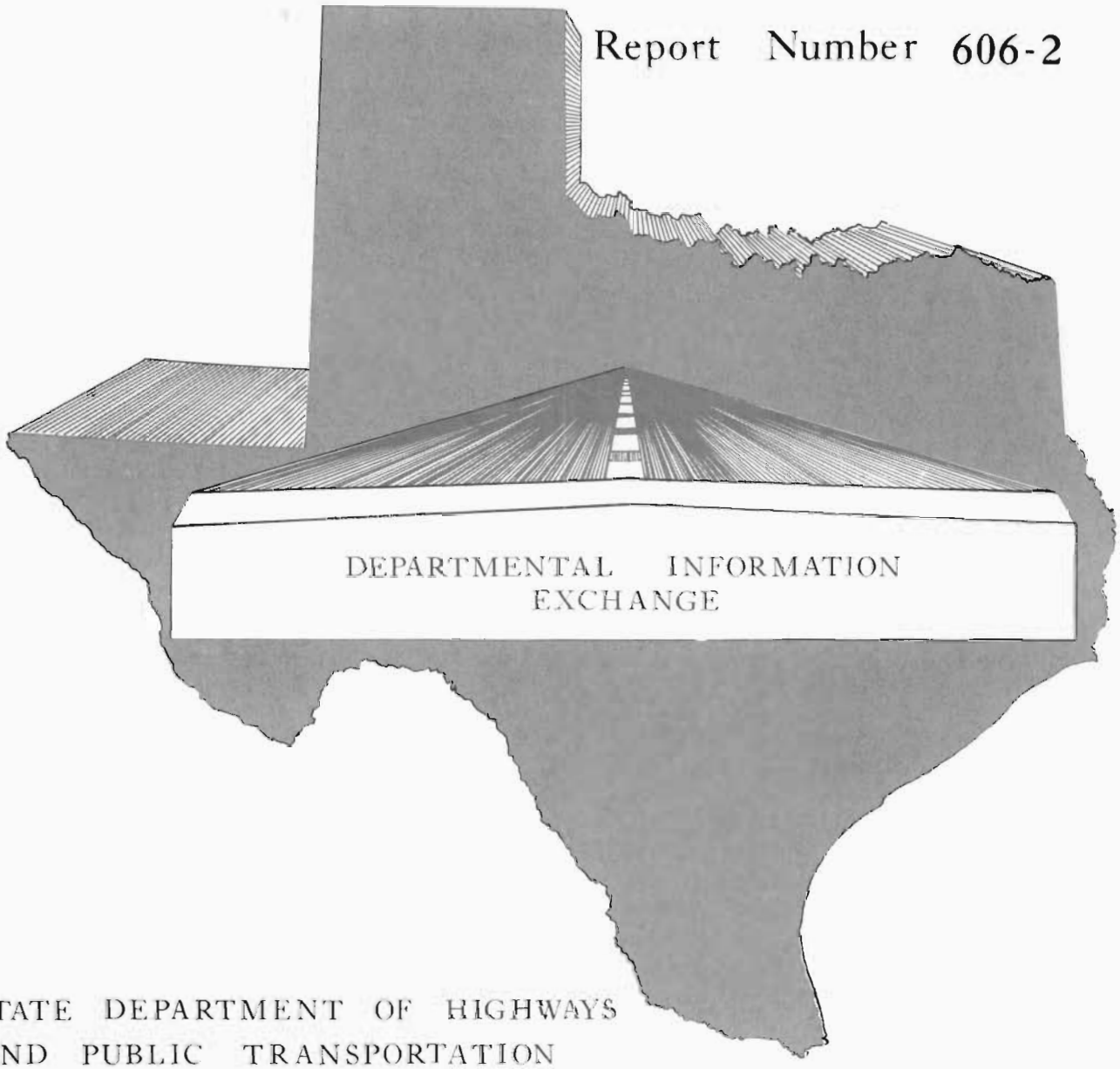
EXPERIMENTAL PROJECTS

A SURVEY OF REFLECTIVE CRACK RETARDATION BY FABRIC MATERIALS IN TEXAS

Report Number 606-2



STATE DEPARTMENT OF HIGHWAYS
AND PUBLIC TRANSPORTATION

A SURVEY
OF
REFLECTIVE CRACK RETARDATION
BY
FABRIC MATERIALS
IN
TEXAS

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This Experimental Projects Report was compiled, composed and assembled in the Transportation Planning Division, Research Section, under the supervision of John F. Nixon, Engineer of Research.

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.

SURVEY RESULTS

Reflective cracking of asphaltic concrete pavements has been a major problem of structural deterioration of roadways for many years. These cracks allow intrusion of water from the pavement surface into the substructure of the roadway.

Solutions to this problem have been and are being evaluated in research projects at many locations. FHWA sponsored departmental studies as well as studies by CFHR and TTI are being conducted to determine causes of reflective cracking and methods to prevent or retard the continuance of this cracking.

Many procedures have been tried throughout the State to prevent or retard the progression of this reflective cracking. One of the procedures that has been tried in many locations is fabric material of various compositions. These materials have primarily been used under hot-mix asphaltic concrete overlays and seal coats or surface treatments (penetration courses). Results of these different materials have varied across the State with "petromat" showing good to very good performance at all locations. Fiberglass fabric has been used in Districts 4, 6, 12, and 23. This fiberglass fabric exhibited a tendency to wrinkle during placement in District 23 which caused considerable construction problems. The crack retardation history has not been sufficient to evaluate in the other districts.

Dupont "Typar" has been used at one location in District 15 as a water seal by placing it on the finished subgrade. This material was placed in an area of extreme soil heaving. The reduction in swell, therefore, would as a side effect, reduce asphaltic surface cracking. However, this material has not been in place long enough to evaluate.

As "Petromat" has been the primary fabric used in Texas, the remainder of this report will pertain to that material type. A survey of districts' experience in reflective crack prevention was conducted. Eight districts, which responded to the survey, have used varying amounts of Petromat fabric in jobs varying from placement in spot locations for experimental purposes to construction jobs which were several miles in length. It has also been used over the joint where old concrete pavement has been widened with flexible pavement.

As illustrated in Figure 1, the principle use of this material has been to place it over various types of asphaltic concrete pavements which are badly cracked. The fabric was then covered with bituminous seal coats and/or hot-mix asphaltic concrete overlays.

The amount and type of asphaltic tack coat used to place Petromat varies with district preference and the condition of the existing pavement surface.

Each responding district states that present roadway surface conditions are good to excellent with a definite reduction of cracks reflecting through to the new surface.

Some districts felt that the evaluation time and performance in their area was satisfactory and are using additional footage of this fabric in the ongoing effort to retard the propagation of reflective cracking. The five other districts felt more time for evaluation of their experimental sections was necessary before additional usage. See Figure 2.

FIGURE I

District	Original Surface	Tack(gal./s.y.)	Type	Cover	Length
4	JCP	.2	AC 10	Part Seal Coat ACP Overlay	1/4 mile
6	ACP	.2	AC(depending on temp.)	Seal Coat and Overlay	4 miles
6	ACP	.15	AC 10	Seal Coat and Overlay	36 miles
8	ACP badly cracked	?	EA 11 M	Seal Coat	Spot Locations
14	ACP	.26	AC 5	Seal Coat & ACP	1 mile
15	Seal Coats & ACP	.10-.15	EA HVRS 2	ACP for level up & then sealed	1500 ft. and various F.M. sections
17	?	.25	Used RC 2 but recommend HVRS-CRS 2	Seal Coat	300 ft.
20	ACP	.23	AC-10	ACP, then Plant Mix Seal	300 ft.
23	?	.2	EA 11 M	Seal Coat	1 mile

FIGURE 2

DISTRICT	PRESENT CONDITION OF ROADWAY	EVALUATION OF MATERIAL	MORE USE EXPECTED
4	smooth asphaltic concrete pavement	early evaluation - good	two jobs under contract
6	excellent, few cracks reflecting through	not in place long enough to evaluate	not until performance further evaluated
8	very good	very good	yes, where needed and money available
14	no reflective cracking	too soon to evaluate	not in forseeable future
15	very good *	good, when properly applied	yes, supply in stock at all times
17	good	good	undecided due to cost of material
20	good	uncertain	uncertain
23	good	good	yes

*In two cases, slippage of fabric occurred when using RC-2 as tack coat. Its performance has not been to the level of the other sections. RC-2 is not recommended.

SUMMARY

Reflective cracking of asphaltic concrete pavements has been a major problem of structural deterioration of roadways for many years. These cracks allow intrusion of water from the pavement surface into the substructure of the roadway.

Many procedures have been tried throughout the State to prevent or retard the progression of this reflective cracking. One of the procedures that has been tried in many locations is fabric materials of various compositions.

In an attempt to determine district use of the materials, the Transportation Planning Division, Research Section, recently conducted a survey of material usage in Texas. This survey reveals that "Petromat" has been the primary fabric used with each user stating that present roadway conditions, where used, are good even though in some cases it had not been in place long enough to evaluate performance. Four districts also used fiberglass fabric. Although it was not to be included in this report on usage of fabric materials to reduce reflective cracking, it may be noted that three districts utilized welded-wire fabric for this purpose.