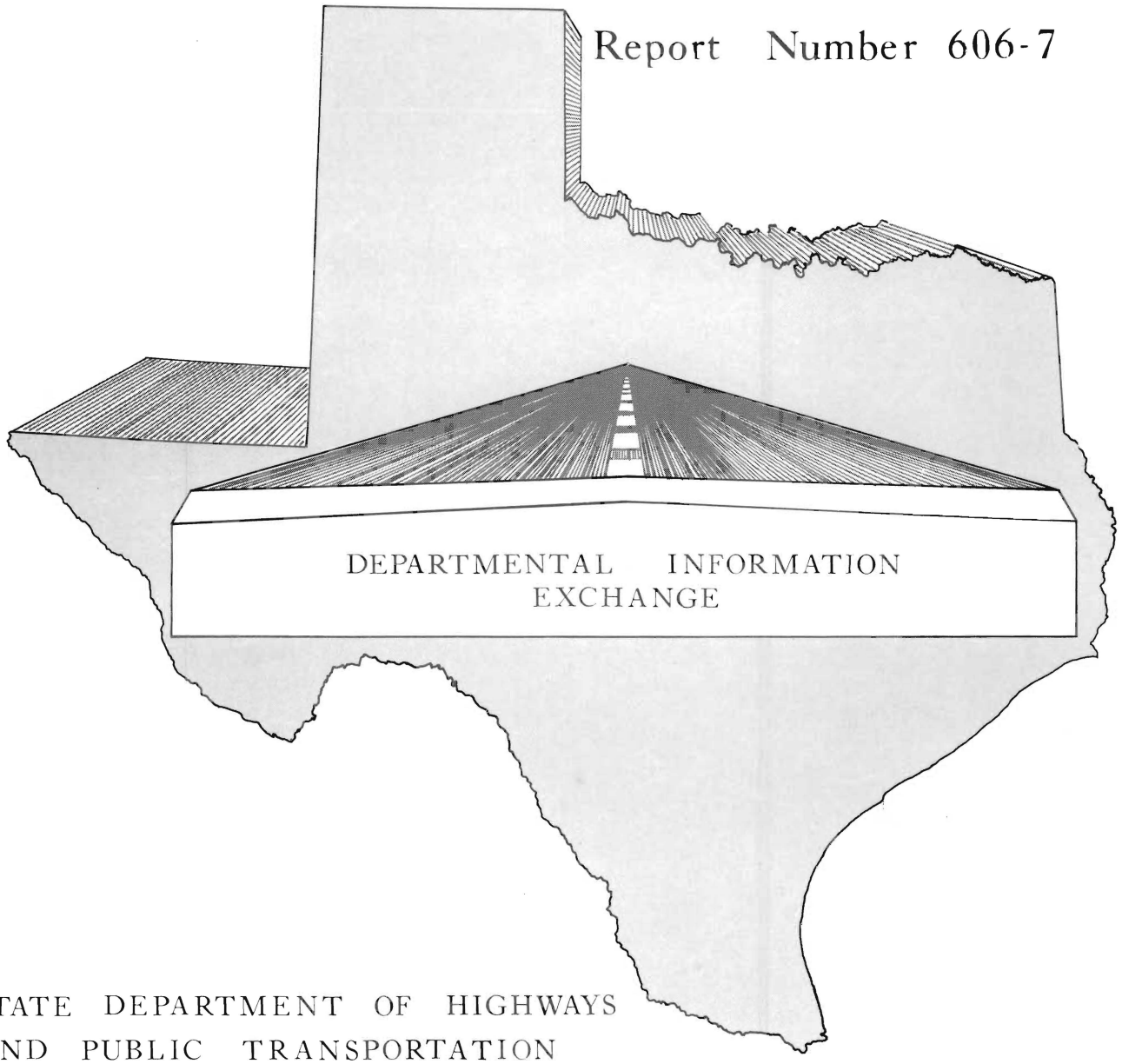
EXPERIMENTAL PROJECTS

APPLICATION OF A FABRIC UNDERSEAL IN DALLAS COUNTY, TEXAS

Report Number 606-7



STATE DEPARTMENT OF HIGHWAYS
AND PUBLIC TRANSPORTATION

APPLICATION OF A FABRIC UNDERSEAL

IN DALLAS COUNTY, TEXAS

by

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Experimental Project Report
606-7

FHWA Experimental Project 7202(D)

Control 196-6-7

Project: MS068(1) P.D. 8073

Loop 354: From North of Mockingbird Lane to South of Loop 12

Dallas County

June, 1982

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Control: 196-6-7
Project: MS 068(1) P. D. 8073
Loop 354: From North of Mockingbird Lane to South of Loop 12.
Dallas County
Contractor: Uvalde Construction Company

Evaluation of Underseals

The plans and specification called for Item 3097 "Thermally Bonded Fabric Seal" to be placed on the southbound lanes and Item 3128 "Polypropylene Fabric Seal" to be placed on the northbound lanes. There was not a product in production which would meet the requirements of Item 3097. Therefore, this item was field changed to Item 3099 "Fabric Underseal" and the contractor chose Monsanto - Bidim. For Item 3128 the contractor chose Phillips - Petromat.

The asphalt was placed with an asphalt distributor. The fabric was placed with a roller mounted on the front of a farm tractor. The rock was placed with a chip spreader.

The asphalt for left turn lanes, median opening, and connections to cross streets had to be placed with a hand hose from the distributor. It was determined from placing a few of the left turn lanes and median opening on the south end of the northbound that using this procedure the rate of asphalt placed under the fabric was excessive. Due to the irregular shapes of these areas there was no other method available to place the asphalt. The excessive asphalt would have greatly increased the possibility of slipage of the fabric. Also, from past experience on other projects, it was likely that some slipage of the fabric would occur in stop areas of the major intersections. Therefore, placing of fabric in the left turn lanes, median openings and connection to side streets was discontinued and no fabric was placed in the stop areas and intersections at Empire Central, Regal Row, Research, Raceway and Bachman.

The only problem which occurred in laying the fabric was with the Petromat. Very often the edges of the fabric curled when the material was layed on the hot asphalt. The edges then had to be ironed down. At some locations these edges had to be nailed down.

The cross section of the roadways before construction began was two-twenty-four foot-one-inch crowned roadways with open drainage in the median and on the sides. The typical cross section of the finished roadway required the addition of a curb and gutter along the median, level-up of the existing roadway to a minimum of 1/8 inch per foot cross slope to the outside and a new third lane along the outside.

For the south section of the roadways (Station 235+77 to Station 316+30) one inch of ACP (base) and one and one-half inches of ACP (surface) was placed over the fabrics. A control section, no fabric, was provided from Station 316+30 to Station 321+30. For the north section of the roadways (Station 321+30 to Station 383+10) one and one-half inches of ACP (base) and one and one-half inches of ACP (surface) was placed over the fabrics.

The five previous mentioned city streets bring to and divert from Harry Hines (Loop 354) large volumes of traffic, but none of these streets continue past Harry Hines as major traffic carriers.

Attached are summaries of Cracks for the different sections of roadway. These summaries give the number of cracks and patterns of cracks for the different sections.

SUMMARY OF CRACKS

Northbound Lanes — Phillips - Petromat — June 22, 1982

Section Description	Transverse Contraction Jt. Complete	Transverse Contraction Jt. Partial	Longitudinal Construction Jt. L.F.	Remarks
Beginning of Proj. to approach to Empire Central Intersection (Station 235+77 to 242+00)	1	12	70' (Approx.)	Longitudinal construction joint crack is at the beginning of section. Most of the partial transverse cracks are in the new lane only.
Empire Central approach and Intersection Station 242+00 to 245+20)	4	2	All	
Empire Central Intersection to approach to Regal Row Intersection Station 245+20 to 293+00)	1	74	1460 (Approx.)	Long. Const. Jt. cracks are across the side streets Most of the partial transvers cracks are in the new lane.
Regal Row approach and intersection Station 293+00 to 297+37)	1	7	All	
Regal Row Intersection to approach to Research Intersection Station 297+37 to 307+51)	0	16	100 (Approx.)	Long. Const. Jt. cracks acros driveway to Simmons Mattress Co. and near Research. Most of the partial transvers cracks are in the new lane.
Research approach and Intersection Station 307+51 to 310+25)	1	5	All	
Research Intersection to beginning of Control Section Station 310+25 to 316+30)	0	8	50' (Approx.)	Long. Const. Jt. crack at Research Most of the partial transvers cracks are in the new lane.
Control Section Station 316+30 to 321+30)	6	6	210 (Approx.)	Long. Const. Jt. crack across Conc. Dr.(Sta. 316+50) and across Shorecrest. Location of partial transvers cracks is in new lane and middle lane.

SUMMARY OF CRACKS

Northbound

Section Description	Transverse Contraction Jt Complete	Transverse Contraction Jt Partial	Longitudinal Const. Jt. L.F.	Remarks
*End of Control Section to approach to Raceway Station 321+30 to 345+45)	15	31	None	The complete transverse cracks are around the Bachman Branch Bridge (Fill Section). The partial transverse cracks are in the new lane and middle lane.
Beginning of Raceway approach to Northside Bachman Intersection Station 345+45 to 355+76)	10	14	200 (Approx.)	Long. Const. Jt. crack across Bachman Intersection
*Bachman Intersection to end of Proj. Station 355+76 to 382+80)	13	29	450 (Approx.)	Long. Const. Jt. cracks across side streets. Most of the partial transvers cracks are in the old two lanes.
Sub-Totals				
Fabric Sections 2½" ACP cover 7,022 L.F.)	2	110	1680 (Approx.)	
*Fabric Sections 3" ACP cover 5,119 L.F.)	28	60	450 (Approx.)	
Non-Fabric Sections 2,572 L.F.)	22	34	1280 (Approx.)	
Totals	52	204	3410 (Approx.)	

Roadway Inspection By

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SUMMARY OF CRACKS

Southbound — Monsanto - Bidim — June 22, 1982

Section Description	Transverse Contraction Jt. Complete	Transverse Contraction Jt. Partial	Longitudinal Const. Jt. L.F.	Remarks
Beginning of Proj. to Empire Central Intersection Station 235+77 to 244+20)	5	17	None	Partial transverse Jt. cracks Mostly in new lane.
Empire Central Intersection and approach Station 244+20 to 247+60)	7	4	340 (Approx.)	
Empire Central approach to Regal Row Intersection Station 247+60 to 296+30)	10	96	200 (Approx.)	Long. Jt. cracks at three of the intersections. Partial transverse Jt. cracks mostly in new lane.
Regal Row Intersection and approach Station 296+30 to 299+80)	2	9	None	
Regal Row approach to beginning of Control Section Station 299+80 to 316+30)	2	15	100 (Approx.)	Long. Jt. crack at Research. Partial transverse jt. cracks in new lane and middle lane.
Control Section Station 316+30 to 321+30)	0	18	30 (Approx.)	Partial transverse cracks in new lane and middle lane.
*End of Control Section to Raceway Intersection Station 321+30 to 345+00)	2	11	None	Complete transverse cracks at ends of Bachman Branch Bridge. Partial transverse cracks in new lane and middle lane.
beginning Raceway Intersection to approach for Bachman intersection Station 345+00 to 357+57)	5	41	None	Partial transverse cracks in new lane and middle lane.

SUMMARY OF CRACKS

Southbound

Section Description	Transverse Contraction Jt. Complete	Transverse Contraction Jt. Partial	Longitudinal Const. Jt. L. F.	Remarks
*Approach to Bachman intersection to End of Proj. Station 357+57 to 383+10)	1	10	50 (Approx.)	Partial tranverse Jt. cracks in new and middle lanes.
Sub-Totals				
Fabric sections 2½ ACP over (7,363 L.F.)	17	128	300 (Approx.)	
*Fabric-sections-3"ACP over (4,923 L.F.)	3	21	50 (Approx.)	
non-Fabric Sections 2,447 L.F.)	14	72	370 (Approx.)	
Totals	34	221	720 (Approx.)	

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