

Rejuvenator Seal Extends Life of Austin, Travis County, Tex. Roads

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Texas' dynamic capital of Austin is located within Travis County, and a great majority of the road network encompasses Austin.

This road system is a blend of moderate and highly traveled residential curb and gutter and lower volume rural areas. Texas uses a gradation numbering system consisting of Type A and B, which are coarse and fine base course mixes; Type C and D being coarse and fine hot mix; and Type F being a fine-graded, high asphalted hot mix used for thin overlays.

Travis County Director of Road Maintenance and Fleet Services Don Ward inherited the maintenance challenge of how to preserve 125 two-lane miles of F mix roadway. Originally F mix was used in residential curb and gutter subdivisions to provide a smooth, appealing surface. But it became evident within four to five years that this mix was prone to weathering and intrusion of moisture, while the high asphalt percent was causing premature oxidation and brittleness in the binder as the lighter oils oxidized from the binder. The county needed a solution to prolong the life of a considerable F mix inventory.

MALTENE-BASED REJUVENATOR STUDIED

In 2005, Travis County looked at the use of a maltene-based rejuvenator that has had over 40 years of use in North America.

Rob Wiggins, president of Pavement Restoration, Inc., Boerne,



Pavement Restoration, Inc., Boerne, Tex., applies Reclamite rejuvenator to pavement in Travis County, Tex.

Tex., reviewed the road inventory with Don Ward and along with Tricor, the manufacturer, provided factual data incorporating many years of experience of how a rejuvenator could extend the county's pavement life cycles.

About that time Travis County executives realized that they needed to be proactive regarding road maintenance. The county Commissioners Court approved this rejuvenation process with an eye to extending pavement life an additional five to eight

years, and hopefully beyond with subsequent applications.

The county placed several full road-width test sections of the rejuvenating agent. They saw excellent absorption and penetration into the binder. Testing done by APART, Inc. (Asphalt Pavement and Recycling Technologies, Inc., Shafter, Calif.) revealed to Travis County that the rejuvenator was fluxing with the binder, and results showed a decrease in microviscosity of the binder in the range of 60 to 300

percent, along with a corresponding increase in penetration values.

It became evident that the rejuvenator could work in Travis County. The use of a rejuvenator was of most interest as product cost was one-third to one-half the cost of the closest alternate, which would be a wear course seal. Using that alternative, the condition of the F mix—along with the many miles of inventory—would have deeply impacted the county budget (wear course seals being chip or Type 1 and 2 slurry are placed on more severely distressed pavements in the county).

PROGRAM COMMENCES

Starting in 2006, Ward and Travis County went forward with a program of rejuvenating 35 to 50 miles per year. The project was let to bid with a tight set of specifications, as the county knew what it wanted to achieve.

Any remedial hot pour rubber crackfilling work was to be done four to eight weeks ahead of the application. In 2008 the program was in its third year. Work is performed during June to August, when ambient temperatures are 65 to 85 deg F (18 to 30 deg C).

The rejuvenating emulsion is applied at application rates of 0.07 to 0.08 gallons per square yard, diluted 2 parts product to 1 part water (0.32 to 0.36 liters/sq. meter). A washed concrete sand is used as a blotter at a rate of 1 to 2 lbs. per sq. yard (0.45 to 0.90 kg/sq. meter). The sand blots any rejuvenator that has not fully penetrated the surface. The rejuvenating emulsion breaks or cures in about 40 minutes.


Typically two to three streets are done at the same time, half of the road per application. Traffic control is maintained by the contractor. Door knockers are used to advise residents

several days ahead of the application, and to-date there has been a 95 percent success rate in clearing the streets of vehicles prior to application.

The subdivision streets are vacuum-swept in 24 to 48 hours after application. A bonus is that because the rejuvenator does not contain asphalt, coal tar base or gilsonite, any tracking

is kept to a minimum with little or no residential complaints.

Factual examples of core data testing are shown in the accompanying table.

Travis County and Pavement Restoration, Inc. have led by example and are showing other Texas municipal agencies their method of extending pavement life at a low cost. 

Travis County, Texas
Top 3/8-inch of Core Samples

Sample Identification	Microviscosity, 25°C, MP		Equivalent Penetration
	0.05 sec ¹	0.001 sec ¹	
Barton Point Drive			
Before	16.0	17.3	24
After	13.0	14.1	27
Bent Bow Drive			
Before	89.0	128	11
After	46.0	78.5	15
Crystal Mountain			
Before	21.0	35.9	21
After	8.98	10.5	31
Green Emerald			
Before	298	355	6
After	16.5	22.6	24
Grimes Ranch Road			
Before	44.0	60.0	15
After	12.4	42.0	28
Kratzman Drive			
Before	28.0	54.0	19
After	9.60	13.2	32
Scul Creek Drive			
Before	37.5	50.0	17
After	9.89	14.3	32
Summer Court			
Before	97.5	106	10
After	55.5	76.0	14
Wavecrest Blvd			
Before	82.0	137	11
After	13.9	15.0	27
Westminister Glen			
Before	54.2	86.4	14
After	37.8	79.9	17
Winchester Road			
Before	118	164	10
After	14.3	19.9	26
Yarrow Court			
Before	68.0	85.2	12
After	19.0	22.0	23

On Travis County, Tex., pavements, the top three-eighths inch of each core was removed for testing. The asphalt was extracted and recovered as prescribed by California Test Method 365 (CTM 365). Viscosities were determined on the recovered asphalt binder using a sliding plate microviscometer (CTM 348). Penetrations were calculated from a nomograph.