

**FIELD EVALUATION OF TOMS MIX PERFORMANCE  
SBS POLYMER-MODIFIED PAVEMENT AND DRY PROCESS RUBBER PAVEMENT  
TEXAS ROUTE 183  
AUSTIN DISTRICT  
LIBERTY HILL, TEXAS**

PREPARED FOR: TEXAS DOT, AUSTIN DISTRICT

PREPARED BY  
DALE RAND  
ATLAS TESTING  
JUNE 14, 2021

**REPORT SUMMARY**

In September of 2019, a portion of Texas Route 183 near Liberty Hill was repaved with a mill and overlay project. The designs used in this project were two modified TOMS C mixes: one modified with an SBS polymer (Control Pavement) and one modified with “dry process” Engineered Crumb Rubber (ECR, Rubber Pavement). Both mix designs were placed in 1.25” lifts.

The base binder used in both designs was a 64 -22 binder produced by Ergon Corporation. SBS was added to modify the binder the binder 2 grades to a 76 -22. The rubberized mix was modified with 12.4 lbs. of Elastiko<sup>R</sup> ECR per asphalt ton, along with a small amount of supplemental binder required to coat and fill rubber pores. Dry process modification involves injecting the ECR during asphalt mix production, permitting mix and binder modification before the mix is placed and compacted. Before field deployment, both mixes were subjected to and passed a BMD analysis that included Hamburg, Texas Overlay and Ideal CT testing of lab-produced samples.

Both the Control and the Rubber pavements were placed and compacted without incident, and both pavements met contract compaction requirements. The pavements have been in service since September of 2019, and TXDOT staff have periodically visually inspected pavement performance, noting no apparent pavement rutting or cracking. These pavements have been exposed to heavy truck traffic, multiple high temperature events and the extreme cold temperatures of the 2020-21 Winter.

In May, 2021, 40 pavement cores were collected by Atlas, and were subjected to a field performance evaluation. During core collection, straight-edge evaluations for both pavements showed no evidence of rutting in the wheel paths. The core performance evaluations included HLWT rutting, Ideal CT and strength testing. As is typical with field data, there was some scatter in the results. In order to fairly compare the control and rubber pavements, core testing outliers were eliminated until the coefficients of variation in each compared test data set (Control versus

Rubber) were roughly the same. The results are detailed in the attached tables and are summarized below:

- After 20,000 passes, the mean HLWT rut depth for the Control Pavement was 11.4 mm, and the mean rut depth of the Rubber Pavement was 7.5 mm.
- The mean Ideal CT Index value for the Control Pavement was 650. The mean Ideal CT index value for the Rubber Pavement was 820.
- The Ideal CT data from produced and cored rubber mixes shows that the plant-produced and field-aged Rubber mixes are performing significantly better after two years of service.
- The mean strength value for the Control Pavement was 119, the mean strength value for the Rubber Pavement was 125.

Field observation of the pavements following two years of service life indicates that the Rubber Pavement is performing comparably to the Control pavement. Core testing indicates that the Rubber Pavement is outperforming the polymer/Control Pavement.