CITY OF FT. WORTH, TEXAS
BLOCK CRACKS

The City of Ft. Worth, Texas under the direction of Mr. Ryan Jeri, P.E. has installed three trial sites since October 1996. These sites compare recycled streets using **ROADBOND EN 1** and a 50% reduction in Portland cement to the typical recycled streets using full rates of Portland cement of 5% to 6%.

The purpose of the trial was to determine if a significant reduction in reflective pavement cracking could be accomplished without compromising the overall strength and durability of the pavement structure. A construction cost savings of $0.60 to $0.80 per square yard was a secondary consideration.

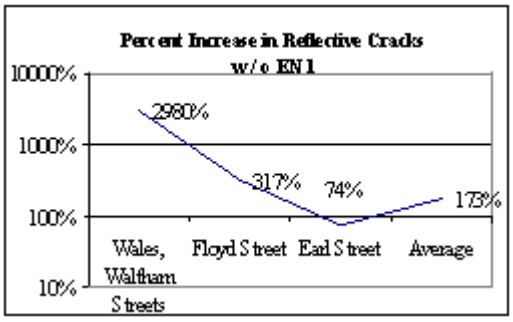
The three trial sites are 3600 – 3900 Floyd Road, 5600 – 5700 Wales Street and 3800 Earl Street. Private contractors installed Floyd and Wales Streets while City of Ft. Worth crews installed Earl Street. Each trial section had a corresponding control section so that comparisons and evaluations could be made.

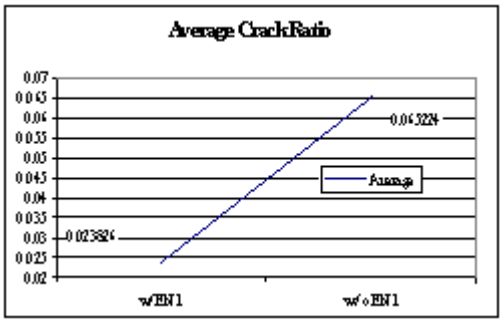
The control section was constructed according to conventional specifications by which the street was recycled to a given depth and dry Portland cement was distributed at the rate of 5% to 6%. The cement was mixed into the pulverized material and water was incorporated to achieve Optimum Moisture Content. At this point the material was compacted to density and shaped to grade.

The trial sections were constructed to the same specifications with the one exception being a 50% reduction in the amount of Portland cement used and the addition of the **ROADBOND EN 1**. The **ROADBOND EN 1** was added at the rate of one gallon diluted into 200 gallons of water per 28.5 cubic yards of pulverized roadbase mix. Once the proper amount of **ROADBOND EN 1** solution was added to the material, untreated water was used to achieve and maintain Optimum Moisture Content.

In order to evaluate the effectiveness of the treated section, the streets were visually inspected by a two-person team and measurements were taken to determine linear feet of reflective cracks, linear feet of repaired reflective cracks and square feet of patched failures. The linear feet of cracks was then divided by the total square feet of each section to determine a reflective crack ratio of each section. A smaller ratio indicated fewer cracks per square foot and once this ratio was established direct comparisons could be made.

Summary of the Ft. Worth Sites

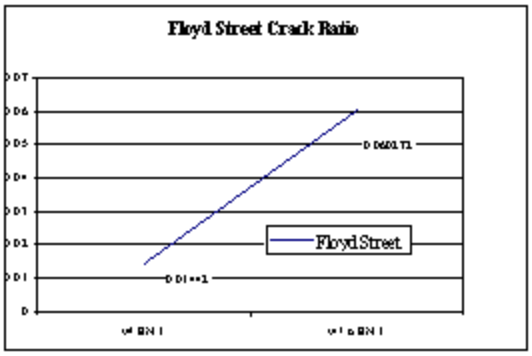




A total of 70,005 square feet of **ROADBOND EN 1** and 50% rates of Portland cement was installed over the three projects compared to 122,730 square feet of control. While no repairs were made to the **ROADBOND EN 1** sections, significant repairs were made to the control sections. The average crack ratio for the treated sections was 2.4% compared to a crack ratio of 6.5% for the control sections. The use of Portland cement alone resulted in 174% more reflective cracks on average and more failures and repairs than a combination of Portland cement and **ROADBOND EN 1.**

Specifics Per Street:

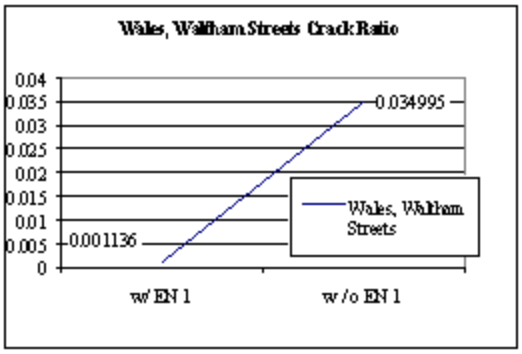
Floyd Street



J.L. Bertram Construction Co. in October 1996 installed Floyd Road. The 3600 block was the trial section, while the 3700, 3800 and 3900 blocks were the control sections. Both sections were paved with an asphalt overlay. The treated section consisted of 6,864 square feet and 28 months after construction had 99 linear feet of cracks with no repaired cracks or patched failures. This resulted in a crack ratio of .01442.

The control section consisted of 67,267 square feet and began to display distress just a few months after construction. Just 28 months after construction the control section had 3,938 feet of cracks with 135 feet having been patched. The section also contained 1,930 square feet of patched base failures. The crack ratio of this section was .060272 or a 317% increase over the **ROADBOND EN 1** section.

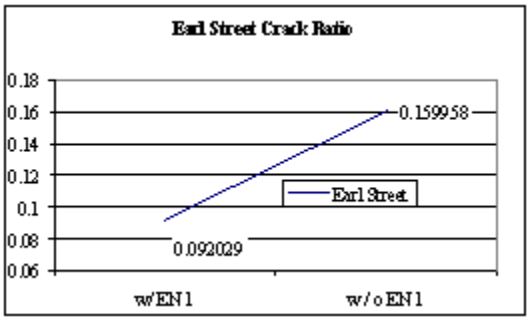
Wales Street, Block 5400-5500



Ed Wilson Construction Company in November 1997 installed Wales Street. Wales Street was the trial section while Waltham Street was the control. Both sections were paved with concrete. The treated section consisted of 46,648 square feet and 15 months after construction had 53 feet of reflective cracks. None of the cracks had been patched. The crack ratio was .001136.

The control section consisted of 40,920 square feet and had 1,230 linear feet of cracks of which 202 feet of the linear cracks had been repaired. The crack ratio was .03499 or a 2,980% increase over the **ROADBOND EN 1** treated section

Wales Street, Block 5400-5500



The Ft. Worth city street crew in early 1998 installed Earl Street. The street was divided in half with the east half being the trial section while the west half is the control section. A fire hydrant on the south side of the street is the demarcation line. Both sections consist of 16,473 square feet with an asphalt overlay.

The treated section had 1,516 linear feet of cracks and a crack ratio of .092, whereas the control section had 2,635 linear feet of cracks and a crack ratio of .1599. That is a 74% increase in cracks over the **ROADBOND EN 1** section.

The graph illustrates the reduction in block cracks resulting from the **ROADBOND EN 1** at 12 months and 6 years after construction. After 6 years the section without **ROADBOND EN 1** had more than twice as many block cracks!