

## **Why is there a City of Leawood Curb Replacement Program?**

D-cracking often occurs in exterior concrete exposed to moisture, freezing and thawing. This common problem throughout the KC metro area became apparent around 2000 when concrete curbs and pavements that were only five to ten years old began to disintegrate. Most of the concrete with the D-cracking problem was placed between 1985 and 2001.

D-cracking occurs when the gravel (aggregate) inside the concrete absorbs water, then freezes and cracks as the water expands during freezing. Aggregate in the Kansas City area has been quarried from limestone area quarries for the past 100-plus years but as the quarries excavate new material, the quality of the limestone changes. In many cases during 1985-2001 the available limestone became “softer”, more porous and would absorb more water. The concrete made with this limestone material began crumbling from within. It typically starts near joints or edges in the concrete where the moisture content is higher. The process gradually spreads towards the middle. That is why in some places where the curb looks in good repair we know that within a few years those areas will fail.

The City of Leawood, along with most of the other local cities, have changed concrete requirements to avoid this problem in the future. Concrete used on projects built by the City no longer allows local limestone. The aggregate in the concrete mix now is very durable, non-porous granite or quartzite that is quarried outside the region and hauled into the KC Metro area.

Between 2000 and 2012 the City began spending as much as \$500,000 each year spot replacing curb and gutter on the mill & overlay project. The curbs that were not replaced in those mill & overlay projects, which appeared to be fine initially, began to fail within a few years. The City would then either add those curbs to another mill & overlay project or have the Maintenance Department complete the spot repairs.

It became apparent after 5 years that the City was spending more money to complete these spot repairs compared to doing an entire curb removal and replacement in the subdivisions where the bad limestone has been identified. The spot repair method is also more disruptive to the residents.

The Curb Replacement Program was added to the City's Capital Improvement Program over a 5 year period to replace as much curb built with the softer limestone. It is anticipated that the new concrete mix design will last 75 years.