

# Full Depth Reclamation is Best Environmental Choice for Austin

Cement and concrete pavement solutions:  
Surprisingly affordable.  
Unsurprisingly durable.



Recycling an asphalt road with cement

For expert help with your paving needs, contact:

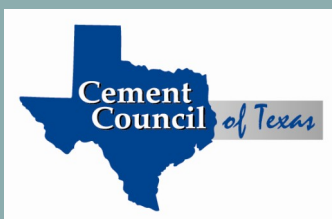
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**Full Depth Reclamation (FDR)** is a construction process that quickly recycles existing asphalt pavements into new cement-stabilized bases. A deteriorating investment becomes a low-maintenance asset, at a 25-40% cost savings over traditional methods.

With FDR, the old asphalt and base materials are pulverized, mixed with cement and water, and compacted to produce a strong, durable base for a new concrete or asphalt pavement surface.

**Life Cycle Assessment (LCA)** is a methodology used for evaluating the environmental impacts of a product or process over its life cycle—from raw material acquisition, through production, transportation, use, and disposal. Inputs and outputs are quantified:

- **Inputs:** Fuels, electricity, materials, and land use
- **Outputs:** Emissions to air, soil, and water.

**City of Austin LCA.** The Cement Council of Texas (CCT) commissioned an LCA that evaluated deteriorated asphalt pavement rehabilitation alternatives for the City of Austin. The analysis was performed by the CTL Group Skokie, IL, in accordance with International Standard ISO 14044 (*Environmental Management—Life Cycle Assessment—Requirements and Guidelines, ISO 2006a*). It was based on one mile of two-lane pavement.

**Remove/Replace Alternative.** Austin commonly reconstructs its asphalt city streets by removing 4.5 in of asphalt surface and 8 in of crushed limestone base. It then lime-stabilizes the subgrade, places 8 in of new base, and 4.5 in of asphalt surface. This is considered a 20-year pavement, and crack sealing maintenance occurs at 10 years.

**FDR Alternative.** The CCT proposed a 20-year FDR alternative where the asphalt surface and 3.5 in of crushed limestone base is pulverized in-place and stabilized with 4% portland cement. A new 2 in asphalt surface is placed, and receives crack sealing at 10 years. Significantly less virgin material and truck transportation is needed with FDR.

**LCA Results:** An LCA's results are detailed and complex. Three key categories show that, over the road's 20-year life cycle:

- FDR requires 51% less energy.
- FDR generates 50% lower CO<sub>2</sub> equivalents (global warming potential).
- FDR emits 36% less respiratory inorganics (including NO<sub>x</sub>, SO<sub>x</sub>, and particulates).

