Life-Cycle Costs of

Streets and Roads

Technical Fact Sheet

Prepared by the
American Concrete Pavement Association and
National Ready Mixed Concrete Association

Life-Cycle Costs of Streets and Roads

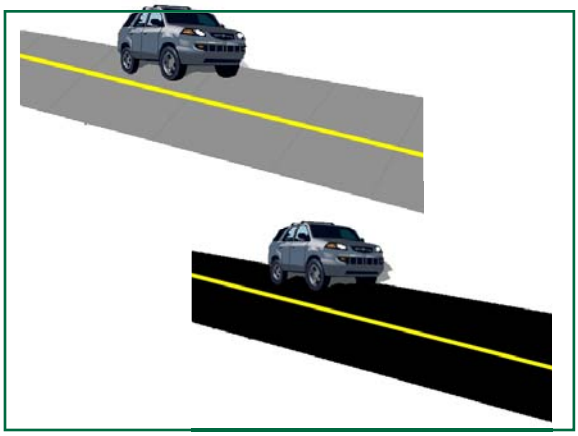
Summary
First costs (also known as installed costs) of pavements has traditionally led to using cheap paving materials ... at least until oil prices became so unpredictable. This document provides some of the basic considerations when determining life-cycle costs of pavements for streets and roads.

Some Basic Principles
- LCCA is fundamentally an economic modeling process, which should be performed with engineering inputs.
- LCCA uses comparable pavement designs.
- LCCA is not specific to either concrete or asphalt pavements; it is a systemic approach.
- LCCA compares pavements over their design life.
- LCCA is expressed in equivalent dollars.

Comparable Pavement Designs
What are comparable pavement designs? They are designs that have the same structural capacity. They also should have similar traffic-carrying capacity over the analysis period, and they should provide a reasonably similar level of service.

Factors to Evaluate
When applying LCCA to pavements, there are significant cost factors that must be considered, including construction costs, estimated preservation and rehabilitation costs, and road-user costs. A number of potentially beneficial factors also should be factored in, too. These include the pavement's durability, performance, and sustainability factors.

When evaluating these variables, it is important to weigh operational considerations to get a complete picture of the environmental "footprint" of a roadway. The more obvious factors typically linked to construction and rehabilitation—recycle, reuse, energy/resource reduction, use of recycled materials, etc.—are important, but so are long-term operational factors.



One of the basic principles of LCCA is that it uses comparable pavment designs.

Examples of these operational factors include vehicle fuel efficiency, pavement surface reflectivity, impact on urban heat island, fuel use associated with preservation and rehab, and other things that impact the sustainability or "ecoprofile" over the pavement's entire life-cycle

Evaluating the Pavement System
Moving on to the actual LCCA, one of the first steps is to evaluate the pavement system, including lane miles; comparable designs; annual construction/preservation budgets and costs; first costs of pavements evluated; relative costs of paving materials; and years of remaining service.

With these general considerations in mind, you are now ready for a thorough evaluation of the engineering inputs.

For questions or assistance with a comparable pavement life-cycle cost analysis in your area, please visit our website at http://www.ConcreteStreets.org to find a local technical representative.

ACPA's StreetPave is a robust software program that is useful in pavement life-cycle cost analysis. StreetPave uses thickness design technology for streets and local road pavements. StreetPave is now available as a free-use online version and as a fully-featured Microsoft Windows® version at http://www.acpa.org/StreetPave/index.asp.

A full version of the software is available at the American Concrete Pavement Association's website, http://www.acpa.org. Click on the "bookstore" tab.