How to Design a Road
To Withstand Time, Traffic, and Taxpayers

Perpetual Pavement Design

Asphalt Surface
Renewed periodically. Maintained to ensure a high level of drivability. Surface type can be customized depending upon needs: open-graded friction courses for safety, stone-matrix asphalt for added durability, Thinlays™ for pavement preservation, etc.

Asphalt Base
Stiff structural layer designed to distribute loads and resist structural rutting. Optimizes materials and costs with use of RAP, RAS, and other recycled materials.

Fatigue-Resistant Asphalt Layer
Flexible layer designed to prevent fatigue cracking and bottom-up cracking. The overall thickness of the structure and the materials of this layer help limit the maximum tensile strain to below the fatigue endurance limit.

Pavement Foundation
The subgrade may be stabilized or unstabilized.

A Design That Limits Distress
A long-life asphalt Perpetual Pavement is designed with optimized layers to create a durable structure that will last indefinitely. Each layer uses different materials to best distribute traffic loads throughout the pavement structure. A thin surface layer provides a safe, smooth, quiet ride, while subsurface layers, which are less impacted by the environment, create a rut-resistant structure. Above the prepared foundation is a durable, fatigue-resistant layer that prevents bottom-up cracking. This design philosophy limits distresses due to pavement loading to the surface where problems are easily corrected through occasional surface renewal.

This Could Be Your Grandfather’s Pavement
Full-depth and full-strength asphalt pavements have been constructed for decades, and continue to perform well. With modern Perpetual Pavement designs, we can optimize materials usage and the design of long-lasting pavements.

The Overachieving Pavement
The Asphalt Pavement Alliance’s Perpetual Pavement Award program recognizes long-life pavements across North America that have never experienced a structural failure. Winners range in age from 35 to 75 years and average 43.25 years at the time of award...and they’re still going strong.

Optimized Designs = Optimized Budgets
With Perpetual Pavement designs, state-of-the-art pavements can be consistently designed with structures that last indefinitely and since optimized designs can yield pavements that are thinner without compromising strength, Perpetual Pavements help to control both initial and life-cycle costs. With a thinner optimized Perpetual Pavement, each inch reduction in pavement thickness can amount to a savings of $20,000 per lane mile.

Maintaining Drivability
A 2014 survey of more than 3,000 U.S. drivers found that 69 percent wanted to see roads undergo (and were willing to pay for) the sort of periodic maintenance Perpetual Pavements receive to ensure a continuously high level of drivability. Furthermore, this sort of periodic maintenance can be performed during off-peak hours with little to no road closures.

A Structure That Lasts
Perpetual Pavements are designed so that the road structure never has to be reconstructed or rebuilt; only periodic, quick surface maintenance is needed to protect the structure and keep the surface smooth and safe. By comparison, concrete pavements must be completely reconstructed: a time-consuming and delay-causing process.

The APA is a partnership of the Asphalt Institute, National Asphalt Pavement Association and the State Asphalt Pavement Associations.