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IDEAS & OPINIONS

Choosing between **asphalt** and **concrete** pavement

Hard-surfaced pavements, which make up about 60% of U.S. roads, typically are constructed with either hot-mix asphalt or portland cement concrete (commonly referred to as "asphalt" and "concrete," respectively). Of those roads, more than 90% are asphalt. Both asphalt and concrete pavements can be designed for long life with routine maintenance and can be constructed as quality products. However, there are many practical, economical, and even political reasons for choosing one type of pavement material over the other for pavement construction.

To understand the practical and economic reasons, a simplified look at how the pavements function is necessary. Asphalt pavements are typically constructed in several layers with a hot bituminous surface. The asphalt may be constructed over a gravel base layer, stabilized subgrade, or natural soils. These pavements are referred to as "flexible" because the total structure flexes under traffic loads. Concrete pavements are constructed with a concrete surface typically poured in one lift over the soils. These pavements are referred to as "rigid" due to the greater stiffness of the material compared to asphalt.

A few reasons asphalt pavements are selected include:

- Asphalt pavements have a lower initial construction cost, allowing agencies to pave more with less funding.
- Traffic noise is generally lower with asphalt pavements.
- Newly constructed asphalt pavements can have a very smooth ride.
- The flexibility of asphalt pavement can help it perform well in areas of expansive soils, especially when coupled with proper subgrade stabilization.
- Routine maintenance can be performed quickly, reducing service interruptions.

Some reasons concrete pavements are selected include:

- Concrete pavements are typically more expensive initially; however, the life-cycle cost of concrete can be comparable to that of asphalt.
- The increased stiffness of concrete makes it able to withstand heavier wheel loads without risk of rutting. This is the main reason concrete pavement is used for bus stops, areas of heavy truck traffic and even loading docks and warehouse slabs.
- Since concrete does not rut, there is less risk of water accumulation on the pavement, which reduces the chance of vehicles hydroplaning.
- During construction, concrete is less dependent upon the subgrade soils and is better able to "bridge" soft spots.
- Routine maintenance can be reduced for some concrete pavements. When maintenance is required, it can be smaller in scope when having to replace select concrete areas.
- Concrete can be colored and/or stamped into a pattern that can be aesthetically appealing.

While there are some recognized benefits to selecting one material over the other, many political factors come into play. Many issues, such as life expectancy, ease and cost of maintenance, and long-term smoothness are hotly debated in the industry. In the end, personal preference and construction costs are often the deciding factor in whether to select asphalt or concrete for the paving material.

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