Asphalt is the sustainable material for constructing pavements. From the production of the paving material, to the placement of the pavement on the road, to rehabilitation, through recycling, asphalt pavements minimize impact on the environment. Low consumption of energy for production and construction, low emission of greenhouse gases, and conservation of natural resources help to make asphalt the environmental pavement of choice.
Less energy consumed in building pavements
Asphalt pavements require about 20 percent less energy to produce and construct than other pavements.1

Less energy consumed by the traveling public
Congestion leads to unnecessary consumption of fuel and production of emissions. Reducing congestion by constructing asphalt pavements just makes sense. Asphalt pavements are faster to construct and rehabilitate. And, a new or newly rehabilitated asphalt pavement can be opened to traffic as soon as it has been compacted and cooled. There is no question of waiting for days or weeks for the material to cure.

America’s leading recycler
According to an EPA/FHWA study, the asphalt industry recycles more than 70 million tons of its own product every year, making it America’s number one recycler. Asphalt recycling saves taxpayers about $1.8 billion a year.

Other materials are routinely recycled into asphalt pavements. Some of the most common are rubber from used tires, glass, asphalt roofing shingles, and blast furnace slag.

Performance

The road doesn’t wear out
Asphalt is the Perpetual Pavement. When appropriately designed and constructed, the road itself doesn’t wear out. Maintenance is simple: only the top layer is removed and replaced. This can be done quickly, even overnight, and it saves taxpayers money. The material that has been reclaimed is then recycled. The newly overlaid road surface (which may also contain recycled material) is a good-as-new pavement. Total removal and reconstruction is not needed. This is a truly sustainable construction process.

Rubblizing for sustainability
When concrete pavements reach the end of their useful life, they must undergo expensive rehabilitation—unless they are rehabilitated through a sustainable process called rubblization. The worn-out concrete is “rubblized” (fractured) and becomes the base for the new asphalt road. This saves fuel that would have been used by trucks hauling the old material away; saves the virgin materials that would have been needed to build a new road base; and can give the traveling public a new Perpetual Pavement. In addition to the environmental and speed of construction advantages, cost savings can be significant.
Public safety
Smooth asphalt roads give vehicle tires superior contact with the road, improving safety.

Open-graded asphalt allows rainwater to drain through the pavement surface, reducing the amount of splash and spray kicked up by vehicles.

Noise reduction
Asphalt is the quiet pavement. Newer quiet pavement technologies include fine-graded dense pavements, open-graded surfaces, and two-layer open-graded pavements. Studies show that the noise-reducing properties of asphalt last for many years. Noise reduction of 3 to 10 dB(a) are common. Reducing noise by 3 dB(a) is about the same as doubling the distance from the road to the listener, or reducing traffic volume by 50 percent.

Asphalt moves traffic along
Asphalt pavements are faster to construct and rehabilitate. In crowded urban areas, where closing a road for rehabilitation or reconstruction would dump increased traffic on neighboring routes, asphalt is the answer. Highways and roads can be milled for recycling, then overlaid, during off-peak hours. An entire freeway can be resurfaced without commuters ever being inconvenienced.

Water Quality

Stormwater management with porous asphalt
Porous asphalt pavement systems can replace impermeable surfaces for parking lots, roads, walking/biking paths, and other applications. Porous pavements can turn runoff into infiltration; restore the hydrology of a site, or even improve it; improve water quality; and eliminate the need for detention basins.

Asphalt pavements do not leach
Once constructed, asphalt pavements have minimal impact on the environment. Studies show that asphalt pavements and stockpiles of reclaimed asphalt pavement do not leach.

Environmental applications
Asphalt is used to construct liners and caps for landfills. The impermeable material is an effective barrier to potential leaks.

Drinking water reservoirs are often lined with asphalt. Asphalt cement is also used to line water pipes that supply potable water to humans.

Oregon and Washington state fish and wildlife agencies use asphalt pavement to line their fish rearing ponds.
Asphalt plants are environmentally sound

Emissions from asphalt plants, including greenhouse gases, are very low and well-controlled. Since 1970, the asphalt industry has decreased total emissions from plants by 97 percent while increasing production by 250 percent. Emissions from asphalt plants are so low, the EPA considers them as only minor sources of industrial pollution.

Cool Cities

The urban heat island effect is not a black and white issue. Porous asphalt pavements have been shown to lower nighttime surface temperatures as compared to impervious pavements. In at least one city, the hottest heat signature is at the airport, with its thick, dense, impervious runways.

Traffic relief

When cars and trucks are mired in congestion, they consume fuel and produce greenhouse gases. Asphalt’s speed of construction allows planners and managers a way to fix congestion hot spots and bottlenecks, quickly and cost-effectively.

REFERENCES


