

Environmental and of A



Because of asphalt's success as a highway paving material, we can easily lose sight that it is also a wonderfully versatile material. It has many diverse applications and can be adapted to a variety of environmental and recreational settings.

For decades, many civil engineering solutions to environmentally sensitive projects have incorporated asphalt. It has been used because it is flexible, strong, chemically stable and nonreactive, impermeable—or permeable—as needed, recyclable, economical and readily available. It has been used to encapsulate landfills, line drinking water reservoirs, canals and fish hatcheries, and to reduce traffic noise.

Contrary to fears by some environmental groups, scientists have established that asphalt, in the form of an emulsion or incorporated into a mixture with aggregates, does not

leach into water, contaminate soil or kill fish. The results of tests for leachability of new hot mix asphalt (HMA) show very low levels of leachable compounds—well below any current Environmental Protection Agency guidelines. Scientists have proved that asphalt is an environmentally safe material.

In addition to its environmental applications, asphalt has many recreational uses. Playgrounds, golf-cart paths and NASCAR tracks are other recreational facilities that take advantage of asphalt's versatility.

Fish Hatcheries

There are more than 35 asphalt-lined fish hatchery ponds in Oregon and Washington. These ponds are used to raise fingerling fish until they are large enough to release. A typical Washington hatchery pond is five to seven feet deep and covers about a half-acre.

The pond liner is constructed of two or three inches of HMA over eight inches of aggregate base. Most liner surfaces are sealed with an asphalt emulsion so that bacteria cannot inhabit the tiny surface irregularities in the HMA mat.

Water Reservoir Liners

California has more than 20 asphalt-lined water reservoirs. The design of a reservoir liner must address permeability, durability, flexibility, resistance to weathering, the ability to absorb stresses during filling and draw-down cycles, and long-term loading stresses caused by settlement in the supporting subgrade.

The composite liners required for large drinking water reservoirs are typically designed using both dense-graded and open-graded HMA. Dense-graded mixes are used to provide an impermeable barrier. Open-graded interlayers are used in the

Recreational Uses

Asphalt



liner structure to monitor and intercept any leakage that may occur.

Landfill Caps

HMA can be used to protect the environment by providing impermeable caps for abandoned landfills and pads for storing hazardous or waste materials. These caps or pads typically consist of hydraulic (impermeable) asphalt, paving fabric and aggregate base. Many of the caps are designed to support haul traffic.

Tacoma, Washington, covered three acres of its landfill for use as a solid waste processing station. The cap consisted of 12 inches of sand to cover the refuse, a high density polyethylene membrane, then 12 inches more sand to protect the membrane from construction equipment. An 8-inch layer of dense-graded aggregate was

placed over the sand and topped with 3 inches of HMA.

Noise Mitigation

Management of roadway noise is becoming an increasingly important part of Departments of Transportation's roadway administration. A number of states have addressed complaints about traffic-generated noise. The standard remedy of installing noise walls is expensive and often ineffective. The walls only lessen sound in a line-of-sight path and can actually increase noise if sounds echo off the walls.

Selection of the proper type of asphalt mix for the surface course can reduce the noise level by 3 to 6 decibels. For more on noise reduction, see page 18.

Recreational Uses

Because of its adaptability, asphalt

fits into many recreational uses. Its smooth surface offers obvious advantages for tennis and basketball courts and running tracks. Its ease of construction and contour-conforming nature is well suited for bike and golf-cart paths.

Professional baseball and football fields are using drainable asphalt mixes as an underlying course for turf playing fields. See the article on HMA racetracks on page 14.

Recyclable, too

In addition to its use in environmental and recreational applications, asphalt is completely recyclable. Reclaimed asphalt pavement (RAP) can be used as an ingredient in hot mix asphalt or it can be used as a foundation material. As RAP, it saves asphalt, aggregate and fuel resources. As a bedding material, RAP substitutes for clean fill or granular material.

Because of its compatibility with the earth, asphalt pavement will continue to be a friend of the environment. Its adaptability, recyclability and economy make it a desirable choice. ▲