

Asphalt Surfacing – Surface Layers (structural)



Traffic Range:

No traffic limitations for most surfacings.

Life Expectancy:

15 to 20 years for most surfacings.

Unit Price:

Material and installation costs are generally higher than for asphalt surface treatments.

Appearance:

Appearance is generally black, but can be influenced by pigments or surface coatings and, in some cases, coarse aggregate color.

Advantages:

Durable; Long life expectancy; Good ride quality; Provides structural capacity to roadway; High quality material.

Limitations:

Higher initial cost than asphalt surface treatments; High energy requirements for construction; Normal black appearance may contrast surrounding environment.

Product Description: Asphalt Concrete Surface Layers (structural) are composed of carefully designed blends of coarse and fine aggregate and mineral filler with asphalt cement as a binder. In general, these surfacings are high quality and durable. More than 90% of the paved roads in the United States are constructed of asphalt concrete surface layers.

Cold Mix Asphalt Concrete Pavement

2.1



Cold mix asphalt concrete pavement.

Photo Source: FHWA-CFLHD

Traffic Range:

No limitations on traffic volumes.

Life Expectancy:

15 to 20 years.

Unit Price:

Material & Installation: \$33 to \$44/Mg
(\$30.00 to \$40.00/ton).

Appearance:

Appearance is generally black, but can be influenced by pigmented binders and aggregate chip color. Surface texture is coarse.

Advantages:

No heating requirements; Plant or road mixing is possible.

Limitations:

Hydrocarbon emissions (if cutback asphalt used); Past experience with CMAC varies from very good to bad, depending on the agency; Generally more reliable as binder course than surface course.

Product Description: Cold Mix Asphalt Concrete (CMAC) is a blend of coarse and fine aggregate with emulsified or cutback asphalt as a binder. CMAC differs from HACP in that no heating is required during the production process.

Exposed Aggregate HACP

2.2



Exposed Aggregate HACP
surfacing.

Photo Source: Golder Associates
Inc.

Traffic Range:

No limitations on traffic volumes; however, surfacing is typically used for AADT < 1,000.

Life Expectancy:

15 to 20 years.

Unit Price:

Material & Installation: \$7.00 to \$12.50/m² (\$5.90 to \$10.50/yd²) based on a 40 mm (1.5 in.) thick layer of HACP.

Appearance:

Appearance will be influenced by the black asphalt binder and the color of the coarse aggregate in the HACP mixture.

Advantages:

Overall surfacing color can be controlled by careful selection of the aggregate used.

Limitations:

Not a common surfacing, so product information and experienced contractors are limited.

Product Description: For exposed aggregate HACP, the asphalt coating of the aggregate at the surface is removed by sandblasting, shotblasting, or other methods. This process results in improved texture and a modified appearance, especially if colored aggregate are used in the HACP mixture.

Hot Asphalt Concrete Pavement

2.3



Hot Asphalt Concrete Pavement.

Photo Source: FHWA-WFLHD

Traffic Range:

No limitations on traffic volumes.

Life Expectancy:

15 to 20 years.

Unit Price:

Material & Installation: \$33 to \$44/Mg (\$30 to \$40/ton).

Appearance:

Conventional HACP is generally black with a fine surface texture. Appearance can be modified with the careful selection of colored aggregates or by the use of pigments in the asphalt cement.

Advantages:

Durable; Excellent ride quality; Very common surfacing.

Limitations:

Asphalt concrete plant is needed in the area; Quality aggregate source is required.

Product Description: Hot Asphalt Concrete Pavement (HACP) is a high quality pavement material that is hot-mixed at a plant and then hot-laid. It is the most common surfacing for paved roads in the U.S., accounting for more than 90% of paved roads. HACP is composed of a carefully designed blend of coarse and fine aggregate and mineral filler with asphalt cement as a binder.



HACP highway.

Photo Source: FHWA-CFLHD



HACP with red aggregate.

Photo Source: Golder Associates Inc.



Imprinted HACP street surfacing.

Photo Courtesy of: Golder Associates Inc.

Traffic Range:

Typical AADT < 1,300. For higher traffic volumes, color and imprint wear will increase.

Life Expectancy:

15 to 20 years.

Unit Price:

Material & Installation: \$60 to \$95/m² (\$50 to \$80/yd²) based on a 40 mm (1.5 in.) thick HACP layer.

Appearance:

Imprinted asphalt concrete can be a highly decorative surfacing. More than 15 different textures (e.g. brick, cobble, herringbone, etc.) and nearly 50 colors are available to choose from.

Advantages:

Durable; Aesthetically pleasing appearance; Can simulate some more expensive surfacings.

Limitations:

High initial cost; Imprinted pattern can cause rough surface.

Product Description: Imprinted asphalt concrete is a decorative paving system that is created by stamping a design into asphalt concrete when it is hot, using a special woven wire cable pattern template. The imprinted asphalt concrete surface is covered with a coating product consisting of cement-modified acrylic resins, epoxy-based polymers, and a blend of aggregates.



Imprinted HACP surfacing.

Photo Source: StreetPrint



Imprinted HACP surfacing.

Photo Source: StreetPrint



Imprinted HACP parking spaces.

Photo Source: Streetprint



Imprinted HACP surfacing.

Photo Source: Streetprint