

Portland Cement Concrete Surfacings

3.0



Traffic Range:

No limitations on traffic volumes for most surfacings.

Life Expectancy:

30 years or more for most surfacings.

Unit Price:

Material and installation costs are typically higher than for asphalt surfacings.

Appearance:

PCC surfacings typically has a smooth surface texture and light gray color. Surface appearance can be modified by using pigments or stains or finishing techniques.

Advantages:

Long life; Very good ride quality; Low maintenance requirements.

Limitations:

High initial cost; Initial construction is time and labor intensive.

Product Description: Portland cement concrete (PCC) is a mixture of aggregate, cementitious material (portland cement, fly ash, silica fume, ground blast furnace slag, etc.), and water that forms a rigid, paved surfacing. Portland cement concrete pavements (PCCP) have very good performance characteristics with respect to strength, durability, and ride quality.

Cellular Portland Cement Concrete

3.1



Cellular PCC concrete placement.

Photo Source: Presto Products Company

Traffic Range:

Typical AADT < 1,000.

Life Expectancy:

20 years.

Unit Price:

Material & Installation: \$16.00 to \$20.00/m²
(\$13.40 to \$16.70/yd²).

Appearance:

Cellular PCC typically has a fine surface texture and light gray color. The geosynthetic cellular support system is not visible in the completed surface.

Advantages:

Supports heavy loads; Does not require steel reinforcement.

Limitations:

Initial cost is higher than for aggregate filled system; Requires cellular confinement system setup prior to concrete placement.

Product Description: Cellular Portland cement concrete consists of a geosynthetic, honeycomb-like, cellular confinement system (geocells) that is filled with Portland cement concrete (PCC). Once constructed, the cellular mat is composed of numerous individual concrete blocks. The resulting product is a flexible surfacing that can support heavy loads.

Exposed Aggregate PCCP

3.2



Exposed aggregate PCCP
entranceway.

Photo Source: Golder
Associates Inc.

Traffic Range:

No limitations on traffic volumes.

Life Expectancy:

30 to 40 years.

Unit Price:

Material & Installation: \$145 to \$200/m³
(\$110 to \$150/yd³).

Appearance:

Appearance is influenced by the coarse aggregate color. Surface texture is coarse.

Advantages:

Appearance can be controlled by careful selection of coarse aggregate; Tire/road noise may be less than conventional PCCP.

Limitations:

Higher initial cost than conventional PCCP.

Product Description: Exposed Aggregate PCCP is constructed of Portland cement concrete (PCC). At the end of PCCP construction, a thin layer of cement paste is removed from the surface to expose the coarse aggregate in the PCC mixture.

Pigmented PCCP

3.3



Portland cement concrete pavement roadway.

Photo Source: Golder Associates Inc.

Traffic Range:

No Limitations on traffic volumes. Surface applied pigments and coatings will wear away faster with high traffic volumes.

Life Expectancy:

30 to 40 years for PCCP. 3 to 6 years for surface applied pigments or coatings.

Unit Price:

Material & Installation: \$6.50 to \$105/m³ (\$5 to \$80/yd³) for pigments, depending on color and intensity required.

Appearance:

Pigmented PCCP typically has a smooth surface texture. Surface color and intensity can be controlled by the pigment color and amount of pigment used.

Advantages:

Surface color can be selected to match the surrounding environment.

Limitations:

High initial cost than conventional PCCP.

Product Description: Pigmented PCCP is constructed of Portland cement concrete (PCC). The pigment can be incorporated in the concrete mixture during mixing or sprinkled onto a freshly poured PCC surface and mixed in during the finishing process, or pigmented sealers or stains can be applied to the hardened concrete surface.

Pigmented PCCP

3.3



Pigmented PCCP surfacing.

Photo Source: Concretenetwork.com



Pigmented PCCP surfacing.

Photo Source: Concretenetwork.com

Portland Cement Concrete Pavement

3.4



Portland cement concrete pavement roadway.

Photo Source: Golder Associates Inc.

Traffic Range:

Very Low to High.

Life Expectancy:

30 to 40 years.

Unit Price:

Material & Installation: \$130 to \$180/m³ (\$100 to \$135/yd³). The use of pigments, stains, or finishing techniques will increase the unit price.

Appearance:

PCCP typically has a fine surface texture and light gray color. Surface appearance can be modified by using pigments or stains or finishing techniques.

Advantages:

Long life; Very good ride quality; Low maintenance requirements.

Limitations:

High initial cost; Potential for increased road noise.

Product Description: Portland cement concrete (PCC) is a mixture of aggregate, cementitious material, and water that forms a rigid, paved surfacing. Portland cement concrete pavements (PCCP) have very good performance characteristics with respect to strength, durability, and ride quality.