

## WHAT IS IT?

Concrete overlays are placed on an existing concrete, asphalt, or composite pavements. There are two types of concrete overlays:

- **Bonded** – Relatively thin concrete placed directly on existing pavements that are in good to fair structural condition.
- **Unbonded** – Usually thicker than bonded overlays, unbonded overlays restore structural capacity to existing pavements that are moderately to significantly deteriorated.

### Why use it?

Many of the nation's roads have outlived their design life and require maintenance strategies for cost-efficient repairs. The Road Information Program (TRIP) estimates the poor state of roads is costing each driver an average of almost \$400 in annual operating costs.

Using concrete overlays is a cost-effective approach that can bring new life to streets and roads. Rather than removing and reconstructing the original pavement, the owner maintains and builds equity in it, realizing a return on its original investment as long as the original pavement remains part of the system. Concrete overlay techniques have been shown to add 15 to 30 years of service life to a roadway compared to 2 to 5 years for asphalt overlays. Initial costs are about the same for concrete and asphalt overlays.

### Bonded Concrete Overlay

- **Process** – A thin layer of concrete (2 to 5 inches) is bonded directly to the pavement surface. Bonding is essential so thorough surface preparation is necessary before restoration.
- **The new pavement** – Bonded together, the overlay and the existing pavement perform as one monolithic pavement with the existing pavement continuing to carry a significant portion of the load
- **When to use it** – For use on pavements in good to fair structural condition. Use on roads and intersections that need added structure to handle the increased traffic loads and volumes.
- **Notable** – Adds structural capacity and eliminates distress. The bonded concrete overlay of an asphalt pavement was previously called ultra-thin whitetopping.



### Unbonded Concrete Overlay

- **Process** – Prior to overlay, a separation medium or stress relief layer is placed on the old concrete pavement to isolate the existing deterioration, prevent reflective cracking and to act as cushioning layer. A layer of concrete (normally 4 to 11 inches) is then placed over the thin separation layer. Existing asphalt or composite pavements do not require the separation layer.

## CONCRETE OVERLAYS

Overlays can be used for surfaces and rehabilitation of mainline highways; high volume streets and local roads; residential streets; heavy industrial/intermodal/military facilities; airport runways, taxiways and aprons; and parking lots.

- **The new pavement** – The overlay performs as a new pavement, and the existing pavement provides a stable base.
- **When to use it** – For use on existing pavements that are moderately to significantly deteriorated
- **Notable** – Does not have reflective cracking or rutting problems. The unbonded concrete overlay of an asphalt pavement was previously called whitetopping.

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### Solutions

- Extends pavement life by 30 years or more
- Makes use of existing pavement layers
- Minimizes pre-overlay repair and eliminates sub-grade rehabilitation
- No rutting, seasonal weakening or reflective cracking
- Reduces user costs and driver frustration – Overlays can be constructed and open to traffic in a matter of hours if necessary.



### Benefits

- **Strength** – Concrete is capable of handling the heaviest loads.
- **Durability** – With an average lifespan of 30 years, concrete can outlast the competition.
- **Low Life-cycle Cost** – With long life and minimal maintenance costs concrete offers affordable, long-lasting value.
- **Sustainability** – Utilizes existing pavement, reduces construction traffic by eliminating removal and disposal of existing pavement, and incorporates recycled waste and byproduct materials into the new concrete pavement.
- **Safety** – Concrete pavements are safer, will not rut, provide significantly higher light reflectivity and excellent skid resistance.
- **Comfortable** – Provides a smooth, quiet ride.
- **Customized appearance** – Modern design techniques offer a variety of aesthetic or decorative choices for each application.



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