

# Roller Compacted Concrete

*in Mississippi*

## A Heavy Duty Pavement

Roller Compacted Concrete, or RCC, is a durable paving material used for off-highway pavement projects, heavy-duty parking and storage areas, dams, and as a base for conventional pavements.

RCC is a less than zero-slump concrete mixture that is placed and compacted with the same equipment used for asphalt pavement.

It is a fast, economical construction method that requires no forms, finishing, or surface texturing.

## Using Local Materials

MDOT needed a material that could be mixed and discharged from a standard transit mix truck at a rate of 50 cubic yards per hour then hauled 40 minutes to the jobsite in a dump truck.

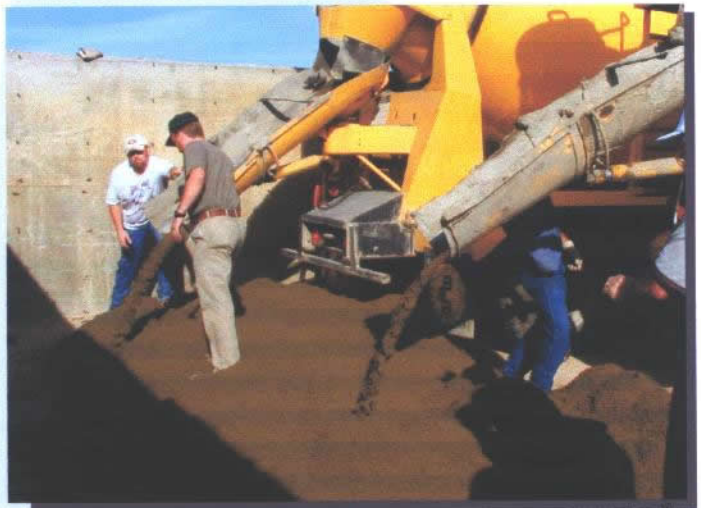
Industry representatives developed several mix designs, experimented with trial batches, held a trial placement of their design and finally settled on the following mix design for the project.

<u>Material</u>	<u>Weight (# per cubic yard)</u>
Cement	300
Class C Fly Ash	168
Sand	1356 SSD
No. 67 Stone	361 SSD
Pea Gravel	1676 SSD
Water	18 Gallons
Hydration Stabilizer	2 oz. per 100# of cementitious

## MDOT's Benton County Pull Off Lane

MDOT needed a tough, economical pavement to construct a pull off lane on Highway 7 just south of its intersection with Highway 72, so MDOT law enforcement personnel could weigh trucks using portable scales. The pavement needed to be able to hold up under heavy loads of the trucks.

Roller Compacted Concrete was the perfect match for the job. On July 10, 2003 the District 2 maintenance crew built MDOT's first Roller Compacted Concrete pavement in Benton County.



# Construction Process



## At the Ready Mix Plant

The Holly Springs plant of B & B Concrete used 4 mixer trucks to mix and discharge 4 cubic yards of RCC per truck. The trucks discharged the mix onto a concrete slab in an aggregate bin and a front end loader was then used to load the RCC mixture into an MDOT dump truck for the 40 minute haul to the paving site.

## Concrete Placement with an Asphalt Paver?

RCC's dry mix allows it to be placed with an asphalt paver. The RCC was then discharged into the hopper of one of MDOT's asphalt pavers which placed the RCC material in two layers approximately 4 inches thick.

No forms were required and there were no dowels or steel reinforcement in the pavement.



## Compaction

Compaction is the most important stage of construction. Compaction of the RCC began immediately after placement with a vibratory steel-wheel roller. A pneumatic tire roller was then used to smooth any rough areas and provide a smooth surface texture.

For appearances, joints were sawed into the RCC to control crack locations. The concrete was then cured with a fine mist of water and covered with plastic sheets.



## Completed RCC Pavement

This RCC pull off lane in Benton County provided a low-cost pavement with the strength to withstand heavy loads and durability to resist rutting. RCC pavements do not deteriorate from spills of fuels and hydraulic fluids and it does not soften under high temperatures.

RCC pavements are the choice for economy and performance in low speed environments.

