ROADS

Stock car racing at the famous Bristol Motor Speedway in Tennessee, USA, has been 'souped up' thanks to the new concrete race track

The new 0.86km track was part of a major project that involved replacing not only the existing worn out track but also adjacent structures. All of the work had to take place within a short 13-week time frame between the spring and autumn race seasons.

Ohio-based Baker Concrete Construction was awarded the contract to build 884m of perimeter crash wall, 1030m of interior crash wall, 33344m^2 of 178mm apron paving, 10,892m^2 of 102mm to 152mm lean concrete base and 10,869m^2 178mm continuously reinforced concrete pavement.

Baker Concrete worked closely with Speedway Motorsports and consulted the race drivers to determine that best track solution. "Many of the drivers complained that the old track's transitions were very short where they came out of the turns and went into the straight-away", explained Steve Swift, construction manager for Speedway Motorsports. "The old track had a transition that rolled the car over from being in the high bank to a relatively flat bank. It actually had a crown in it. For this reason only one groove was run because, in the second groove, the track rolled over and pushed the drivers into the wall".

The new track has the opposite effect. It has a parabolic shape so that the higher the drivers go, the faster they can go and so can keep up with the bottom car. The upper car can keep up with the lower car and overcome distance with speed.

Paving a parabolic-shaped track was not without its challenges. It called for paving on slopes up to 30 degrees and, despite the slope, for a finish that was consistently smooth. Baker Concrete turned to GOMACO for the paving solution.

GOMACO's answer was a SL-450 slope finisher with additional features. Two work bridges followed behind the finisher for handworking, brooming and curing. All the equipment ran on a rail system with the top section of the rail being mounted to the new crash wall using specially designed brackets. "The key was to keep the end of the C-450 paver frame close to the wall to minimize the amount of hand finishing", said Rob Ford, project coordinator for Baker Concrete. "There was a lot of intensive engineering involved to ensure that the machine was in the right place everywhere on the track".

"The slope changes required significant surveying", explained Dennis Ernst, service manager for GOMACO. "The rail height changed as the sloped changed. As the track widened through the transition the rails would widen and adjust horizontally. Slope sensors on the legs of the SL-450 allowed them to automatically adjust to plumb, or a true vertical position as the rails changed widths through the transitions. No manual adjustments were necessary".

The 103mm lean concrete base of the track was finished with the SL-450. The roller was replaced with an augur to provide a rougher finish to help create a better bonding surface for the top finish. The concrete was a standard mix design of a 276 MPa strength. Slump averaged 44mm to 64mm. Paving production on the CRC averaged 13.7m to 18.33m per hour. The automatic advance feature on the SL-450 was set to advance 203mm on each pass.

The Sharpie 500, a major fixture on the stock car racing calendar, was the first race run on the new track. The feedback from the drivers was positive. "The drivers were very appreciative of the track and the way that it drove", said Swift. "Baker Concrete and GOMACO have given us an excellent track. This is an outstanding job of planning and partnership to complete a challenging project in a short amount of time".