Wirtgen │ Widening of the Ruta 5 highway from Montevideo to the Brazilian Border

Efficient concrete paving solutions from Wirtgen ensure the success of a road construction project in Uruguay

One of the five most important Uruguayan national highways connecting to the heartland begins in the capital city, Montevideo. The ‘Five Fingers’ link the larger cities to the capital and are the most important arterial routes in the country. One of these is the Ruta 5, which heads north to the city of Rivera on the border with Brazil.

Up to now, there has only been one lane in each direction. but now, the northbound and southbound lanes of a 75 km section of the highway are being doubled to two lanes. The project involves the construction of the new traffic lanes and rehabilitation of the existing road surface. Four contractors were commissioned to carry out the construction project. The equipment deployed for the project included three slipform pavers SP 64 and two texture curing machines TCM 180 from Wirtgen and a JD 318G skid steer loader from John Deere.

Optimised paving process with DBI

When constructing concrete roadways, the reinforcement in the form of dowel baskets or steel rebar mats is frequently pre-placed ahead of the machine. Considering the terrain, this would, however, have been extremely time-consuming. The pre-placement process considerably limits the space available on the construction site and hinders the manoeuvring of construction vehicles on the site. When the reinforcement is in place, this means that the concrete supplied for the paving work can only be delivered from the side.

Here, the use of the integrated dowel bar inserter (DBI) on the SP 64 brings numerous advantages. Both the dowel bars and the longitudinal joint tie bars are placed automatically across the entire paving width. This increases process reliability, as the dowels and tie bars can always be inserted at exactly the right locations. The concrete can be offloaded and evenly spread immediately in front of the machine. Construction vehicles such as the tipper trucks supplying the concrete have more space to manoeuvre. ‘With this machine, we can achieve a much higher overall level of productivity than with our earlier method of paving the concrete with vibrating screeds.’, says Sebastián Trujillo, machine operator from R&K – Berkes, summing up the advantages of the SP 64.

Cutting-Edge Technologies with 3D Control

Traditionally, slipform pavers are controlled by mechanical scanning of previously installed stringlines. In contrast to this, when using a virtual stringline for 3D control, the height and positioning data for the line to be paved are contained in a digital terrain model. Two prisms are typically installed on the slipform paver, both of which have line-of-sight contact with a total station and reflect its laser beam. The total station determines the position of the prism in three dimensions and transmits it to the machine’s control system. In combination with the inclination sensors on the machine, this enables extremely precise control of the paver’s height and position.

More room on the construction site

In comparison to control by a physical stringline, a virtual stringline offers a number of benefits: The paving crew on the Ruta 5 highway was able to move freely around the construction site, and there was more room to manoeuvre the machines and construction vehicles. At the same time, the drivers of the tipper trucks delivering the concrete didn’t need to think about a stringline being in the way. They were able to drive right up to the slipform paver to offload the concrete anywhere on the site. The time consuming detours to avoid the stringline when leaving the site were also no longer necessary. Apart from the better site logistics, the project managers also made a special mention of the outstanding IRI they were able to achieve with the system. The International Roughness Index (IRI) describes the evenness of the road surface.

Project details

Widening of the existing road from one lane to two in each direction. Construction of the new lanes and the rehabilitation of the existing road surface.

Machines deployed

Wirtgen:   
3x slipform pavers SP 64 with DBI and STBI  
2x texture curing machines TCM 180  
  
John Deere:  
JD 318G skid steer loader

**Construction project**  
Overall length: 75 km  
Section 1: Peaje Mendoza – City of Florida: 30 km  
Section 2: City of Florida - Sarandí Grande 45 km

Overall paving width: 15.6 m   
Paving width per lane: 3.9 m to 5 m   
Paving height: 220 mm   
Insertion of steel reinforcement integrated on the machine Dowels and tie bars

**Photos:**

  
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Slipform pavers and texture curing machines from Wirtgen carried out the precision concrete paving work during the widening of the Ruta 5, one of Uruguay’s most important national highways.

  
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Thanks to an integrated dowel bar inserter, the SP 64 was able to automatically and precisely insert the dowel bars and longitudinal joint tie bars after the JD 318G skid steer loader had evenly spread the concrete in front of the slipform paver.

  
w\_pic\_js\_montevideo\_2023\_sp64\_0039  
The texture curing machine TCM 180 followed on directly behind the SP 64 and produced the desired texture for the concrete road surface. In addition, a dispersion was simultaneously applied to prevent premature drying of the surface and edges.



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Jahuer Flores, foreman from Berkes-Pietroboni, sees advantages in the stringless 3D control of the paving process: ‘It makes it easier to operate the machines according to the plans, and the work is easier because there’s more room on the site. We’ve also had positive experiences with the 3D system when it comes to the IRI.’

Please note: the photographs shown here are only previews. If you wish to publish them in other media, please download the higher resolution (300 dpi) versions from the link provided here.

Video:

 [Please click here to watch the video](https://youtu.be/EvRSszW9IxQ).

[More videos can be found on the YouTube channel of the Wirtgen Group](https://www.youtube.com/@WirtgenGroup).

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