Vögele │ Spectacular road construction project in the Himalayas

Two Vögele pavers involved in the construction of the Zoji-La tunnel in India.

India’s most ambitious tunnel construction project is currently in progress in the heart of the inaccessible mountain range: With a length of approximately 13 km, the Zoji-La Tunnel will provide a weather-independent connection between the Ladakh and Kashmir regions. Two Universal Class pavers from Vögele have taken on the paving work inside and outside the tunnel under difficult topographic conditions and without disrupting the traffic flow.

A major infrastructure project

A mission like no other: one of India’s biggest infrastructure construction contractors is constructing Asia’s longest road tunnel at an altitude of close to 3,500 m in the Himalayas. Up until now, it usually took vehicles more than three hours to cross the Zoji-La Pass. Between November and May, heavy snowfall, avalanches and landslides make it impossible to cross the pass, meaning that the border region of Ladakh depends on airfreight for six months of the year. The new tunnel with a length of around 13 km will change all this: it will shorten the travel time between Srinagar (Kashmir) and Leh (Ladakh) to 15 minutes and establish a safe, all-year-round connection between the two cities.

Ideal pavers for tough conditions

Lead contractor Megha Engineering and Infrastructures Ltd. relied on two particularly versatile, high-performance road pavers from Vögele to assure high quality and efficient realisation of the asphalt paving work in the challenging location. The contractor used a SUPER 1400i for the paving work inside the tunnel: the paving team laid down a 6 m wide layer of dry lean concrete (DLC) with a thickness of 18 cm with the rugged all-rounder. For the paving of the 16.4 km long and 10.5 m wide section outside the tunnel, including access roads and bridges, the contractor deployed a second Universal Class paver, a SUPER 1800-3i. In combination with an AB 600 TV extending screed, the most powerful paver in its class is ideal for a wide range of applications and assured high paving quality despite the challenging topography and weather conditions.

Three layers in two lanes

The team laid down a total of three layers with the SUPER 1800-3i: the 10 cm cement-treated sub-base layer (CTSB) was followed by an 11 cm binder course with a mix formulated especially for the terrain. Finally, a 6 cm surface course of bituminous concrete (BC) was paved on top. The mix used for paving consisted partly of material removed during the construction of the tunnel – which increased the cost-efficiency and sustainability of the construction project.

Precise levelling technology for challenging terrain

To ensure true to grade and slope paving of the three layers, the paving team took advantage of the Niveltronic Plus system for automated grade and slope control. This fully integrated system is precisely matched to the machine technology of the Vögele pavers and can be combined with a variety of different sensors. The paving team used a cross-slope sensor and a height sensor to enable them to cope with the bends and uphill and downhill gradients in the challenging terrain of the Zoji-La Pass. In combination with the cross slope, the measured height on one side of the screed delivered consistently accurate, true to grade and slope paving results across the entire working width. This meant that the road level could be maintained at all times, even in this mountainous region.

Paving with minimal traffic disruption

Due to the heavy traffic, the route could not be completely closed during the paving project. The paving team therefore decided to pave the road in two lanes, one with a width of 5 m and the other with a width of 5.5 m, which allowed one lane to be kept open to traffic at all times.

**Photos:**

  
JV\_SUPER\_1800-3i\_Himalaya\_001\_PR  
Working in extreme conditions: the Vögele SUPER 1800-3i paver played an essential role in the construction of the Zoji-La Tunnel in the Himalayas.

  
JV\_SUPER\_1800-3i\_Himalaya\_002\_PR

Precision paving in challenging terrain: Despite bends and uphill and downhill gradients, the Niveltronic Plus system for automated grade and slope control assured true to grade and slope paving results.

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.

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