ROADS

Paving A19 in Germany

Contractor Eurovia is working on a 14 km section between Kavelstorf and Rostock-Laage (exit for the local airport) on the German A 19 Autobahn using a Wirtgen slipform paver train SP 1500 L.

The A19 is a 124km long highway which leads through the German federal states of Mecklenburg-Vorpommern and Brandenburg. The highway starts in the northern part of the German city of Rostock and connects the Baltic sea coast with the highway A 24 leading to the German capital of Berlin.

The highway A19 is of importance for the international transit traffic as it provides direct trade access to the international port of Rostock: The port of Rostock offers ferry connections to several Baltic sea states, for example to Gedser in Denmark, Trelleborg in Sweden, Helsinki in Finland, Tallinn in Estonia and Ventspils in Latvia.

The SP 1500 L is a lightweight slipform paving train for paving two-layer concrete slabs. The train comprises two machines that can move independently of one another. This feature ensures quick and easy transport, requiring only little disassembly effort. And this feature is very helpful on this particular section as three bridges can be found along the 14km. The paving process takes place in two working shifts: a day shift from 7 am to 7 pm and a night shift from 7 pm to 7 am. Up to 700 m of concrete pavement can be laid during one shift. Washed concrete with a low noise surface texture is used for the 14 km.

A self-propelled, track-mounted texture curing machine TCM 1600 follows behind the slipform paver train for the perfect finishing touches. The unit is equipped with an automatic spraying and sweeping system.

Wirtgen slipform pavers are extraordinarily efficient when used in motorway construction. Dowel bars and tie bars are inserted into the concrete automatically. The large Wirtgen pavers like the SP 1500, SP 1500 L and SP 1600 are capable of paving concrete slabs across the full carriageway width and in single-layer or dual-layer application.

The SP 1500 L is a complete paving train, making it an ideal candidate for paving motorway carriageways. It comprises two two-tracked machines, and is fully equipped for dual-layer paving of motorway carriageways.

An American View of Concrete Pavement Preservation

Having recently celebrated the 50th anniversary of the interstate highway system, it seems appropriate to honour and reflect upon one of the USA's greatest achievements.

It is noteworthy to mention that many of the original interstate highways that were constructed years ago using Portland cement concrete pavement (PCCP) are still in service today, carrying traffic loads many times in excess of their design projections. In fact, it is difficult to imagine what the condition of the interstate system would be today if constructed from other paving materials.

Since the early days of interstate construction, highway funding has failed to match the overwhelming needs posed by the growth and vitality of the US economy. Highway managers face increasing demands with limited transportation funding. This has led many transportation officials to find new and innovative ways to maintain and preserve their existing pavements.

Highway agencies across the country are departing from old traditional reactive maintenance approaches to new proactive preservation strategies designed to protect their highway infrastructure investment. Preserving the highway network is the most cost-effective and efficient means to assure serviceable roadways in the future.

But perhaps the greatest benefit derived from preservation is improved overall performance, measured by attributes such as ride quality, safety and extended service life.

Concrete Pavement Preservation – A Better Way of Doing Business

Across the USA, awareness is growing among transportation officials that concrete pavement preservation, or CPP, pays significant dividends in managing pavements. In states such as Texas, New York, California, Kansas, Missouri, Georgia and others, highway officials realize that their investments in concrete pavement need to be protected to obtain the maximum life span from these pavements.

Highway owners can no longer afford to address their concrete pavement repair needs with short-term solutions such as bituminous patches and thin asphalt overlays.

CPP is a series of engineered techniques developed over the past 40 years to manage the rate of pavement deterioration in concrete streets, highways and airports. CPP is a non-overlay option used to repair areas of distress in concrete pavement without changing its grade. This rational, preventive procedure restores the pavement to a condition close to or better than original and reduces the need for major and more costly repairs later.

In fact, recent reports from the Transportation Research Board state that for every dollar invested in appropriately timed preventive pavement maintenance, $3 to $4 in future rehabilitation costs are saved.

Diamond Grinding – A Gem of a Solution

One CPP method that is used more and more frequently by highway owners is diamond grinding, a procedure used to restore or improve pavement ride quality and surface texture. Although diamond grinding has been available since its first use in 1956 at Davis-Monthan Air Force Base in Tucson, Ariz., recent developments and increased experience have made diamond grinding and CPP the best, first rehabilitation option for concrete pavements.

Diamond grinding corrects a variety of surface imperfections on concrete pavements and should be used in conjunction with other CPP techniques. Diamond grinding restores rideability by removing surface irregularities caused during construction, slab curling, faulting and construction of other CPP techniques. The immediate effect of diamond grinding is a significant improvement in the smoothness of a pavement.

Another important effect of diamond grinding is the significant increase in surface macrotexture and consequent improvement in skid resistance, noise reduction and safety.

Some of the advantages of diamond grinding include:

Reduced road noise - Diamond grinding retextures worn surfaces with a longitudinal texture and provides a quieter surface. Diamond grinding also removes faults by leveling the pavement surface, thus eliminating the thumping and slapping sound created by faulted joints. Noise-level measurements of diamond-ground surfaces indicate a reduction of up to 10 dbA in pavement noise and a considerable decline in the frequency of noise when compared to transverse tining. In fact, diamond-ground concrete pavements can be quieter than many dense-graded bituminous pavements.

Provides a smooth surface that can reduce dynamic loading and increase pavement longevity. Diamond grinding often results in a pavement that is 70 percent smoother than the pregrinding profile.

Reduces accident rates - There is some evidence that diamond grinding may help reduce accident rates, and it does not affect the life of the pavement

Enhances surface texture and skid resistance.

Does not raise the pavement surface elevation.

Can be applied only where improvement is needed.

California State Department of Transportation (CALTRANS) conducted a study to better quantify the expected longevity of a diamond-ground PCC P and its overall effectiveness under various weather conditions and construction practices.

In fact, diamond grinding was first used on a highway application in California in 1965 on a 19-year-old section of Interstate 10 in Southern California to eliminate excessive faulting. The pavement was ground again in 1984 and again in 1997 and is still amazingly carrying heavy traffic nearly 60 years after it was first constructed.

CALTRANS reports that "is a viable and cost-effective rehabilitation measure when properly applied. Diamond grinding not only extends the service life of a concrete pavement, but it also reduces tire-pavement interface noise and improves texture and skid resistance. Because the pavement is much smoother after grinding, highway user costs are also reduced through improved fuel efficiency and lower vehicle maintenance costs. It has been shown that it is possible in California to diamond grind candidate PCCP up to three times during the life span of the pavement.

■ For further information please contact: John Roberts, International Grooving and Grinding Association. jroberts@pavement.com