

4,700 railroad bridge bearings for the new Red Line in Bangkok

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MAURER is pioneering with durable and maintenance-free bearings in the tropical climate of Thailand.

Bangkok. Bangkok is expanding its local transportation network: the completely new 'Red Line' is designed as an elevated railroad. MAURER delivered 4,712 spherical bearings equipped with the sliding materials MSM® und MSA®. In Thailand, durable and maintenance-free bearings of this quality are used for the first time.

The name 'Red Line' is derived from the color code of the local transportation system in Bangkok. The new Red Line is part of the government's master plan aiming to increase local public transportation capacities in the metropolitan area. It stretches from the new main station 'Bang Sue Grand Station' presently under construction to Rangsit in the north and Taling Chan in the west.

The northern line section has nine stations, a length of 21.6 km and is completely designed as an elevated railroad. In each direction of traffic, there are separate 22 m high viaducts with two tracks each. In total, in each direction of traffic, 589 single-span beams follow one another featuring an average span width of 36 m.

New technology for the new railroad line

In Thailand, traditionally elastomeric or pot bearings are used for railroad bridges. The former have the disadvantage of deflection by traffic loads, the latter feature low durability and only allow for limited function control. "We were able to convince the building owner SRT (State Railway of Thailand) that spherical bearings with MSM® and MSA® technology are the appropriate solution for the new railroad line," explains Georg M. Wolff, CEO of Civil Engineering Solutions (Thailand). "These bearings enable maintenance-free and low-wear load accommodation and movement."

Large quantity of high quality

The notable feature is the outstanding material properties. The MSM® sliding material accommodates and transmits high loads, also in combination with highly accumulated sliding paths and temperatures. The calottes are made from MSA®, a sliding alloy that does not corrode even in tropical climate or in a



The 'Red Line' is designed as an elevated railroad on 22 m high viaducts. Each direction of traffic has its own viaduct with two tracks.

Photo: MAURER



Each single-span beam rests on four bearings.

Photo: MAURER



The picture shows a longitudinally sliding guide bearing designed for a structural load of up to 6 MN.

Photo: MAURER

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marine environment. Together, MSM® and MSA® ensure an outstandingly long service life of the bridge bearings.

Each single-span beam rests on four bearings: one free-sliding bearing, one transversely sliding bearing, one longitudinally sliding guide bearing and one fixed bearing. They accommodate structural loads between 3,579 and 8,715 kN (ULS) and feature a diameter of up to 700 mm. They transfer the weight of the load-bearing structure and the traffic loads restraint-free into the pillars and allow for climate-induced length variation of the viaducts.

The challenge was to deliver the large quantity of 4,712 high-quality spherical bearings at a reasonable price and in due time. This was where MAURER could show its strength based on its experience as a worldwide supplier for major projects. The bearings were manufactured at MAURER INDIA in Bhopal in 2015/16. The MSA® calottes and MSM® sliding plates were delivered from Munich.

The installation was carried out by the customer Italian-Thai Development PCL, the largest building contractor in Thailand. The opening of the Red Line is scheduled for January 2021.

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One of the new stations in the northern part of the 'Red Line'. The photographer stood on street level; visible above: the elevated Red Line.

Photo: MAURER



The 'Red Line' features two tracks per viaduct with a track gauge of 1 m.

Photo: MAURER

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Quick facts about MAURER SE

The MAURER Group is a leading specialist in mechanical engineering and steel construction with over 1,000 employees worldwide. The company is market leader in the area of structural protection systems (bridge bearings, expansion joints, seismic devices, tuned mass dampers, monitoring systems). It also develops and produces vibration isolation of structures and machines, roller coasters and ferris wheels as well as special structures in steel.

Maurer participates at many spectacular projects world wide, like for example the world's biggest structural bearings for the Signature Bridge in Wazirabad, Delhi, earthquake resistant expansion joints for the Bosphorus bridges in Turkey, semi-active tuned mass dampers for the Danube City tower in Vienna, or uplift bearings for the Zenit-Football-Arena in St. Petersburg. As for steel structures, the BMW World in Munich or the Terminal 2 of Munich Airport count among the reputed projects. In terms of spectacular amusement rides, to be mentioned are the world's biggest transportable Ferris Wheel R80 in Mexico, the Rip Ride Rockit Roller Coaster in the Universal Studios Orlando or the Fiorano GT Challenge in Abu Dhabi.

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