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# Steel Slag Road technology

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**Why is in news?** Union Minister Dr Jitendra Singh says, India has developed the world's latest Steel Road technology - CSIR- Central Road Research Institute (CRRI), New Delhi

The Union Minister of State (Independent Charge) Science & Technology; MoS PMO, Personnel, Public Grievances, Pensions, Atomic Energy and Space announced that **India has developed the world's latest Steel Road technology**.

He informed that **CSIR- Central Road Research Institute (CRRI)**, New Delhi, which was founded in 1952, has **pioneered the development of a revolutionary Steel slag road technology** which facilitates the large-scale utilization of waste steel slag of steel plants in road construction.

In June 2022, **Surat in Gujarat became the first city in the country to get a processed steel slag (industrial waste) road** built as part of a joint-venture project by the Council of Scientific and Industrial Research (CSIR), Central Road Research Institute (CRRI), Union Ministry of Steel, government think-tank NITI Ayog, and Arcelor Mittal Nippon Steel (AM/NS), at Hazira.

This innovative technological initiative also **addresses the problem of environmental degradation** caused by waste steel slag and unsustainable mining and quarrying of natural aggregates.

CRRI has developed several key technologies for sustainable utilization of waste materials in road construction.

The **Border Roads Organisation (BRO)** also used steel slag to **construct a long-lasting heavy-duty road** at Arunachal Pradesh **along the India-China border area**

The steel slag material was given by Tata Steel Ltd free of cost and transported from Jamshedpur to Arunachal Pradesh by Indian Railways free of cost.

Besides, **India's largest road building agency**, National Highway Authority of India successfully tested the Steel Slag Road technology on NH-66 (Mumbai- Goa).

Nearly 50,000 kms of National Highways have been added in the last nine years, while the pace of construction more than doubled from 12 to 29 km/day since 2014.

In May this year, India achieved a milestone by laying 112.5 lane kilometres of bituminous concrete road within a timeframe of 100 hours.

India's network of National Highways, at 1.45 lakh km, is **now the second largest in the world after the United States**, and it has increased by 59 per cent in the past nine years of the government led by PM Modi.

Construction of National Highway in the country grew to 1,029 kms in January 2023 from 419 kms in August 2022 to achieve this feat.

## Steel slag:

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Steel slag technology in paving the roads is in tune with Prime Minister's "**Waste to Wealth**" Mantra.

Slag is **made up of impurities melted out of the ore during the steel-making process** in most of the Steel Plants.

The steel slag road **not only cost about 30% cheaper than conventional paving** but they are **also more durable and resistant to weather vagaries**.

Steel slag roads have been **found to last ten years as compared to three to four years for bitumen roads**, thus bringing down sharply the maintenance costs.

In Surat, the steel slag road top has been found to weather the erosive saline marine environment while in the cold, snowy and torrential rain prone toughest Himalayan terrain, the steel slag roads have been found to last longer.

**India is the world's second largest steel producer.** For per ton of steel production around 200 kg Steel slag is generated as solid waste.

Steel slag generation in the country is about 19 Million tons per annum and expected to reach 60 million tons by 2030

This huge quantity of steel slag is piled up in and around the steel plants as big mounds and becoming the source of air, water, and land pollution.

The potential valorisation of steel slag as processed steel slag aggregates provides an environment friendly cost-effective alternative of natural aggregates for road construction in the form of steel slag road.