

No rocket science in building, maintaining good roads: IISc professor

Voices are growing shriller against the poor road infrastructure in Bengaluru, even as the state government is wooing foreign investors to the city.



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BENGALURU: Voices are growing shriller against the poor road infrastructure in Bengaluru, even as the state government is wooing foreign investors to the city. A few days ago, Biocon chief Kiran Mazumdar-Shaw too criticise the apathetic attitude of the civic authorities and the state government over the upkeep of city's roads. Ashish Verma, Professor, Transportation Systems Engineering, Convenor, IISc Sustainable Transportation

(IST) Lab, Department of Civil Engineering, Indian Institute of Science (IISc), in an exclusive interview highlights what can be done to achieve good roads in Bengaluru, saying it is not rocket science.

Roads are like the arteries and veins in the body. What needs to be done to ensure that roads are maintained well?

Good quality workmanship, quality road construction material, proper and systematic road construction practices, adequate and fast rainwater drainage from road surfaces are the fundamental aspects important to ensure well-maintained roads and their longevity. Besides, inter-agency coordination is key to ensuring that roads are not dug up freely and frequently. In the case of white-topped roads, it needs to be ensured that concrete is not broken soon after it was laid — for example, on Outer Ring Road where within months of white-topping, the concrete was broken for constructing the Metro rail line. Further, if rainwater drainage is not maintained well, even a road with good quality material and construction will develop potholes in no time. There needs to be adequate capacity rainwater drains on both sides of the road, and proper cross slopes on the roads. If water remains in longer contact with the road surface, the bitumen gets stripped off from stone aggregates thereby losing its binding property, resulting in loose stones and then leading to formation of potholes.

What are the problems that plague the roads in cities, towns and rural areas?

Urban roads are plagued by poor workmanship of contractors and labourers, poor road construction material, improper and unsystematic road construction practices, absence of adequate and fast rainwater drainage from road surface, and corruption prevalent in civic agencies. There is literally a circular economy being created, churning business for a few who benefit from frequent occurrence of potholes/bad roads. Besides these, overloading of vehicles, frequent digging of roads, and poor maintenance of vehicles are issues plaguing urban roads. These also result in higher wear and tear of the road surface.

In rural areas, too, overloading of heavy as well as light commercial and passenger vehicles is a factor causing deterioration of roads. Further, there is a need to upgrade the prescribed standards for rural roads. We should have all-weather roads connecting villages with good surface quality and motorable roads during all months and seasons of the year.

Can you explain the science behind maintaining roads to ensure that they remain in top condition?

There is no rocket science behind constructing and maintaining good roads. For black-top roads, politicians, bureaucrats, and civic agency officials (including technical officers) tend to blame or put complete onus on rain for the bad condition of black-topped roads in Indian cities, including Bengaluru. It is as if rains happen only in India and nowhere else in the world.

Roads are maintained elsewhere on this planet despite rains and even snow in colder places. What is required is basic civil engineering practices, which is taught at UG (undergraduate) level to all civil engineers. That should be followed properly, along with good workmanship and focus on detailing and precision. The roads will then automatically remain in top condition. Also, indiscriminate conversion of black-topped to white-topped roads on the pretext of improving road surface quality and ensuring longevity will only add to problems that are already visible now. For example, concrete slabs have been put on the top of black-topped surface, thereby substantially raising the level of roads and resulting in more instances of flooding in adjoining areas during rain, and while doing so, no care is taken for constructive cross-utility ducts below the concrete surface.

How important is inter-departmental coordination while maintaining roads? How can that be ensured?

Inter-agency coordination is key to ensuring roads are not dug up at will frequently. This results in huge financial losses to the government — mainly loss of public money — and huge economic and social costs to the common people because of an increase in travel time, more road accident-related injuries and deaths, and more pollution, especially that of PM2.5 that leads to more exposure to fine dust particles and corresponding health impacts. A coordination agency like Department of Urban Land Transport with proper powers could be a way to ensure effective inter-agency coordination.

Is it possible to eliminate the menace of potholes on roads? How can that be done?

Considering the circular economy around potholes, some may not like to see roads in good condition. If all best practices are followed, a black-topped road should easily last for at least 5-10 years without requiring any major maintenance. A white-topped road should easily last for more than 10 years without any major maintenance requirements.

How can motorists play a better role in ensuring that roads remain in good condition?
While erratic breaking may have some role, it may not be substantial. Not resorting to overloading of vehicles (beyond set standards) and maintaining the road-worthiness of vehicles are things that motorists can contribute towards maintaining good roads.

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