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Projects for Good

Recycling Aiding Sustainable Road Building in Qatar

Victor Adefolaju Ajayi, Quantity Surveyor, Public Work Authority, Ashghal, Qatar

Summary

The sustainable and innovative materials used in the Road Works Project in the State of Qatar have been designed to look into different types of innovative materials that can been used in the road work construction in the State of Qatar which will be sustainable and cost effective for the future. This case study explores both the rationale and opportunities that exist for embedding sustainability in road construction and it analyses the impact on the environmental and weather conditions coupled with cultural and economic contexts.

Context

The continuous increase in discarded vehicle tyres pose an immense problem, contributing to environmental pollution in Qatar. The magnitude of this issue can be drastically reduced by incorporating crumb rubber, obtained from grinding up whole scrap tyres from cars, trucks, or buses into asphalt concrete mixes for use in road construction projects, parking lots, and other areas.

Aims

- ➜ To reduce the need to quarry more aggregate
- ➜ To assess the benefit of using rubber asphalt to reduce the volume of tyres being sent to landfill
- ➜ To assess the increased pavement performance due to the reduction of pavement cracking and reduction in overall lifecycle cost

The Project

The dry process of creating crumb rubber involves dry rubber particles being added to aggregate and bitumen in a pug mill at the asphalt mixing plant. The rubber is usually mixed with the aggregate prior to bitumen addition. The alternative method is wet process where crumb rubber and bitumen are reacted together at a high temperature to produce a crumb rubber binder. The crumb rubber modified bitumen is added to aggregate in a mixing plant in the same way as any other binder.

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Personal Impact

Qatar Vision 2030 aims to balance innovation and sustainability in and around Qatar, and also dedicates 2.5% of its annual Gross Domestic Product for research and development to encourage and support the key sectors. The Public Work Authority (ASHGHAL), the company I work for, believe that education, innovation and sustainability are the keys to economic growth and advancement. Asphalt on the street of Abdullah Bin Jassim near the iconic Souq Waqif in Doha, Qatar, was painted blue recently as part of Qatar Vision 2030 which aims to balance innovation and sustainable road development. This was part of a pilot project which aimed to reduce the effect of extreme heat in the city. This was achieved by reflecting the heat instead of absorbing it through modifying the road colour. The blue coated asphalt roads will support Qatar's battle to combat the urban heat island effect.

Results

The blue asphalt was a great innovation, the crumb rubber into asphalt was a great achievement, and the recycle process helped in the reduction of waste scrap tyres. Generally, there was great satisfaction in occupant wellbeing and a better atmosphere with improved living and working environmental conditions in the State of Qatar.