Case Study: Tyre rubber in building foundations

UC AND ESR RESEARCH PROJECT

LOCATION
Christchurch

ROLE
Research & Development

TYRES RECYCLED
Passenger | Truck | OTR

WHAT THEY DO
Researchers at the University of Canterbury (UC) and Institute of Environmental Science and Research (ESR) have been investigating the use of finely shredded end-of-life tyre rubber as an additive in building foundations

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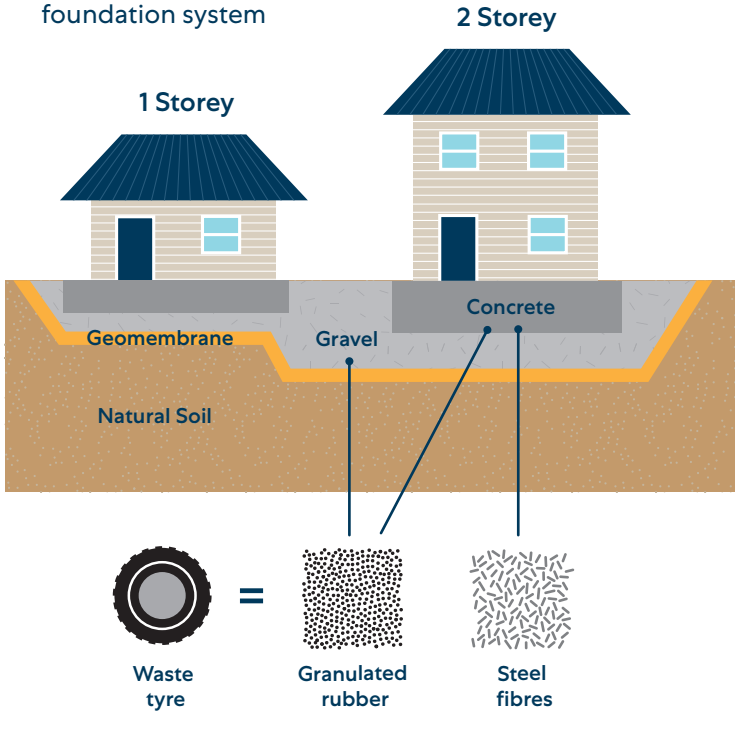
Eco-rubber seismic isolation foundation system



Laura Banasiak (ESR), Gabriele Chiaro (UC) and Alessandro Palermo (UC) assessed the seismic performance of concrete foundations with a tyre rubber additive. The conclusion? A significant improvement in the resilience of foundations in the event of an earthquake.

The work found a mixture using 40% rubber was optimal – the equivalent to 9,000 passenger tyres in the foundations for a 200m2 residential building.

Plans are under way to construct a test building using the system where its performance and environmental impact can be tested in a real-world setting.

The researchers see it as a very promising, cost-effective system for protecting residential buildings against the effects of earthquakes. It has the added benefits of reducing the need for gravel as aggregate and could keep used tyres out of landfill. The ESR did lab-scale testing on leaching and found no toxicity issues.

Building 722 x 200m2 homes in this way would use all the end-of-life tyres generated in New Zealand annually.

"Using tyres in foundations means they are kept out of landfill. It also reduces the need for virgin material such as gravel and makes protecting residential building against earthquakes financially viable. So, we're solving three problems with one solution."

Dr Laura Banasiak, Senior Scientist,
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