Based on the results of a series of deflection tests, prior and after loads are applied, an indicative estimation was calculated on the structural lifetime of roads constructed to traditional Highway specification and alternatively using RoadCem stabilised in-situ soils.
By using RoadCem it is clear that the structural performance after 10 years will be extended for an additional 20-year lifetime when loads of 80 kN are applied. In comparison, the traditional construction will need to be fully reconstructed, resulting in higher costs once it reaches the 10-year lifetime.

RESEARCH METHODS

Simulation

DYNATEST used a Heavy Vehicle Simulator (Figure 5), to simulate the test of the construction during the functional and structural lifetime of 10 years. With this test a wheel load of 2*80 kN is driving over the pavement on a conditioned (temperature, moist) test track, in the asphalt the temperature is conditioned. In the DYNATEST report [2] this data is described for deformations and deflections.

Construction	Stiffness asphalt prior to load	Stiffness asphalt after 10 year	Reduction	Stiffness foundation prior to load	Stiffness foundation after 10 year	Reduction
Traditional	11000 N/mm^2	3000 N/mm^2	-72,72%	3500 N/mm^2	525 N/mm^2	-85%
RoadCem	11000 N/mm^2	3000 N/mm^2	-72,72%	26000 N/mm^2	26000 N/mm^2	0%

Table 21 Reduction structural performance of the materials

On the RoadCem pavement, the difference is relatively smaller before and after the load, at some point there is not even A measurable increased deflection after loading (position=1 m), what seems to be the perpetual pavement behaviour.

Based on the calculated elastic modulus after 10 years, a full BISAR calculation was made to evaluate the ongoing structural lifetime of the pavement.

Construction	Strain value	Fatigue formula	Rest lifetime
Traditional	133 m/m	$N_{eff} = \exp^{(0,33796*(\ln(E))^2-7,3642*\ln(E)+77,142-5,2438*\ln)}$	0,3 years
RoadCem	14 m/m	$N_{eff} = 10^{(22,9-8,561*\log)}$	> 20 years

Table 22 Indicative lifetime