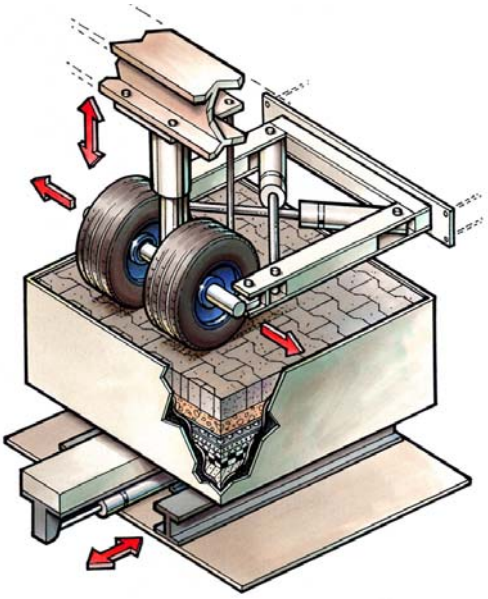
Testing of stability of bonded paved stone surfaces subjected to traffic loads by the Technical University Munich

The internationally renowned test centre for road construction at the Technical University Munich, was given the assignment by the companies **NOPHADRAIN BV** from Kerkrade in the Netherlands, their German representatives - **OBS® Objekt-Begrünungs-Systeme GmbH (Property Greening Systems Ltd)**, Unna and **ROMEX®-PAVEMENT FIXING MORTAR (PFM)** Euskirchen, to test the stability of bonded paved stone surfaces subjected to various traffic loads (cars and trucks) in a rolling testing station.



The main emphasis of the work carried out by the faculty and test centre for road construction is the experimental and theoretical research into the deformation and strain reaction of the upper surface of roads, railways and airports, as well as the dimensioning and development of new systems.

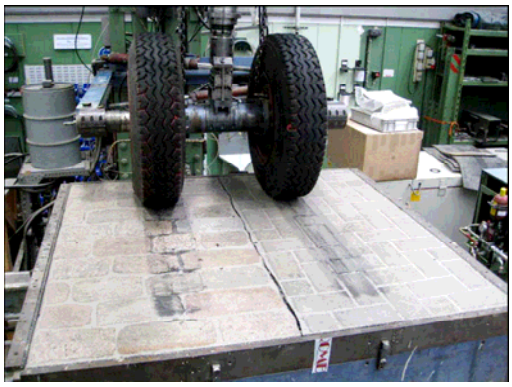
The two different test surfaces were laid using 8cm concrete stone paving stones on the one hand and 12cm natural stone paving stones on the other. The paving stones were pre-treated using **ROMEX®-ADHESION ELUTRIANT**, an adhesion bridge. The pre-treated paving stones were laid into a 6 cm and 15 cm bed made of **ROMEX®-TRASS-BED**, a by ROMEX® specially developed frost resistant drainage mortar.

Then the entire surface was jointed using the modern and proven pavement fixing mortar **ROMPOX®-D2000** in the colour tone „neutral“. With it’s more than 51 N/mm² compressive strength and 2390 N/mm² static elasticity module (more flexible than i.e. cement bound pavement fixing mortars with ∅ 20.000 N/mm²), **ROMPOX®-D2000** displays much better deformation properties and is thus excellent for use in jointing paved stone surfaces subjected to even the heaviest loads.

Both test surfaces were subjected to a total of <u>100.000 roll overs</u> in both rolling directions with phased increases in wheel loads of 5kN ("heavy cars"), 10kN ("small transporters"), 25kN („light trucks) and 50 kN ("heavy trucks").

In order to do this, the over-roll test station was fitted with two truck tires in order to guarantee simultaneous loads on both test surfaces. Finally, on part of the surface laid with natural stone paving stones, a further test phase was carried out to simulate heavy, overloaded trucks (simulation of 60kN wheel load). The tests were carried out under constant, climatic fringe conditions, i.e. at room temperature (approx. 20°C) and without precipitation.

The result:



The part surface laid with natural stone paving stones, showed no damage or significant deformation, even after phase 5 („heavy trucks“) was completed.
The part surface laid with concrete stone paving stones, showed no damage or significant deformation, after completion of phase 3 (“small transporter“).

Using the **NOPHADRAIN** protective and drainage systems and by using the **2 component ROMEX® pavement fixing mortars** as well as **ROMEX®-TRASS-BED**, planners and laying companies have a system for road surfaces that can be driven on for thin layers (approx. 15 cm total construction height) up to a total of approx. 10 tons vehicle weight. Depending on the layer thickness of the **ROMEX®-TRASS-BED,** construction can be carried out for up to 60kN wheel loads (overloaded trucks).

Nophadrain and ROMEX® are the first and only manufacturers from the paving stone construction sector, who offer their customers proof of functionality of the total build, **CE**-marked drainage mats and a system guarantee for the bonded construction method. **Nophadrain** and **ROMEX® spell assurance** especially for specialist firms who nowadays, in accordance with BGB, give a 5 year guarantee to their endusers for all their construction services.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7. beugt Setzungen vor
ROMEX® PFM GmbH
Bert Maurer (Geschäftsführer)
Frank Speichert (Prokurist)
ROMEX® ist Mitglied
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It is these kind of firms that **Nophadrain** and **ROMEX®** stand side by side with all the time!

With regard to this project, you can request details about the testing methods, CE certificates, the ROMEX® certificate as well as all other information from Nophadrain/OBS® and ROMEX® or anytime directly from our website.

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