

Quiet Road Surface suitable for heavy traffic

Traffic is one of the most important sources of annoyance in the Rotterdam Metropolitan Area. Due to the numerous port related enterprises in this area the percentage of heavy traffic (lorries) is quite high compared with elsewhere in The Netherlands. As known quiet road surfaces are mostly prone for heavy traffic because the quiet asphalt is ravelling and wrinkling, etc.

The Noise Expertise Centre of the DCMR EPA has commissioned a consultant and a producer of asphalts (BAM wegen) to develop and apply the asphalts on the Groene Kruisweg that can endure the heavy traffic.

OBJECTIVES AND CRITERIA

Aim of the project is to develop a road surface that is suitable for heavy traffic and can also reduce the noise. Therefore it was planned to develop two kind of asphalts.

- A quiet variant with a reduction of **4 dB** applicable for roads or stretches with much heavy traffic with a constant speed (hardly no stops, no junctions or traffic lights)..
- A durable variant with a noise reduction of **2 dB** for those stretches of the road with a lot of stopping and wringing traffic. Such as happens on and near junctions, traffic lights and roundabouts.

As the 4 stretches are situated in an urban area with a legal maximum speed of **50 km per hour** the type of the asphalt to be developed is only useable on municipal roads. Lifetimes of the quiet road surfaces have been estimated on at least **7,5 year**..

DEVELOPED ASPHALT MIXES

During the design phase it became clear that two kind of variants could be successful. It was decided to develop 2 types of each variants. So in total 4 stretches of the road were laid with different types of asphalt.:

- Mix1 : DGD1, quiet with fine texture;
- Mix 2 : SMA1, quiet with coarse texture;
- Mix3 : DGD2, durable with fine texture
- Mix 4 : SMA2, durable with coarse texture.

DGD is a thin layer, SMA stands for Stone Mastic Asphalt.



stille variant



duurzame variant

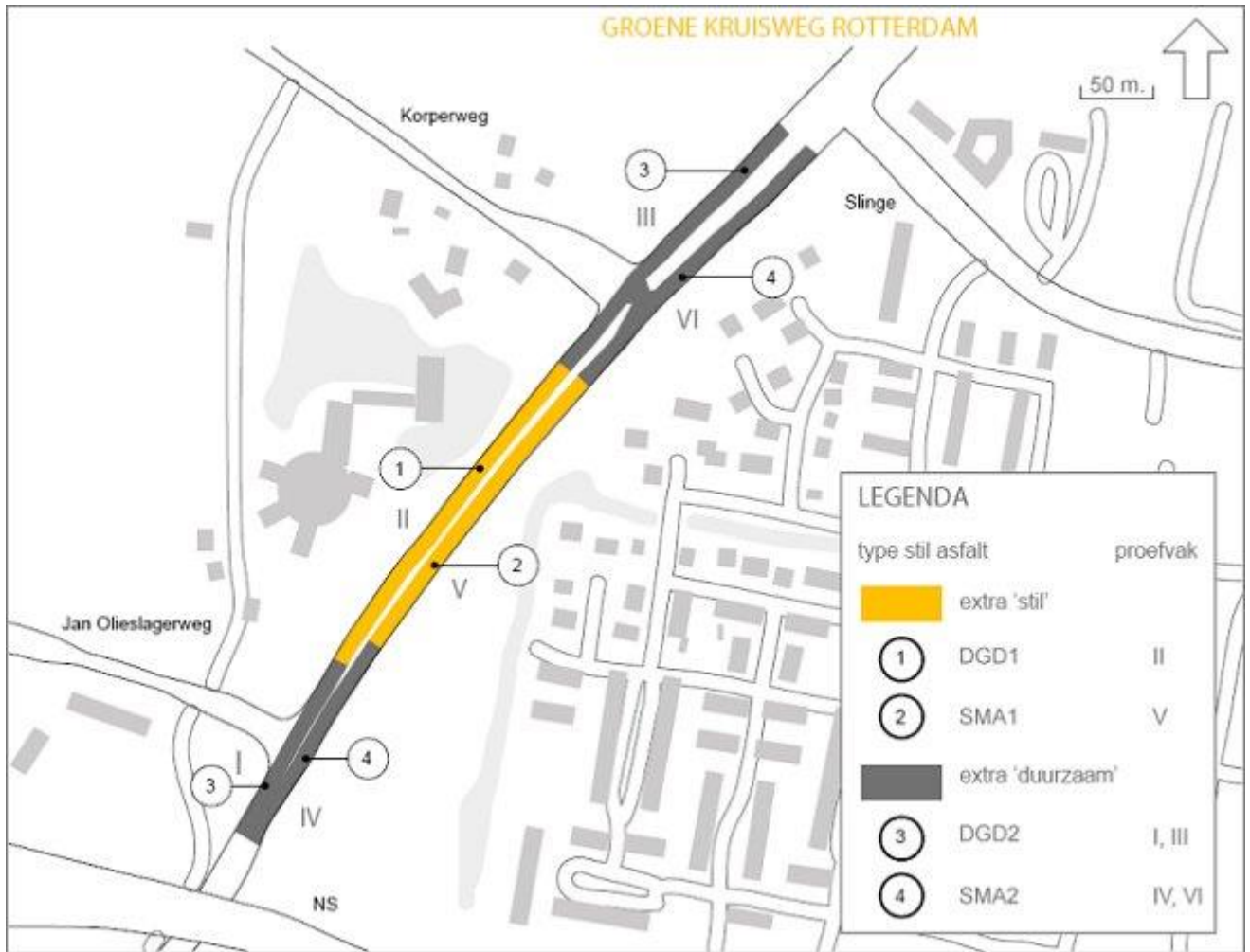
TEST STRETCHES IN THE CITY OF ROTTERDAM

To test the new mixes in practice 4 stretches have been laid on the Groene Kruisweg, a road with a lot of heavy traffic. The tests consist of noise measurements, absorption measurements and texture measurements but also the roughness (grip) of the surface will be measured annually.



Fotos : © Gemeentewerken Rotterdam

The figure below shows the stretches on the Groene Kruisweg with the different asphalt mixes. Yellow is extra quiet and gray is extra durable,



FIRST RESULTS NOISE MEASUREMENTS

On the stretches measurements have been conducted just after the construction of the quiet road surface and one year after laying the asphalts. Table 1 shows the targets per sort of asphalt and the results of the measurements.

Table 1 : Average noise reductions by speeds 50 km/hr

Variant	type of surface	Noise reduction in dB		
		Target for heavy traffic	Measured heavy traffic	Measured for passenger traffic
quiet	DGD1	4	4,0	3,8
durable	DGD2	2	2,3	2,1
quiet	SMA1	4	3,5	4,1
durable	SMA2	2	2,0	2,7

From table 1 can be learnt that the noise reductions of the stretches applied on the Groene Kruisweg still meet the prognoses of the targets after one year. By means of an annual

monitoring (measurements) it will become clear whether these noise reductions will maintain after 2, 3 or even more years or to what extent these noise reductions will shrink. Also the durability of the asphalt will be measured by means of measuring the aforementioned metrics..

PARTIES INVOLVED

DCMR EPA
Municipality of Rotterdam
BAM roads
Van Keulen advies

MORE INFORMATIE

- The DCMR Milieudienst Rijnmond contact person Mr Gert Put (gert.put@dcmr.nl- tel. (010) 24.68.262 can provide you more detailed information.