"The choice for a sustainable pavement"

EUPAVE Breakfast Debate "Tendering for sustainable infrastructure in the circular economy"

Wednesday, 17 October 2018 Altiero Spinelli building, ASP0G, MEP Salon, European Parliament

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Vlaanderen is wegen en verkeer

Where is the Agency for Roads and Traffic (AWV) ?





The Flemish AWV road network





7.694 km bicycle paths

2.613 km adjacent4.121 km separate960 km adjacent raised



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AWV and its annual budget

Regular investments: € 282.405.000	Maintenance: € 174.049.000	Kilometer charging projects: € 100.000.000
Traffic safety:	Traffic flow:	Availability fees:
€ 60.000.000	€ 52.200.000	€ 93.359.000

AWV and its staff

AWV: 1400	Road Engineering Division: 43
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AWV and the Road Engineering Division ?



Organisation of the <u>Road Engineering Division</u>

Subdivision <u>Materials</u>: Main tasks: Laboratory (asphalt – concrete)

- Registrations of asphalt and concrete mixtures
- In situ quality control of asphalt and concrete mixtures
- Research: tar, recycling, test procedures, etc...

• Subdivision <u>Road Structures</u>:

Main tasks: Road measurements (systematic, contractual)

- Give advice to the territorial divisions
- Quality control of the road works
- Annual Reports "Road Network condition"
- Pavement Management System
- Subdivision <u>Noise and Vibrations</u>: Main tasks: noise measurements
 - Design of noise barriers
 - Noise mapping / creating action plans
 - Trial sections with noise reducing pavements













Importance of sustainability

People – Planet - Prosperity Social - Environmental – Economical

Total life: from cradle to cradle !!!





EUPAVE publication



CONCRETE ROADS : A SMART AND SUSTAINABLE CHOICE

ENVIRONMENTAL ASPECTS
ECONOMIC ASPECTS
SOCIAL BENEFITS
OTHER DURABLE APPLICATIONS OF CEMENT AND CONCRETE

deren n verkeer

Sustainability: economic considerations

Evolution of Road Infrastructure Investments and Road Maintenance Investments in a selection of Western European Countries*



* Austria, Belgium, Bulgaria, Croatia, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Latvia, Lithuania, Luxemburg, Netherlands, Poland, Portugal, Romania, Slovak Republic, Slovenia, Sweden and United Kingdom Source: ERF position paper for maintaining and improving a sustainable and efficient road network 9



Sustainability: economic considerations

• Long-life pavements – minimum maintenance

NO MAINTENANCE, IF A GOOD DESIGN WITH A PERFECT EXECUTION [DE WINNE P., 2018]

 Lifetime – Maintenance – Costs throughout the service life of the road (life cycle cost analysis)

For a horizon of 40 years the maintenance cost of an asphalt road is 53% of the installation cost of an asphalt road, the maintenance cost for concrete is 14% of the build cost of a CRCP.

[VAN RUIJVEN J., "Ringweg Antwerpen, een economische afweging van verhardingsalternatieven", Grontmij Verkeer & Infrastructuur Afdeling Wegen, 2002, pp.4-15.]



Sustainability: environmental considerations

 Circular economy: opportunities for recycling in standard specifications

TENDER SPECS SB250: max. 20% in bottom layer of concrete pavement and in bicycle paths: max. 20% TRIAL SECTIONS with 60% to 100% are in service...

 Green Public Procurement: tendering with environmental criteria (AWV trials with provisionally only asphalt roads)

EU GPP is a voluntary instrument: environmental criteria for products and services in the public procurement process





Sustainability: social considerations

- Fewer delays as a result of few road works
- Improved surface characteristics throughout the lifetime of the road, esp. rutting !!!



Noise → Next Generation Concrete Surface (NGCS)

Compared with the SMA-C reference pavement the noise level is up to 4 dB(A) quieter.





Flemish principles of choice of pavement type

- LCCA: exceptionally
- Other criteria: durability maintenance traffic noise …
- Directive on the choice for concrete for highly trafficked regional roads

The choice of pavement

- is primarily decided by structural requirements
- the acoustic performance parameter is considered afterwards



Current policy for choosing between asphalt or concrete pavements

Based on the required bearing capacity in function of the traffic load:

- most heavily trafficked sections => CRCP
- other sections => asphalt pavement (or CRCP)
- => Result: a circular MOW/AWV/2010/10 indicating which road sections should be reconstructed in CRCP:



Current policy for choosing between asphalt or concrete pavements

and "if a more silent wearing course is needed because of comfort noise reasons" these alternatives are possible:

- two lift CRCP with a top layer 0/6.3
- COMPOSITE pavement consisting of CRCP 0/20 or 0/31.5 and a functional overlay with porous asphalt or a low noise asphalt layer (currently mostly SMA-D, other wearing courses are under development)

For maintenance reasons a two lift CRCP (0/6.3) is preferred



EXPOSED AGGREGATE SURFACE	
5 cm TOP LAYER	
18 cm BOTTOM LAYER	> 23 cm CRCP
5 cm ASPHALT)
15 to 20 cm EXISTING LEAN CONCRETE BASE	

THE END

THANK YOU FOR YOUR ATTENTION



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