Longitudinal Joint Study 2002
Sponsored by VBW Asfalt, The Netherlands

Longitudinal joints

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Last year the requirements and quality of longitudinal joints in asphalt were discussed in great detail. The problem with longitudinal joints lays primarily in their very low condensing degree and their very high amount of air void content. This results in such damage as fraying and open joints where moisture can seep in.

At the same time the requirements for longitudinal joint quality were further adapted in the *Standaard RAW 2000*[1] and amendments 2002. The following amendments will be introduced from 2003:

- Core drillings are permitted up to the joint in order to determine the condensing degree and amount of air void content;
- Air void content and condensing degree tolerance will be 2% for both exposed and confined edges;
- Air void content and condensing degree tolerance for joints in ZOAB[2] paving will be 4%;

There are a number of construction methods that can be used to achieve good joint quality, namely:

- Use of the edge pre-compactor, at an angle of 45 degrees in accordance with VBW-Asfalt[3], or where by preference, an angle of 60 degrees + warmed gives better results;
- Warm-in-warm method (a number of pavers stood next to each other) whereby a "mock weld" is created;
- Cut or saw the joint before handling;
- Joint warmer, in which case the paver driving speed is of importance;
- Edge compacting unit, which is frequently used in Germany.

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[1] RAW : "For civil engineering works exists in the Netherlands a system of standardised conditions of contracts annex standardised work specifications for contracts, together called 'RAW-systematiek' (RAW-systematics for contracts for civil engineering works). It is a combined initiative of (governmental) principals, contractors, consultants and suppliers of building materials. The standardised conditions of contract are called 'Standaard RAW Bepalingen' (or short 'Standaard')." *Source: http://www.eapa.org/publications/8209.htm*. See also http://www.crow.nl/engels/.

[2] ZOAB is an acronym from the words *Zeer Open Asfalt Beton*, meaning "very open asphalt concrete". For more information, in Dutch, please visit the site: http://www.vtm.nl/zoab.htm.

[3] The Dutch Asphalt Paving Association

Something we used to take as a futuristic development has become reality. Last year, in 2002, research was begun using the ("Wedge-) Jointmaker". These tools originate from the United States and are intended to further improve joint quality, and in so doing comply with the current issuing of rules.

The Wedge Joint Maker

The Wedge Joint Maker is a joint improver that was introduced into The Netherlands from the United States. It is an instrument of approximately 40 cm wide and must be adapted to the paver beam profile prior to being mounted onto the paver. The Wedge Joint Maker is adjustable depending on the asphalt mixture and the layer thickness of the asphalt layer being introduced. Likewise, the Wedge Joint Maker is meant to be used in combination with the edge pre-compactor to bring about a complete restraint of the asphalt on the spot of the joint.

Figure 1: Wedge Joint Maker

In order to use the Wedge Joint Maker the minimum beam width of the paver must be increased by 100 cm. This means that, in the case of a paver with a beam width of 300 cm, a minimum working width of 400 cm is imperative. The improvement of the condensing results, with respect to the method of reference, measures approximately 1%. This research took place on the asphalt mixtures STAB 0/22 and OAB 0/16. The same asphalt mixtures, as well as an edge pre-compactor, were used as the method of reference.

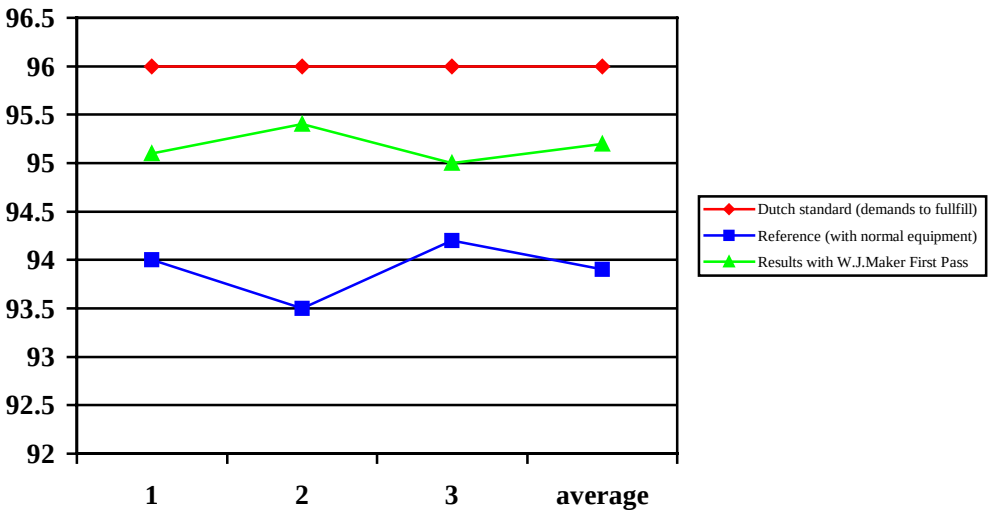


Chart 1: Wedge Joint Maker Data

Joint Maker

The Joint Maker also originates from the United States. The instrument is approximately 20 cm wide and needs to be adapted to the beam profile before being mounted on the paver. The Joint Maker is situated against the end gate of the paver beam and is very easy to mount. At the same time the Joint Maker incline is adjustable depending upon the asphalt mixture and the layer thickness of the asphalt layer being introduced. The Joint Maker is always used in combination with the edge compactor in order to create a complete confinement of the asphalt and, therefore, also optimal condensation.

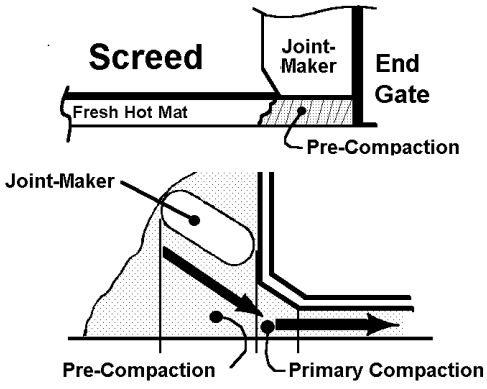
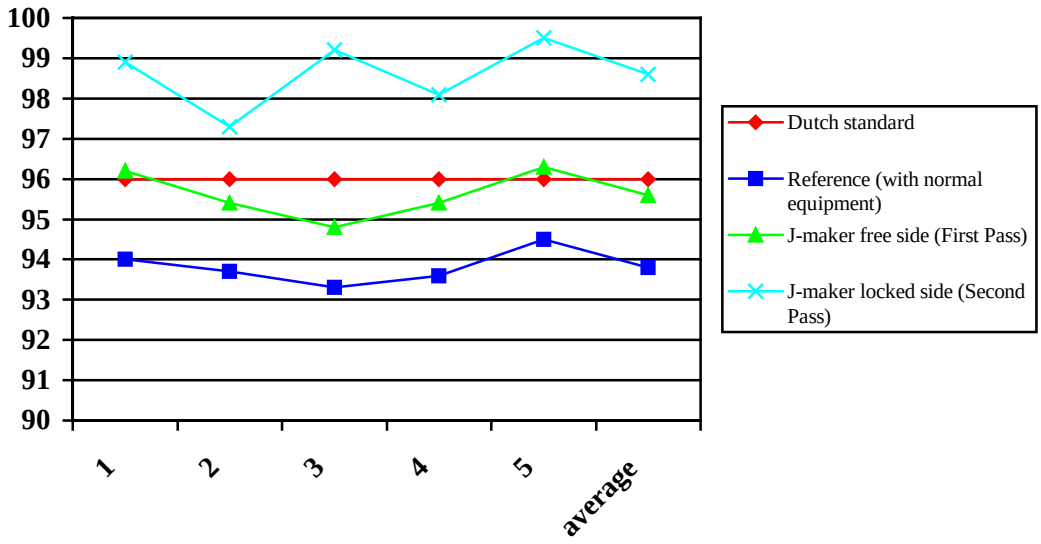


Figure 2: Joint Maker

The condensation results of the Joint Maker are particularly positive. During the test phase in 2002 the Joint Maker was tried and tested on OAB 0/16 and STAB 0/22. The



study results show that the Joint Maker delivers a positive contribution of approximately 1 to 1.5% with an exposed edge and about 3% with a confined edge.

Chart 2: Joint Maker Data