

The Ideal Project



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In the asphalt sector the knowledge and technology is available to deliver more durable products, but until now there is in most cases no incentive for the construction companies to use the latest technology and to innovate.

This is mainly due to tendering procedures used. In the present tendering systems mostly the costs are the only criteria used and the lowest bid is awarded. Awarding the lowest bid is only likely to result in the lowest permissible quality nor does it stimulate the use of the latest sustainable technologies and innovations.

To show the possibilities that are available for using a different tendering system and to show the technologies that are available to pave high quality pavements the European Asphalt Pavement Association – EAPA – recently published the Position Paper “The Ideal Project”.

This Position Paper provides tools for increasing the durability of asphalt pavements by providing good examples in all stages of the project from the design preparation stage until maintenance.

The durability of asphalt pavements is very important because the availability of the road network is getting more and more essential and that means that roads should be built to last for a very long period and the amount of maintenance needed has to be reduced.

Durability of is not only essential for the availability of the network, it is also related to the effective use of material. Effective and efficient use of materials and a better durability of products also leads to a lower Carbon footprint, less need of resources and that is better for the environment. Durability also leads to cost savings in the end because of the more efficient use of material.

The right choice of the “Tendering procedure” gives the road authority the opportunity to obtain the quality it would like to have.

To be able to achieve a higher quality it must be specified by the road owner. This can be done in various ways. The road authority can use e.g.:

- A best “quality/price” ratio or a bonus/malus-system
- Functional requirements
- Green Public Procurement criteria

If a construction company is rewarded for improved performance, robustness and efficiency of road infrastructure, he has the incentive needed. This will stimulate using the state of the art technologies, processes and materials across all types of networks.

To achieve a long lasting pavement a good pavement design is essential and for the execution of the work the devil is in the detail and uniformity plays a key role.

A uniform asphalt mixture, uniform in temperature and gradation is important to obtain a uniform pavement structure. Uniform temperatures of the asphalt mixture are essential to get a good evenness of the layer and to obtain a uniform compaction.

So this starts with the asphalt production with a constant temperature. Good procedures for loading and unloading asphalt trucks should be followed to avoid mixture segregation (during loading) and to avoid temperature differentials in mixture (cooling) during transport. The trucks have to unload in a correct way and Material Transfer Vehicles (MTV) can be used when needed to avoid stops and to remix the asphalt to get a homogeneous and uniform mixture (again).

A constantly moving paving operation is possible without stops and starts with a balanced plant production, sufficient transport, a paver with the right capacity and adequate roller capacity. A constant paver speed should be maintained for getting a uniform pavement layer and stops should be avoided because they can lead to unevenness and cooling down of mixture. An MTV can be used to create buffer to avoid stops/starts.

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For the asphalt transport track and trace systems can be used to inform the paving crew about the expected arrival time of the next trucks with asphalt, the amount (and type) of asphalt delivered and the amount to be delivered.

Hand raking should not be done unless absolutely necessary.

Information technology is available to assist the paving crew in obtaining a homogeneous and uniform pavement layer; uniform in grading and also uniform in temperature.

To check the asphalt temperature and the uniformity of the asphalt temperature behind the screed the asphalt temperature behind the screed can be measured with an infrared line scanner. This asphalt temperature can be displayed on the paver or on a 4G mobile phone / iPad.

A uniform asphalt temperature behind the screed is important to be able to compact the asphalt uniformly. In Norway and Sweden the contractor gets a bonus when the temperature is uniform and he gets a penalty when the temperature is not uniform.

A uniform good compaction is important for obtaining a durable pavement structure. In fact good compaction is essential for all pavement layers because it increases stiffness of the layers, without hardly any additional material cost. For asphalt it also increases the resistance to permanent deformation, it improves the fatigue behaviour, it reduces water permeability of the asphalt layer and it minimises or prevents moisture damage.

There are systems available where the asphalt temperature measured behind the screed is sent to the roller and displayed. When the roller driver knows the temperature window within which he has to compact the asphalt, he can adjust his roller scheme to the asphalt temperature measured and displayed. This all leads to a more uniform compaction.

Next to that a Continuous Compaction Control systems can be used to assist the roller driver in obtaining a uniform compacted pavement structure, which is important for obtaining a durable pavement.

Such a Continuous Compaction Control system combined with GPS can show the roller driver:



- Stiffness values as a map
- Temperature of asphalt, speed of roller, amplitude & frequency as a map
- Trend of stiffness values
- Exact geographical position
- Number of passes
- Date and time of passes

All these data can be stored to.

For durable and long lasting asphalt pavements good performing longitudinal joints are essential, otherwise they will lead to earlier than normal rehabilitation.

A proper bonding (bond coat / tack coat) between the layers is essential for the bearing capacity of the pavement.

“The Ideal Project” paper also addresses Quality Control, Quality Assurance, Process Control and Local maintenance and Major maintenance techniques and it provides an example of Treatment Selection Guidelines.

The aim of the Position paper is to encourage all working in the asphalt industry and at the road authority side to contribute to making more durable asphalt pavements. It provides techniques and procedures as well as the latest technologies.

The paper presents information everybody should know for creating durable asphalt pavements. It is not providing all the knowledge that is needed in the different steps of road design, road building and road maintenance, because it is totally impossible to have all that information in one paper. This document can be seen as a starting point of a whole library and as appetiser. For more information and details good references are provided. The paper goes further than the standard books; it is meant to bring new ideas that go on top of that.

The paper can be downloaded from the EAPA website:

<http://eapa.org/userfiles/2/Publications/Position%20papers/The%20Ideal%20Project.pdf>