

Planning the asphalt construction process

Aligning paving and compaction

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A changing road construction industry

- Increasing use of innovative contracts types (change of risk profile), e.g.
- Longer guarantee and warranty periods on the work delivered;
- Maintenance and repair included in contracts;
- Penalties for disturbing traffic during maintenance actions;
- Thus; Quality of asphalt layer is (more and more) a key issue!
- Requires a different, i.e. method-based approach for construction phase

The current (Dutch) practise

- Usage of standard roller set for each job



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The current (Dutch) practise (2)

- Usage of standard roller set for each job, but different types of jobs!



- Planning, preparation and organization of the paving process is a must;

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Considering that;

- Paver and roller compactor output should be aligned (consistency!);
- Important relationships between optimal compaction, available time for compaction and quantity of asphalt to be compacted exist.
- Various roller strategies and roller types can be applied, (depending on asphalt characteristics, road geometry and other factors);
- We have to assess all these factors before we put our equipment on site!

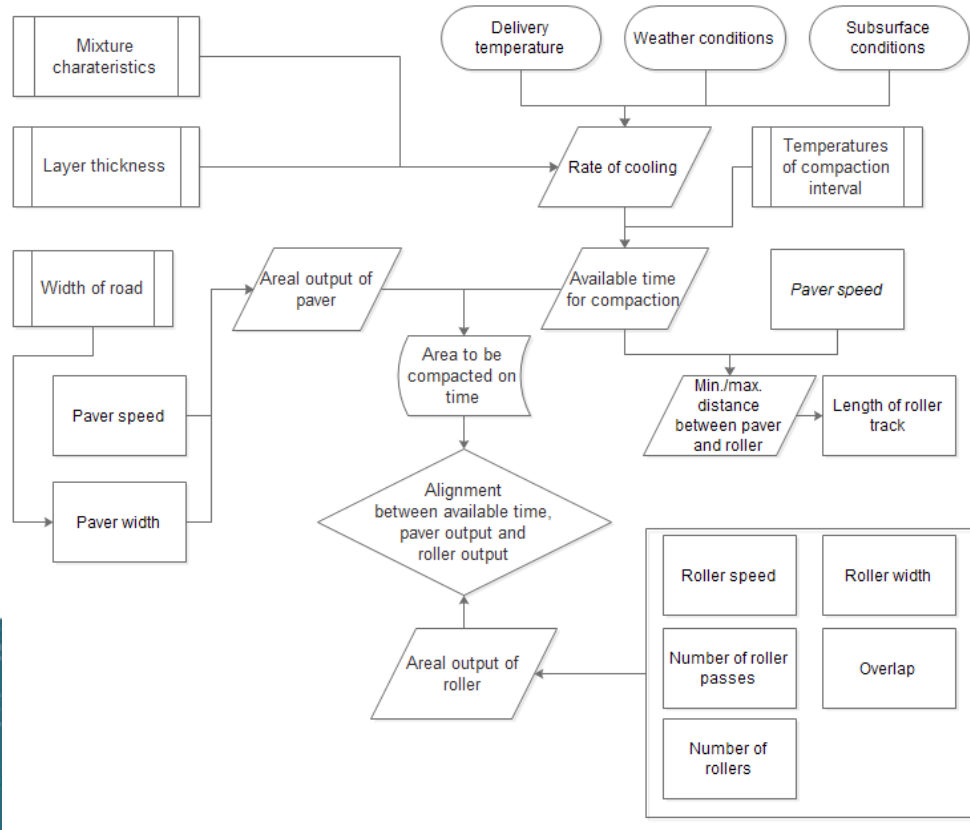
This requires;

- Proper work preparation and organization of the paving and compaction process;
- Alignment between asphalt production, transport, paving and compaction phase;
- Change in thinking at the planning stage (considering the compaction process as a whole and not as separate boxes);

Goal: Setting up a DST

- Setting up a Decision Support Tool (DST) for the planning phase, which
 - makes equipment allocation explicit
 - makes operation compaction strategies more explicit

Basic setup of the DST



The leading discipline (?)

- From production to compaction or from roller capacity to production?



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The DST planning procedure

- Six steps
- Input and output in Excel interface
- Based on averages
- Filled in by planner or site engineer

Step 5a: Calculation of operational roller variables

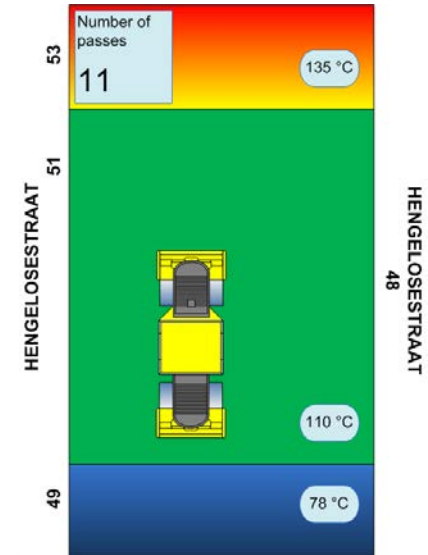
l) Operating width of paver	6 m
m) Average paver speed	5 m/min
n) Estimated efficiency factor for paving	0,9 -
o) Estimated efficiency factor for rolling	0,8 -
p) Average roller speed required	45 m/min
q) Length of roller path	54 m

Conclusions

- Explicit planning the asphalt paving and compaction process is a must
- DST is an appropriate tool for planning the asphalt paving and compaction process.
- But; good average results over the entire road section do not immediately imply good results on each subsection of the road.
- Thus; Field Monitoring on regular interval scale is necessary.

The road to improved asphalt pavings

- Ongoing research by ASPARi – UT, e.g.
- Real time information and visualisation for operators
- Requires machine-2-machine (m2m) communication



Thank you for your attention!

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