



Session 2 **DESIGN**



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DECivil - IST

Road Pavements: Materials, design and performance
Lisboa, LNEC, 25 March 2010



**Road
Materials
and
Pavement
Design**

Do we, actually, perform pavement design?

- > Pavement design is the process of selecting pavement layer types and thicknesses in order to withstand expected traffic loads and environmental conditions in a cost-effective manner

- > Pavement design is a process used by us, pavement engineers, to determine the structure that will be used to support the traffic loads. We pray in a daily basis with great hope that the structure that we designed last time ended up being the best for the network.





Which design parameters are really achievable?

- > Traffic
- > Environmental conditions
- > Materials' composition
- > Layers' behaviour



- > A road pavement is the trickiest to design civil engineering structure
- > For instance, a bridge designer only need to fit a safety factor (at least 5 times the hugest distress case known...) to the response of a pretty fair response model usually used. A pavement designer is fired if he just mentioned that it will be better to do something similar in order to get a lower risk to better address uncertainty.

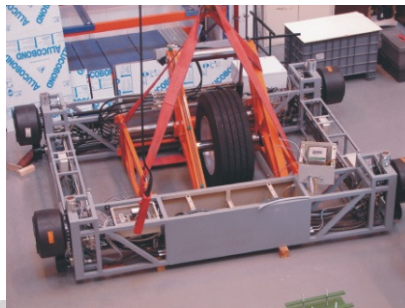


What can we do?

> Mechanistic-Empirical Design

- Better translation of loading conditions and better parameterized behaviours during life cycle, based on real world data and improved modelling (MEPDG – “Mechanistic-Empirical Pavement Design Guide” from FHWA – USA)
- Verifying effectiveness through “after-design” pavement behaviour follow up for each region and local conditions, defining local/regional adaptations

> Research





DESIGN - agenda for today

> 14:15-14:35

- Long term flexible pavement performance modelling, Andrew Collop

> 14:35-14:55

- Tyre-pavement contact stresses, Morris de Beer

> 14:55-15:15

- Assessment of boundary-element method for modelling the structural response of a pavement, Arminda Almeida and Luis Picado Santos

> 15:15-15:35

- Advances in pavements modelling from in situ load tests, José Neves, Pedro Domingos and Maria de Lurdes Antunes

> 15:35-15:55

- Do models really work? Verification and validation in pavement engineering, William Buttlar

> 15:55-16:15

- Discussion



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CENTRO RODOVIÁRIO PORTUGUÊS

QUESTIONS

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- Tyre-pavement contact stresses, Morris de Beer
- Assessment of boundary-element method for modelling the structural response of a pavement, Arminda Almeida and Luis Picado Santos
- Advances in pavements modelling from in situ load tests, José Neves, Pedro Domingos and Maria de Lurdes Antunes
- Do models really work? Verification and validation in pavement engineering, William Buttlar

