



Session 2 **DESIGN**



Moderator:
Luís Picado Santos
DECivil - IST

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



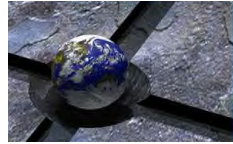
**Road
Materials
and
Pavement
Design**

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 for a given project. We pray in a daily basis with great hope that the structure that we design will be the one that will be used for the network of roads that we are responsible for.





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.

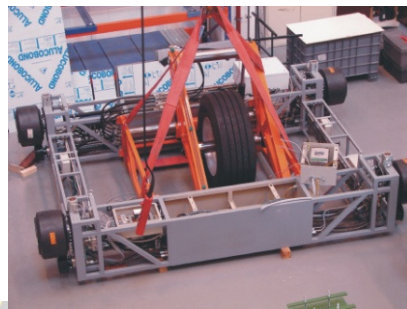


What can we do?

> 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

- Long term flexible pavement performance modelling, Andrew Collop
- 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

