Evolution of thermomechanical behaviour of bituminous materials
with diffusion phenomenon

Dipartimento di Ingegneria e Architettura

XXXIV cycle SDIA

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PhD thesis under joint supervision

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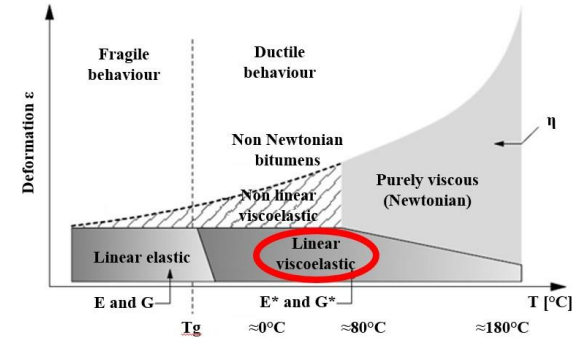- Dr. Salvatore Mangiafico

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Hypothesis Interaction between aged and fresh binders

RAP grain:
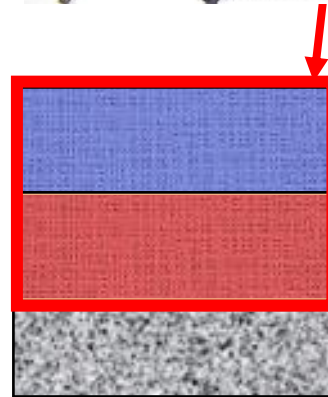aggregate + RAP binder

RAP grain in new HMA:
aggregate +
RAP binder + fresh binder

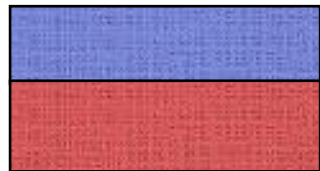Diffusion between two
different bitumens

(Di Benedetto, Corté, 2005)

Fresh binder

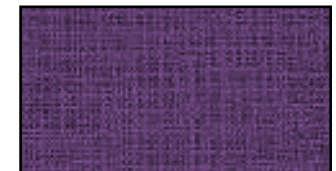*RAP binder*

Aggregate

Bitumen
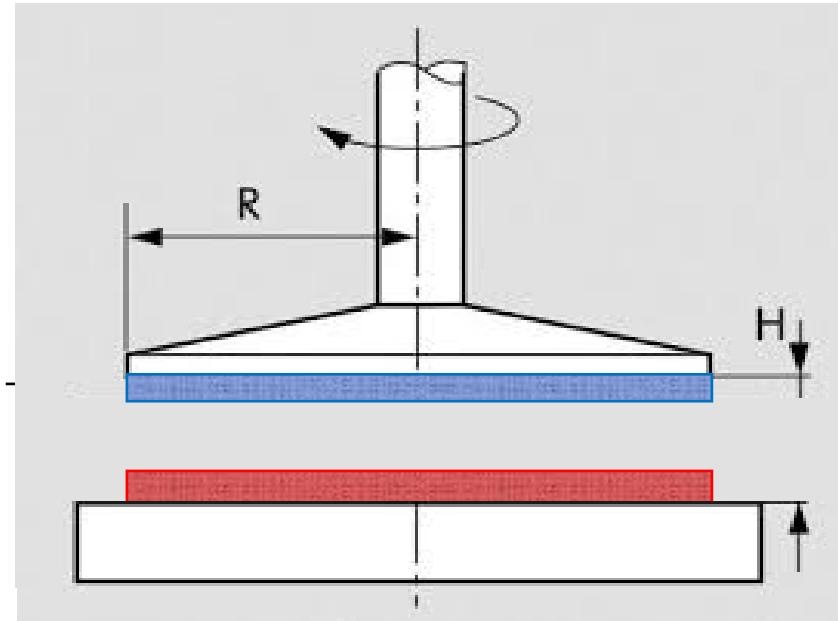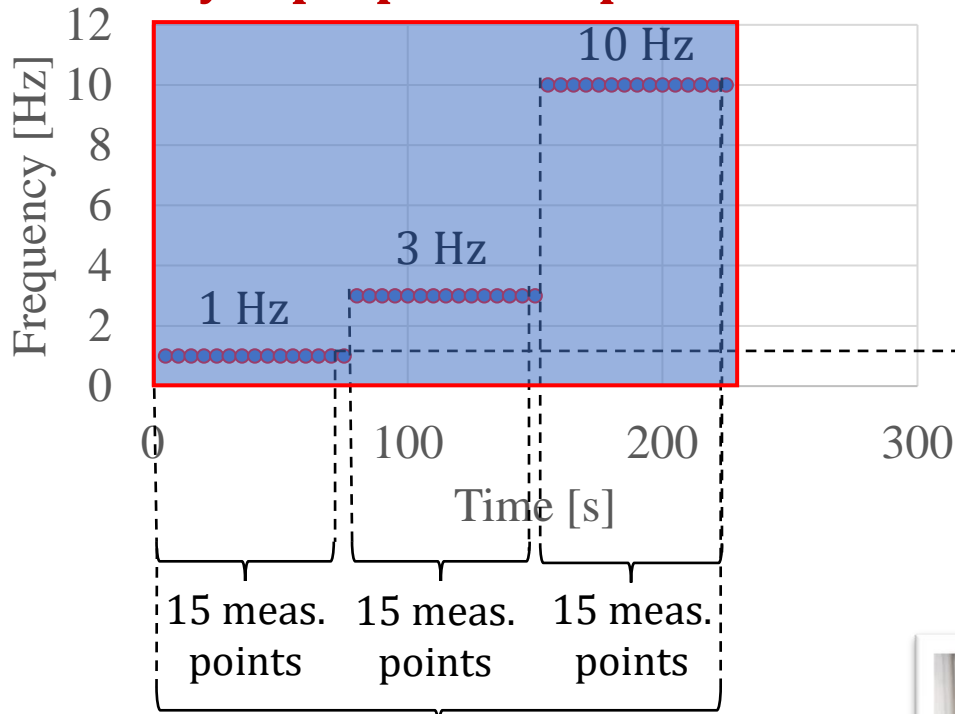
Distinct layers   *Diffusion*   *Full blend*   Time

Double-layer preparation procedure

Rest period:
30 minutes

$$\frac{\partial c}{\partial t} = D \frac{\delta^2 c}{\delta x^2}$$

2nd Fick's law