

Residual Shear Capacity of Beams on Old Concrete Bridges

RESEARCH SCHOOL
INTEGRAL DESIGN OF STRUCTURES



Speerpunt
BOUW

Subject

Many bridges in the Netherlands were built in the 1960s and 1970s. The traffic load on those bridges has been significantly increased since then, while their structural performance might have been degraded. For that reason, the Ministry of Transportation in the Netherlands is now evaluating the structural capacity of the old bridges. With regard to flat slab concrete bridges, a major concern is the shear capacity of the bridge decks. A first evaluation showed that according to the current design codes many of the bridge decks do not fulfill the requirements with respect to shear capacity. However, it is believed that the actual shear capacity of concrete bridges decks is often higher than what is given by the current design codes.



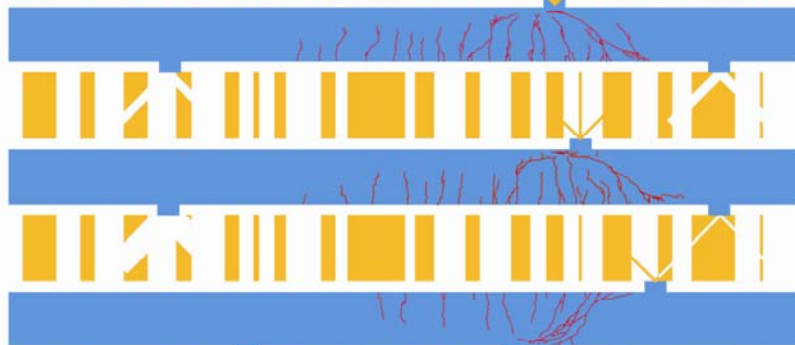
Goal

The goal of the project is to explain the function of certain factors to the shear capacity of concrete structures, such as: the negative moment at intermediate supports, the size of the loading and supporting area and the tensile strength of concrete. Special attentions will be given to the reinforced concrete beams without shear reinforcement.



Expected Results

Based on a more refined model including multiple parameters the residual shear capacity of bridge decks will be estimated additional to the current design codes.



Strategy

A series of experiments are planned, with variables including the size of the loading plate and the supports, the position of the load, the dimension of the test element and the reinforcement. Mechanical models will be developed to explain the shear capacity of reinforced concrete beams.

Researcher
Supervisors

Yuguang Yang / Yuguang.Yang@tudelft.nl / +31152782277
Joop den Uijl / J.A.denUijl@tudelft.nl / +31152785997
Joost Walraven / J.C.Walraven@tudelft.nl / +31152785452

Program/Subprogram
Host University

Concrete Structures
TU Delft / Faculty of Civil Engineering and Geosciences

3TU.

TU Delft

Delft University of Technology

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Yuguang Yang, Joop den Uijl, Joost Walraven

Delft University of Technology, Faculty of Civil Engineering and Geosciences, Department of Design & Construction, Delft, The Netherlands, yuguang.yang@tudelft.nl



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Research Question

Which are the factors influencing the shear capacity of reinforced concrete beams, and how?

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Preferred Partners Applications / Sponsors

Rijkswaterstaat Dienst Infrastructuur

Prime Publication / Prototyping

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Research Period

2008-2012