

# Wind-induced dynamic behaviour of a cable-stayed building

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Place & Time: Room C, Fac. of Arch. 13.30h

Graduation-team:

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A cantilevered cable-stayed-building, the design of the law-court in Zwolle, is a new archetype. The subject of the graduation-project concerns the review of the wind-induced dynamic annoyance in the cantilever as perceived by the users of the law-court.

Analyses to two designs have been carried out:

1. an extensive research to the wind-induced dynamic human annoyance of the structural design of Arcadis (above left);
2. a brief analysis to the wind-induced dynamic human annoyance of the students own architectural concept (above right).

Preceding the dynamic analysis of the building (a) several Dutch and international standards with respect to wind-induced dynamic human annoyance in buildings and (b) several models defining the dynamic wind-load have been analyzed. The most important results are:

Ad. a. The current Dutch standard with respect to wind-induced dynamic annoyance in the law-court is to be considered as relatively favourable in comparison with other (international) standards. A stricter boundary value is applied to judge whether the vibrations in the cantilever are acceptable.

Ad. b. The parameters defining the dynamic wind-load vary within a wide range, depending on which models or standard-procedures are applied.

Therefore the design of a highly sophisticated dynamic model of the cable-stayed-building is not useful.

Analyses of both designs prove that the wind-induced dynamic human annoyance of both designs satisfies the stated requirements. The cantilevered cable-stayed-building offers great possibilities with regard to both architecture and structure. The graduation-project intends to have reduced possible reserves with respect to the dynamic challenges.