

Master's Dissertation at the Div. of Structural Mechanics



ANALYSIS AND DESIGN OF A GLASS FLOOR STRUCTURE

Pontus Dufvenberg och Fredrik Jönsson

Presentation

Spring 2014

Report

will be published as
report TVSM-5192

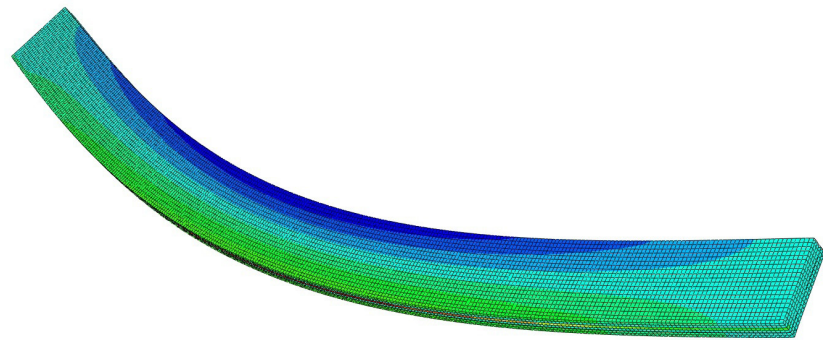
Supervisor

Per-Erik Austrell, *Ass. Professor*
Div. of Structural Mechanics, LTH

Examiner

Kent Persson, *PhD*
Div. of Structural Mechanics, LTH

The work is performed at
Division of Structural
Mechanics, LTH



Background

Glass is by procurers and architects regarded as a material with desirable aesthetic properties and therefore more frequent utilized as a building material. Glass is a translucent material which gives a bright, clear and fresh sensation when used as a visual part in structures. It is a durable resistant material with a high compressive and tensile strength. However, glass is a brittle material that is sensitive to stress concentrations at supports and at imperfections such as micro-cracks. When glass is exposed to tensile stresses, these cracks will grow larger and the cross section of the glass element will fracture. This is a major problem when glass is used as a structural element where problems are likely to occur at connections and supports.

Aim and method

The aim of this master thesis is to design and analyse a load-bearing structure containing a glass floor supported by glass beams. Finite element analyses will be carried out using Abaqus. The dimensions of the cross sections and the connections will be determined with aid of the calculations.

The stability of the beams and the whole floor structure can be a major concern that will be studied. Laboratory tests may be made as well, to verify the theoretical finite element calculations.



LUND
UNIVERSITY