PRE-Stress

StruSoft

Life span considerations on design of prestressed beams with PRE-Stress

Prefabricated, prestressed elements have a tough life.

Large stresses act on the immature concrete when the strands are released, which can cause cracking. The cracks and deformations that a beam receives in this first stage of its life remain with the beam, affecting its bearing capacity and shape long after it has been erected in its intended place.

Beams are typically stored (frequently for long periods of time) in outside storage yards with drastically different supports and environmental conditions than the final placement. Transporting and erecting an element also involves different supporting conditions and accidental dynamic loads. All this affects the final stage results.

*So why should you only design a beam for the final stage?*

Release	Storage	Transport	Construction Site	Final Stage

PRE-Stress takes into consideration all steps of the life span of prestressed members, whether hollow core units, beams or slabs with or without topping, sloped T- or I-beams. Reinforcement, both prestressing strands and non-tensioned rebar, can be added either by predefined positions or manually by adding and removing user defined bars/tendons.

The program calculates all the phases of the construction, from the release of the strands in the factory, the properties of storage conditions, possibility to add loads during transport and erection, and finally the long term, short term and ultimate limit states. All the serviceability state phases, like cracking and effects from creep, shrinkage and relaxation, are linked so that effects will be similar to real life. These effects will then be taken into account in the design phase of the ultimate limit states. All strength, accidental and fire ultimate limit states can be calculated at the same time.

The results are presented either on screen or by a user defined report, showing everything a designer needs to be able to make cost-efficient designs according to Eurocode.

Users of IMPACT Design can benefit from full integration of hollow core calculations. Loads and supports defined in the model are sent to PRE-Stress along with section data, returning key results straight into the drawing. More in-depth examination of results can be done in the accompanying PRE-Stress file.

PRE-Stress
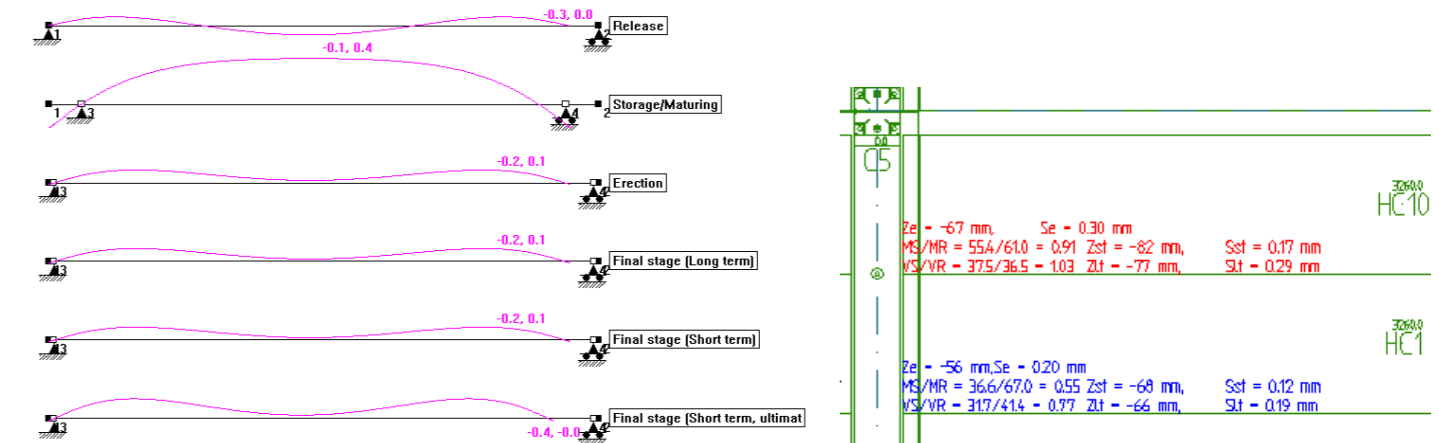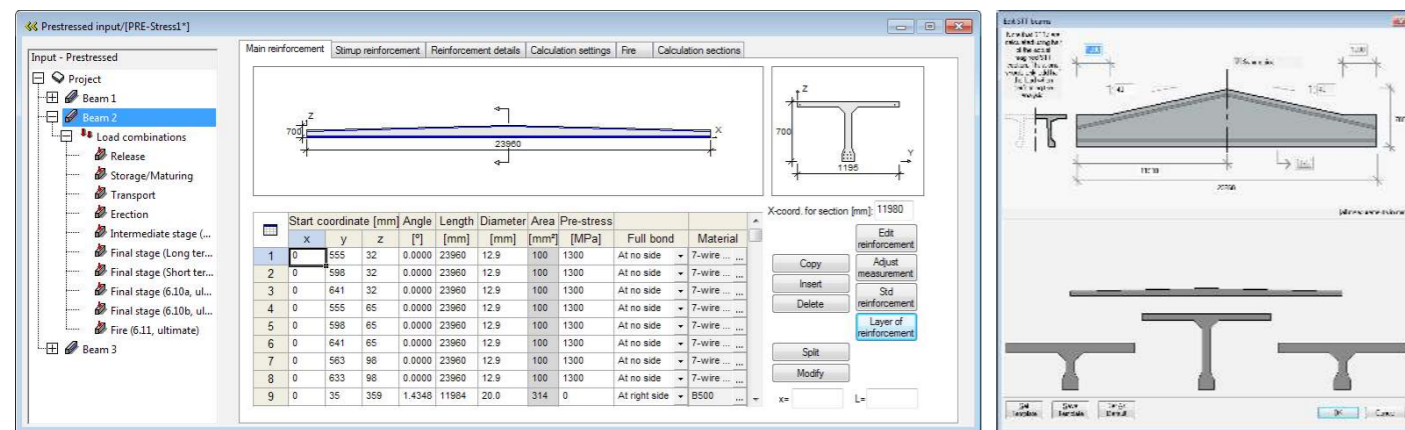
StruSoft

PRE-Stress

StruSoft is an innovative Swedish software company with more than 35 years of experience in specialized software applications for analysis, design, modelling and energy for the building industry.

FEM-Design

Finite element software for analysis and design of load-bearing concrete, steel and timber structures.

WIN-Statik

A suite of easy to use applications for common design tasks such as beams, columns or frames.

PRE-Stress

Analysis and design software for complete product life calculations of prestressed beams.

IMPACT

A family of BIM software to efficiently manage, design, produce, transport and erect prefabricated concrete elements.

VIP-Energy

Fast energy balance analysis for buildings using a dynamic calculation engine.

BIMcontact   www.bimcontact.com

Web-based project collaboration, IFC-viewer and document management system for the building industry.