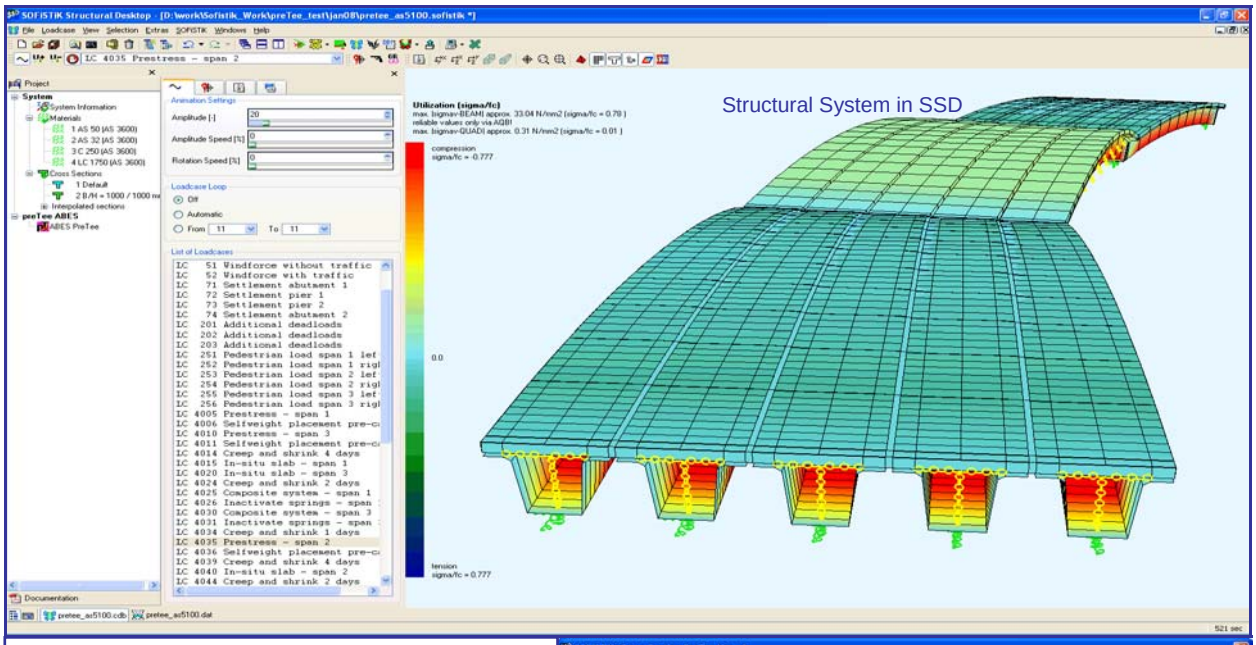
ABES IT
Advanced Bridge Engineering Systems

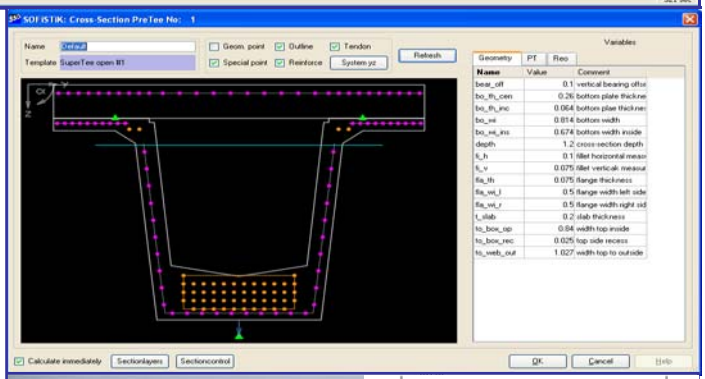
SOFiSTiK

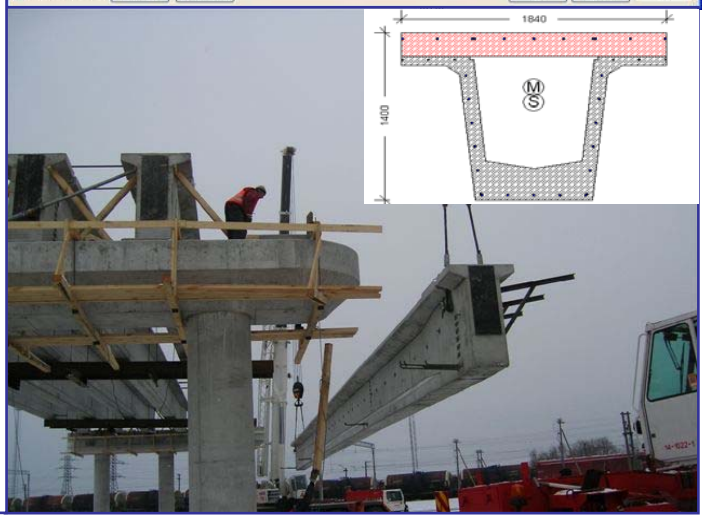
PRETEE Wizard

Precast pre-tensioned beams
Cast in-situ concrete slab
From simple supported to continuous
Beam + FE roadway slab modelling
Construction stages – SLS and ULS design



- Design of precast beam bridges with onsite concrete deck.
- Super-tee sections, (voided) planks, I and T cross section.
- Suitable for multi-span structures, curved alignments, skew support conditions, etc.
- Analysis includes construction sequence, permanent loads, traffic loads, temperature and wind loading, time-dependent effects, etc.
- Load combinations generated automatically for SLS and ULS checks.
- Automated SLS and ULS checks for the complete deck.
- Automated consideration of beam-slab system.
- Automated reinforcement design in longitudinal and transversal direction.
- CAD interface for integrated drafting.





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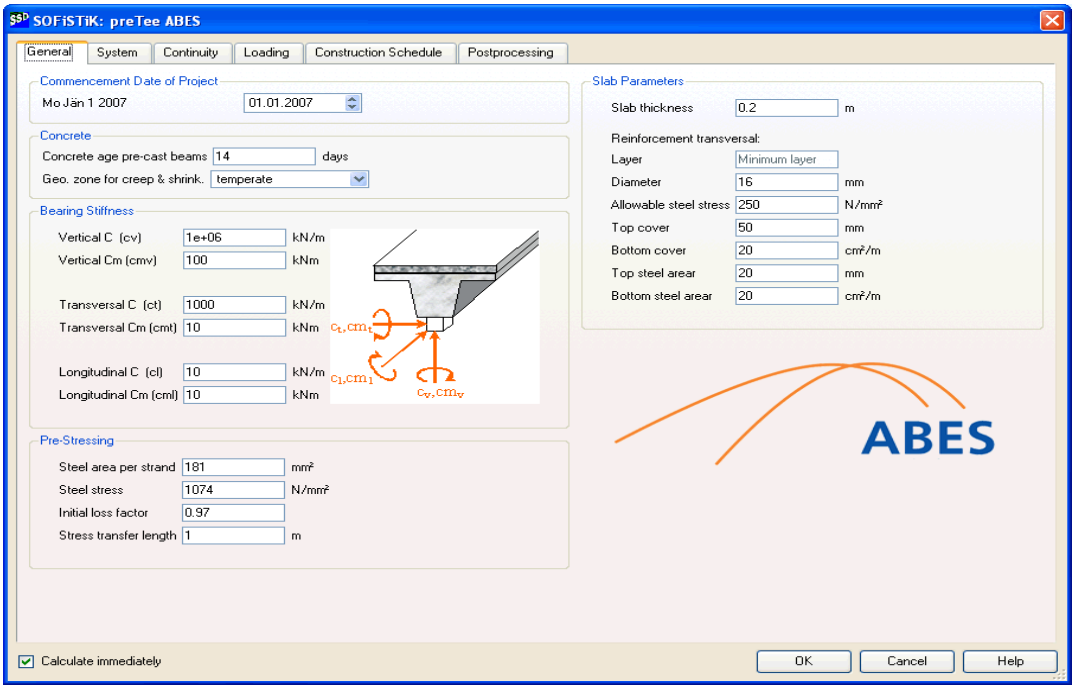
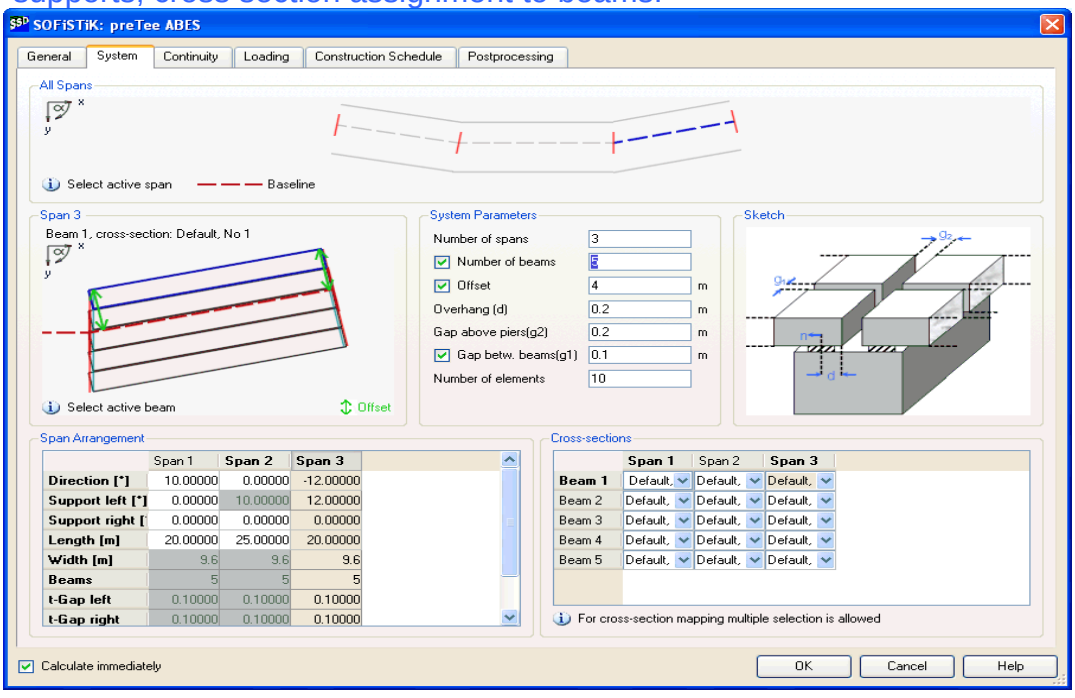
Sitz der Gesellschaft: Graz | FN 26959 s | Firmenbuchgericht: Landesgericht für ZRS Graz als Handelsgericht | UID/VAT: ATU62036059

PRETEE Wizard input sequence:

Step 1: General definitions for the structural system such as concrete ages, spring constants, pre-stressing tendons, slab thickness and position of reinforcement.

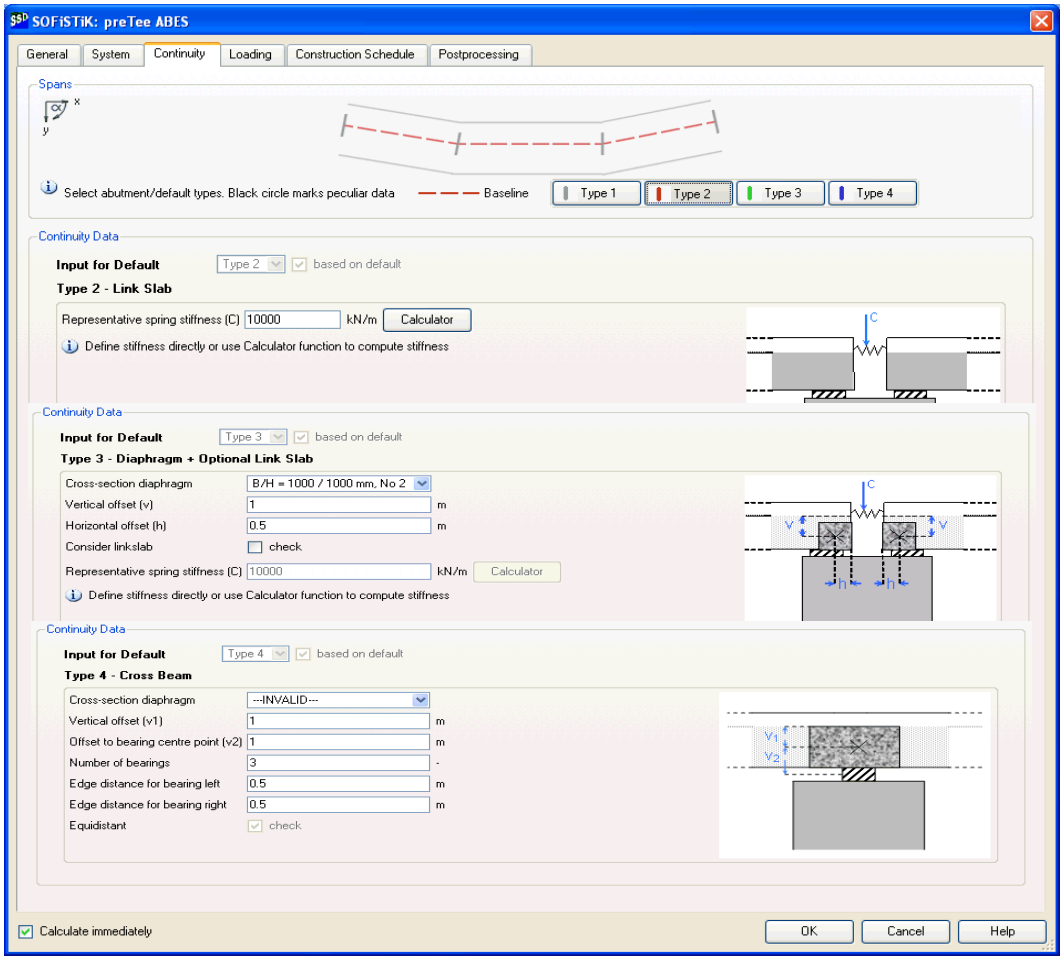


Step 2: Number of spans, span lengths, support angle, number of beams per span, widening of beams, construction joint between beams at the supports, cross section assignment to beams.



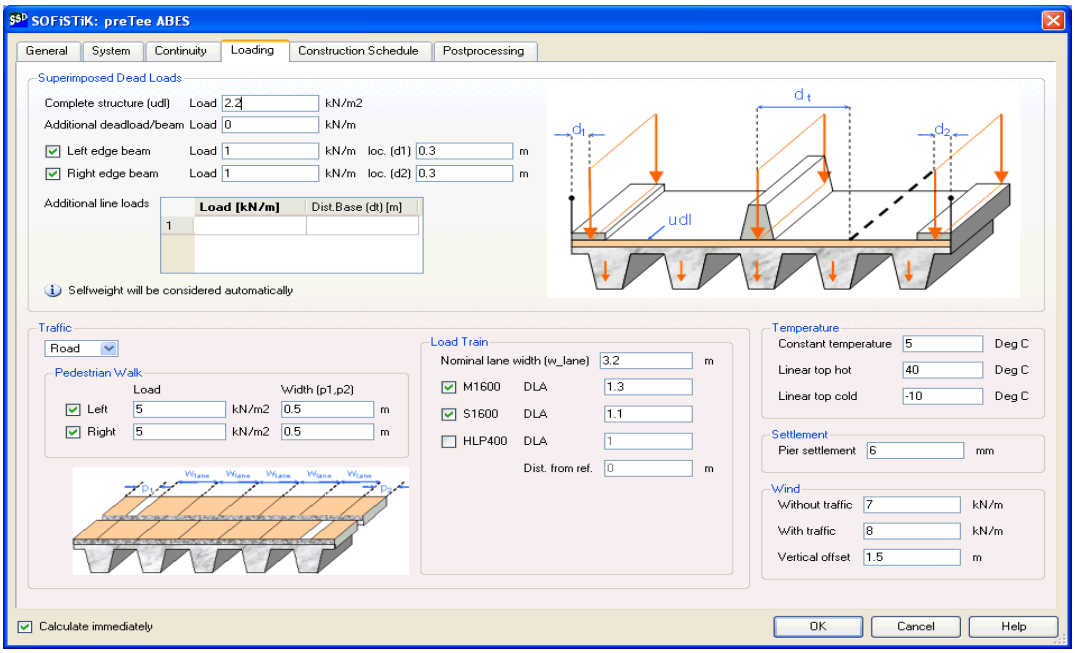
Step 3: Definitions regarding the joint at the supports. Structure can remain simple supported per span (Type 1) or become continuous. In this case one can choose between:

- a spring element connecting the spans (preTee helps in finding the 'correct' spring constant) – Type 2,
- a continuous longitudinal connection using 'link slab' together with a transversal beam element connection at the supports – Type 3,
- a continuous connection representing a solid joint between the spans where the gap between the beams is filled with concrete resulting in a cross beam and a longitudinal connection of the precast beams – Type 4.



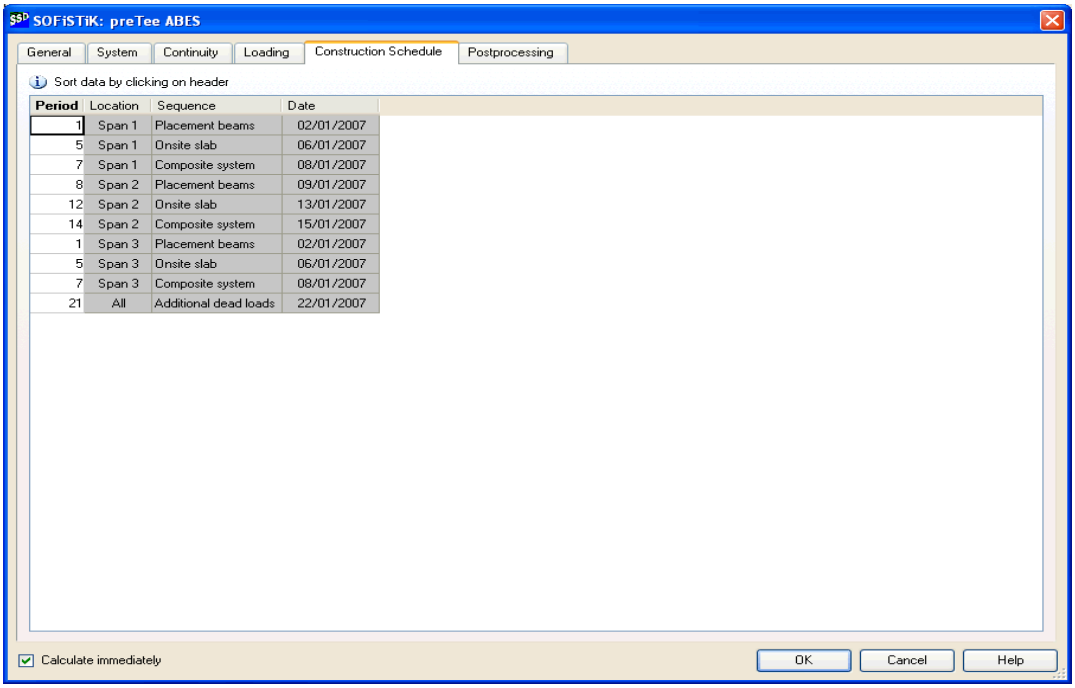
Step 4: Autoloader :

Traffic load using influence line method valid for both rail and road bridges, selection of load train and the position of the lanes on the deck, temperature load global and as gradient, settlements per support axis, wind for loaded and unloaded deck.



Step 5: The construction sequence.

The time axis is set up by defining the duration for each situation (period). Together with the already known concrete ages and loadings preTee is able to set up all system changes and creep/shrinkage/relaxation coefficients.

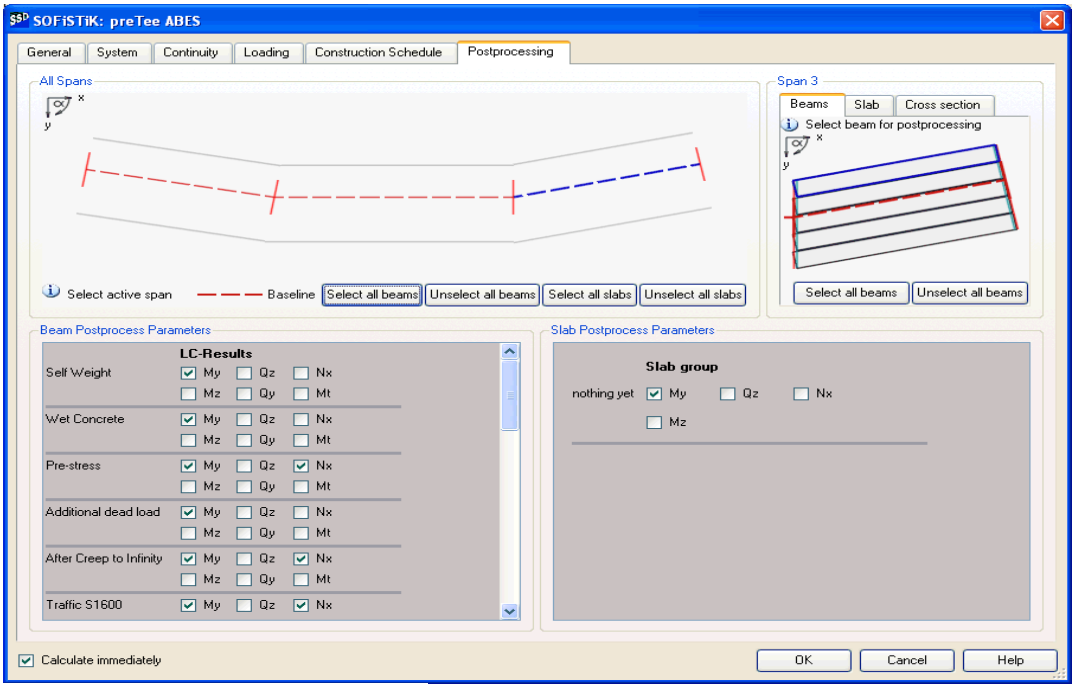


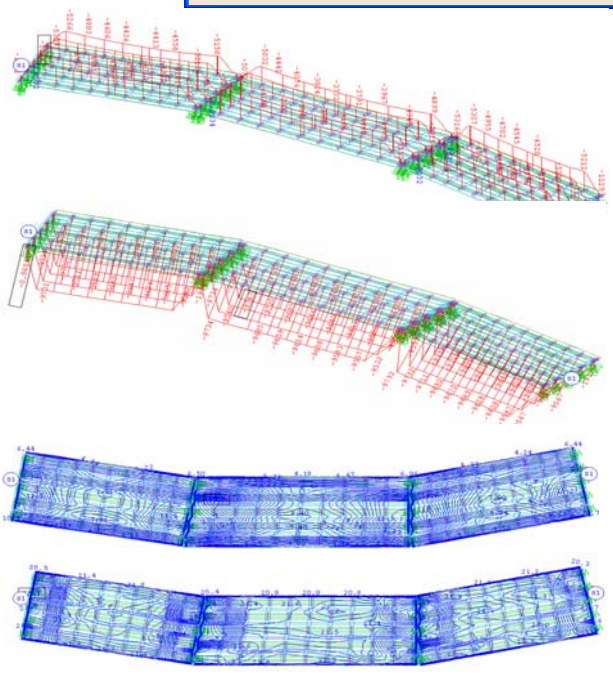
Step 6: Post-processing:

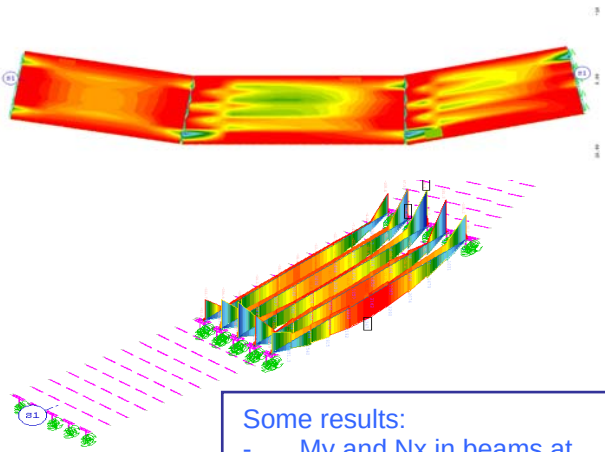
SOFiSTiK provides automated report facilities combining numeric and graphic output in a final document. Here the user can choose the content of the automatically generated report:

- Selection of beams relevant for report,
- Selection of relevant slab elements,
- Selection of relevant cross section(s),
- Loading cases to be included.

SLS and ULS stress checks are generated automatically as well as all relevant graphics showing the result reinforcement in beams and slab elements.







Some results:

- My and Nx in beams at time infinite
- Isolines for reinforcement in slab
- Principal stress in slab
- Max/min My envelope for traffic, mid-span.