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SCIA Engineer Fact Sheet

Code Dependent Deformations 1D

CPE esas.18

Analysis of total, immediate and additional deformations in reinforced-concrete frames including the calculation of long-term stiffness according to national codes.

- Calculation of deflections based on regulations stipulated in standards.
- Long-term deflection obtained as a multiple of short-term deflection and creep coefficient.
- Two step process:
  1. linear calculation + input of reinforcement + calculation of cracks and their effect on stiffness.
  2. calculation with modified stiffness.

Highlights

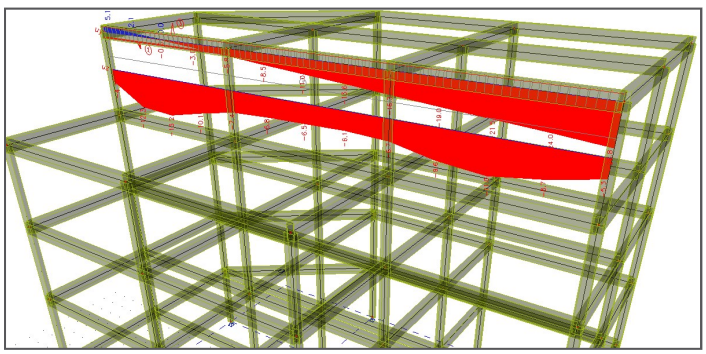
Stiffness calculation with respect to the non-linear stress-strain relationships in concrete and its reinforcement.

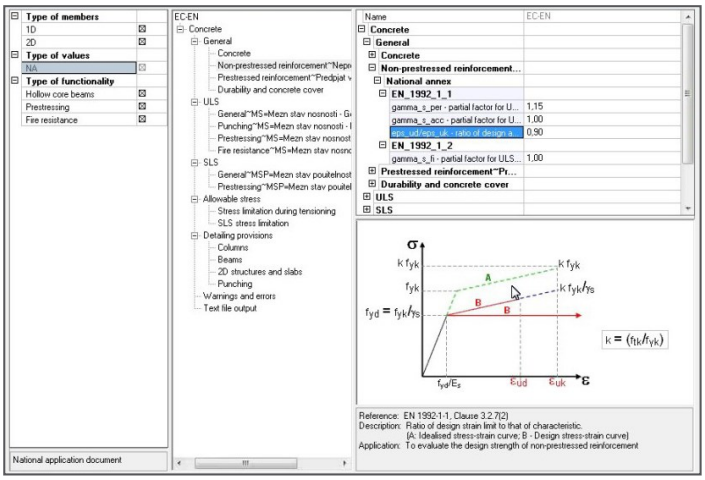
Input of real (practical) reinforcement or use of program-generated reinforcement.

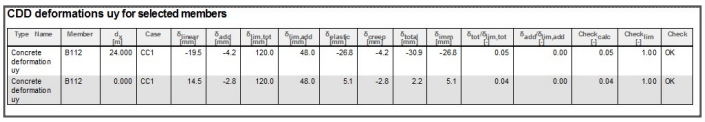
Modification of the calculated required reinforcement area using the multiplication factor when the program generates the amount of required reinforcement for CDD calculations.

The program can calculate the magnitude of concrete creep deformation for selected combinations. It does this twice - once using the standard concrete modulus of elasticity, and once using the effective modulus of elasticity. The difference between the two values is considered as the creep deformation.

Evaluation of total deformation and deformation caused by short-term loading.







In order to calculate CDD in concrete, the user needs to do the following:

- Define physically non-linear concrete combinations;
- Run a linear analysis;
- Input real (practical) reinforcement or have the program calculate the amount of required reinforcement;
- Run a non-linear analysis using the Concrete - CDD option;
- Display and evaluate the linear/CDD results including creep deformation figures.

CDD calculations can be performed according to the following national codes:

- Eurocode 2;
- NEN 6720;
- ČSN/STN 73 1201;
- DIN 1045;
- Önorm B4700;
- BS 8110.

Required modules

esas.00

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