B7+

Flight of Stairs

B7+ allows you to perform the static calculation and design of a single flight of stairs.

The geometry, composed of landings with/without consoles and treads is taken into account. The support conditions are freely selectable.

The graphic is interactive - input values can be changed directly within the graphic.

Standards

- DIN EN 1992 1-1: 2012 + 2013 + 2015
- ÖNORM EN 1992 1-1: 2011
- BS EN 1992 1-1: 2015
- EN 1992-1-1:2014

Support / landing

For the support of the flight of stairs you can choose between the following types:

- hinged support with console
- hinged support without console
- rigid support of the landing

The static system is modeled so that the bars are in the line of gravity of the corresponding stair parts (pedestal bottom / top, tread without taking into account the steps).

Loads

A permanent load g and live load q can be applied independantly on flight and landing.

The live load can be assigned to an action group (important for the ψ values).

Output/results

The output includes the system graph, the complete system values, the structural system, the loads and optionally, the durability requirements and the design of the stair flight (bending design, shear design, crack width verification and deflection calculation). The result of the bending design proposes a bending reinforcement (number of bars, diameter and spacing). The user can edit and customize the proposed reinforcement.

The crack width verification is based on the quasi-permanent load combination.
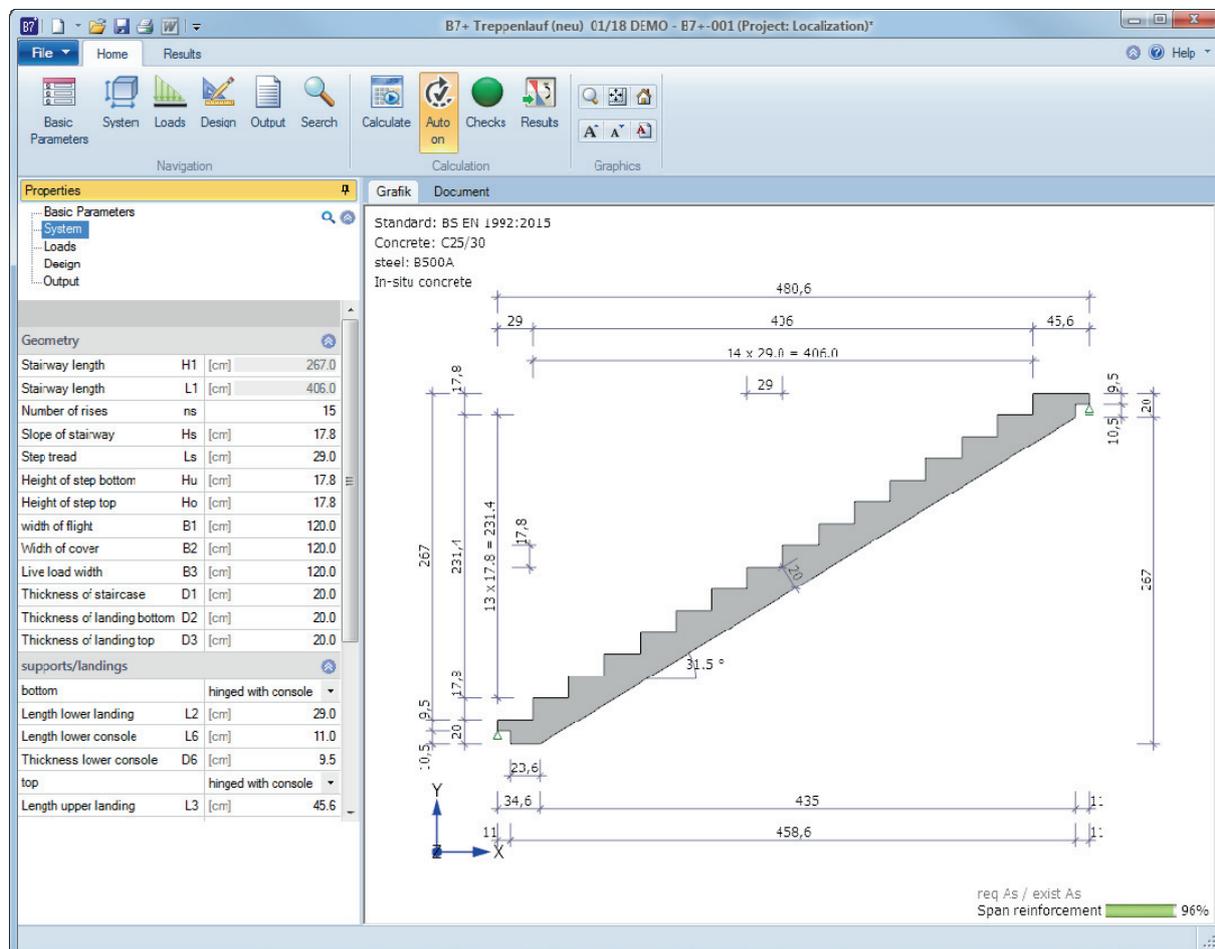
The pogramm determines the maximum deflection for the state I either for the characteristic, frequent or quasi-permanent action combination.

If the flight of stairs is restrained on one or both sides, a reinforcement proposal is submitted for the corresponding components and the crack width verification is performed in addition to the bending design and the shear design.

The reactions, the characteristic as well as the design values, are listed separately, according to permanent and live loads. Also the combined reactions are represented.

Grafik	Document

Span reinforcement 7 Ø 12

Design Load combination (Shear forces are related to staircase width).

-36,7
-43,43,0

Shear Force [kN]
44,3 39,7
33,8

6,09,09

Moment [kNm]
22,5
54,77
13,34
alle Werte = 0.0

Y
X

Axial force [kN]
alle Werte = 0.0
-20,8