

Concrete and Masonry Structures 2

task R (reinforced concrete) & task P (prestressed concrete)

Design of two load-bearing structural elements of industrial building with dimensions L_1 by $n \times L_2$.

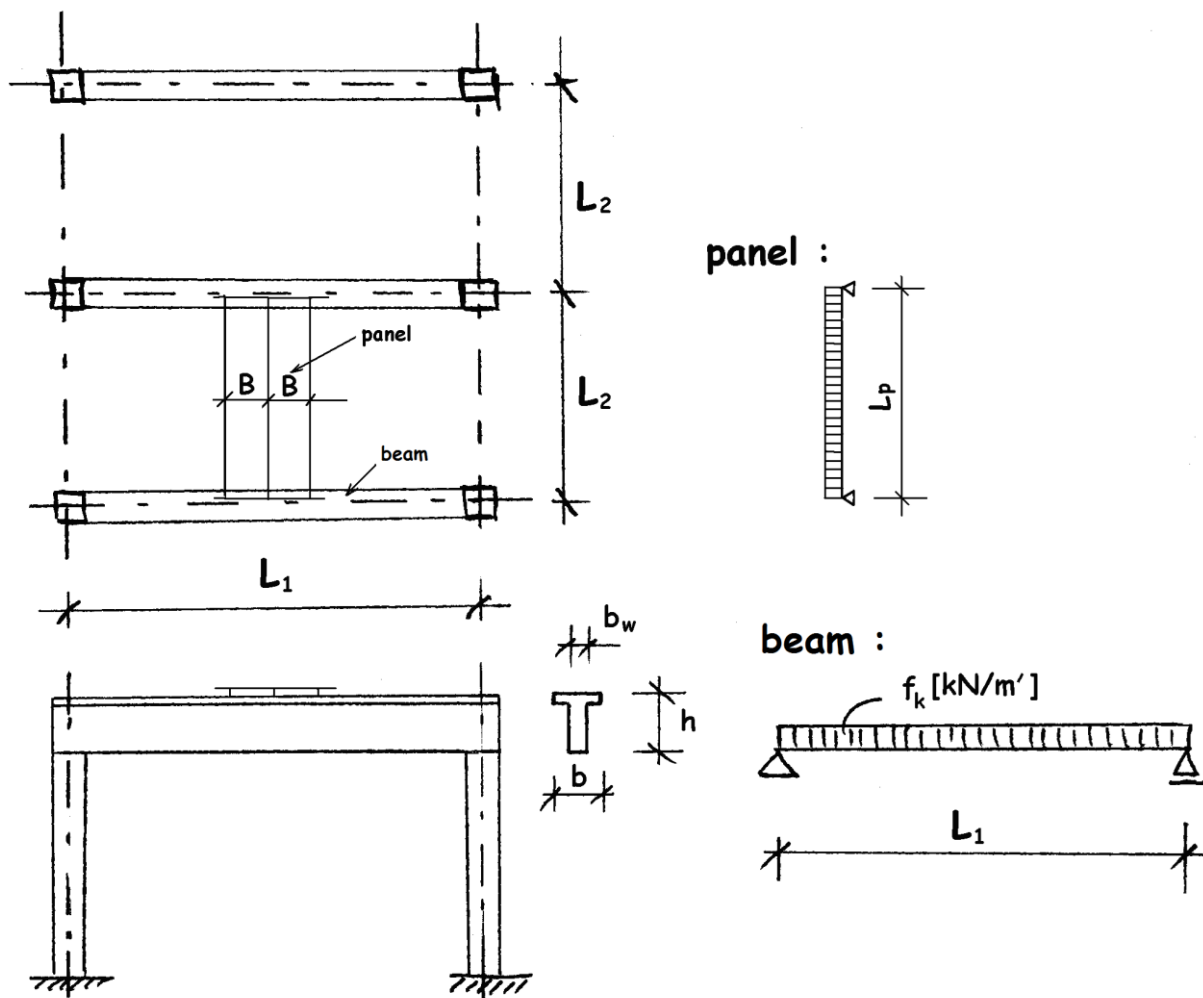
where L_1 [m] is axis distance between columns in transversal direction

L_2 [m] is axis distance between columns in longitudinal direction

The roof consists of precast reinforced concrete panels with trapezoidal cross section and other roofing layers defined by a secondary dead load $g_{SDL,k}$ [kN/m²]. The live load is given as q_k [kN/m²]. All loads are defined in characteristic values according to Eurocodes). Panels are supported by precast prestressed concrete beams with "T" shape cross section.

Conduct the design and assessment of both structural elements (panel and beam) in accordance with ČSN EN 1990 and ČSN EN 1992-1-1. All essential information will be provided during tutorials.

Individual parameters for each student are provided in attached table



Subtasks (panel)

Basic design of panel and ULS assessment (bending), calculation of crack widths, calculation of short and long term deflections, design of transport anchors, layout and reinforcement drawings

Subtasks (beam)

Basic design of beam, design of prestressing, simplified SLS assessment (stresses in extreme fibres), simplified ULS assessment (bending), layout and prestressing reinforcement drawing