Faculty of Civil Engineering
CTU in Prague
Department of Concrete and Masonry Structures

Precast Concrete

Ing. Josef Fládr

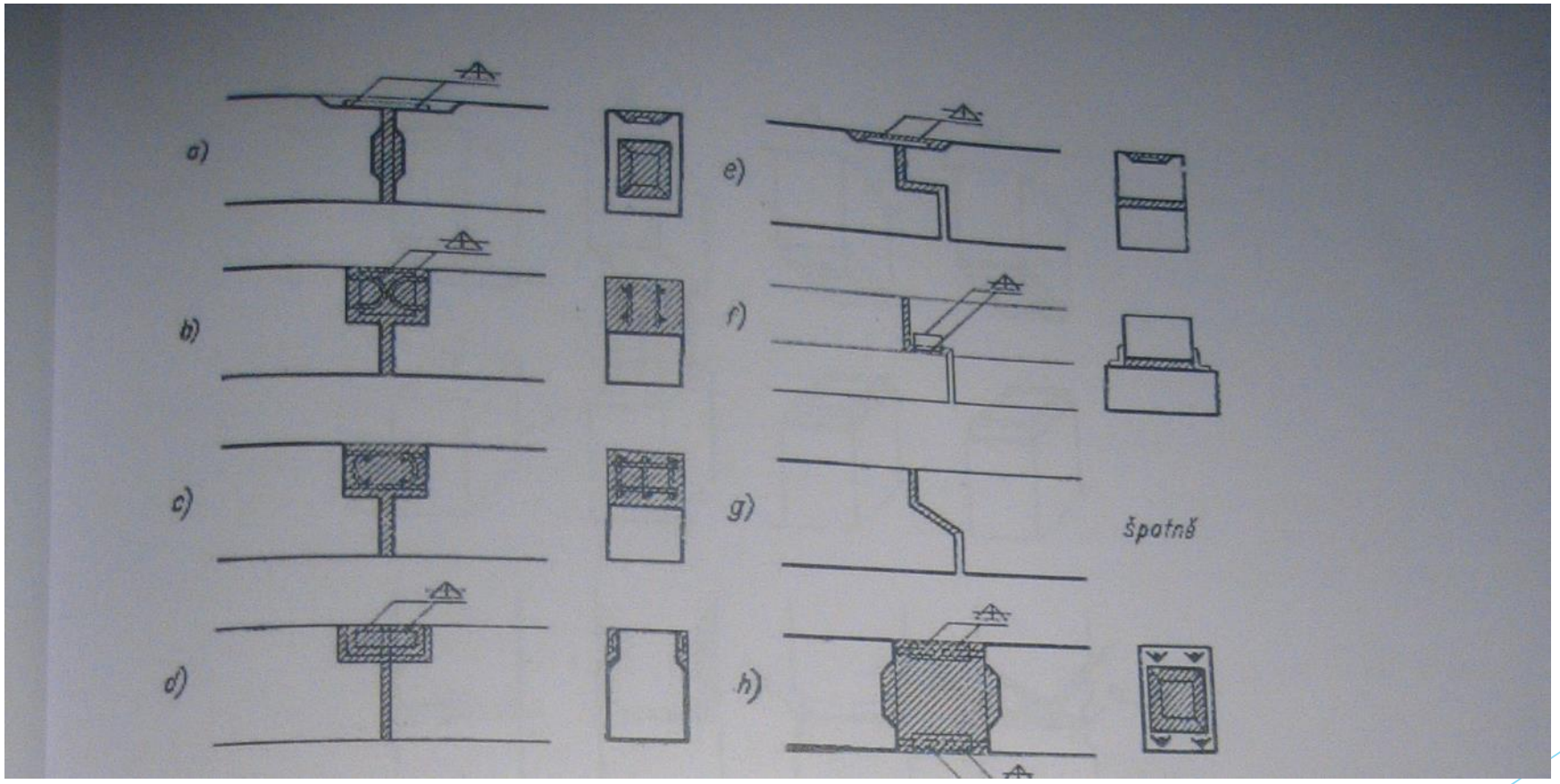
Advantage

- Production accuracy
- Free shape solutions
- Quick mounting structure
- Without wet solution
- Better surface finish

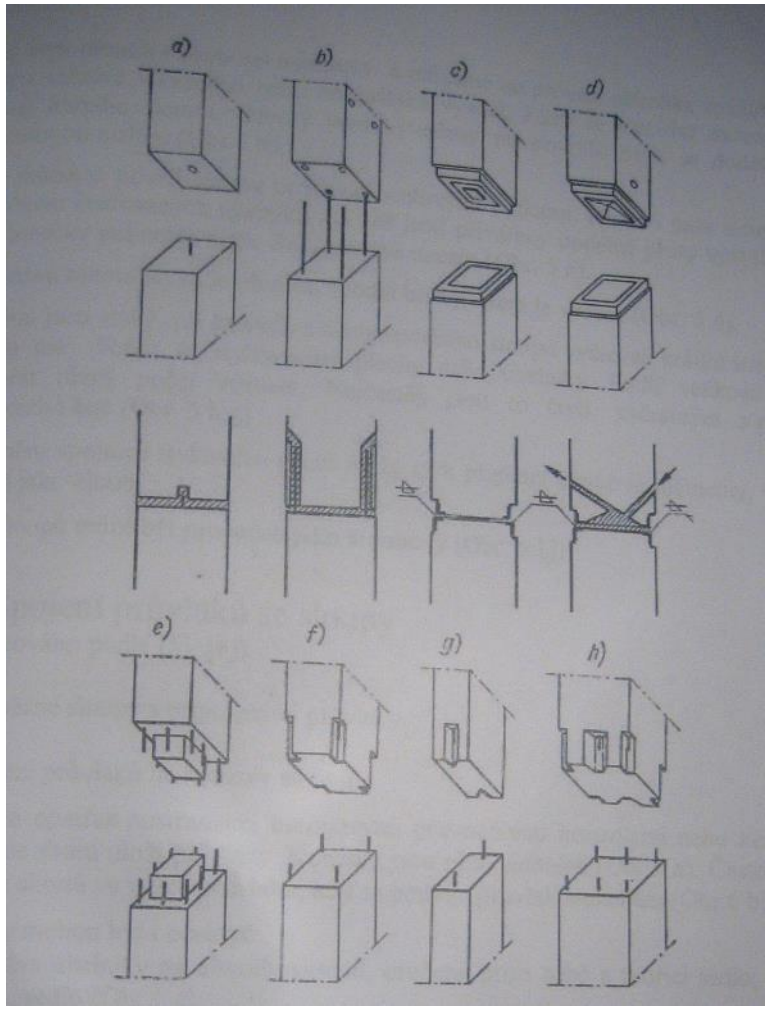
Disadvantage

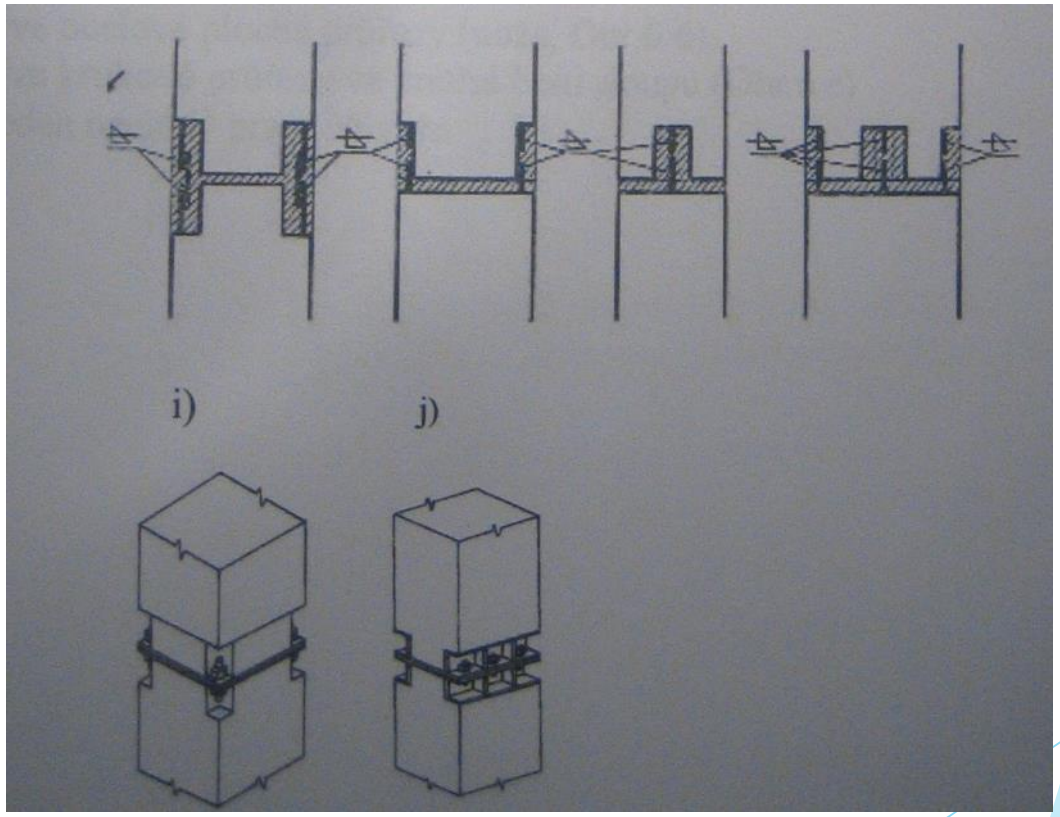
- Heavy transport and handling
- Structure joint
- Precision construction foundation
- Extra reinforcement

Structure joint

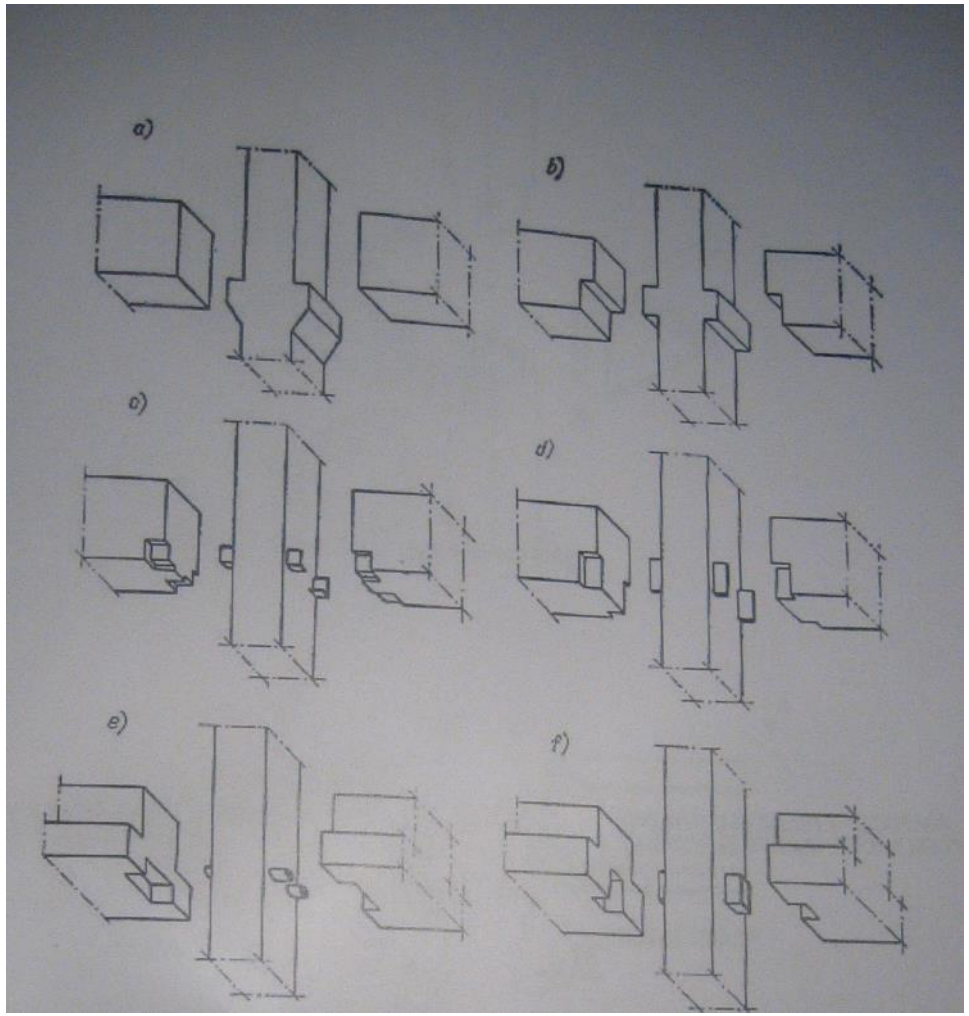


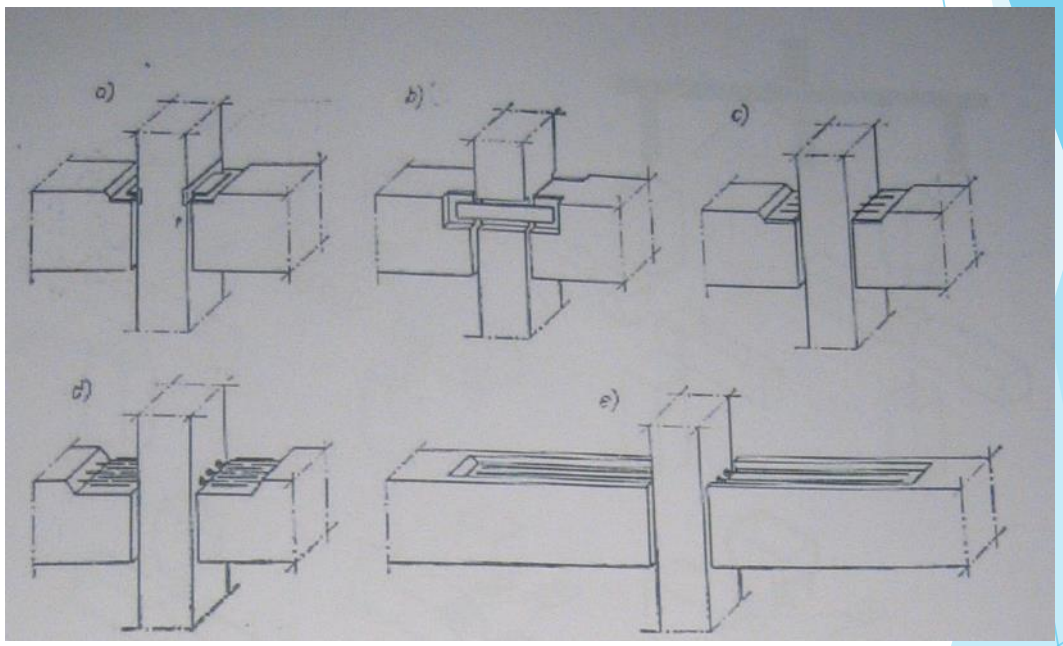
Structure joint



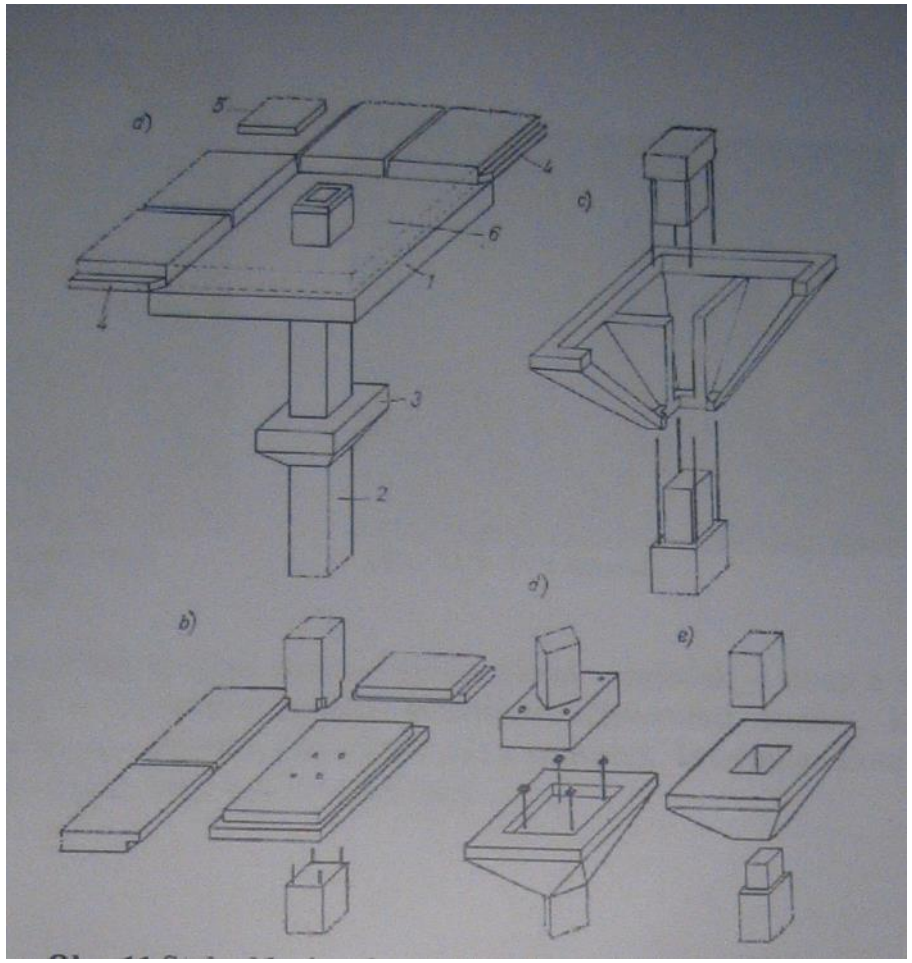


Structure joint



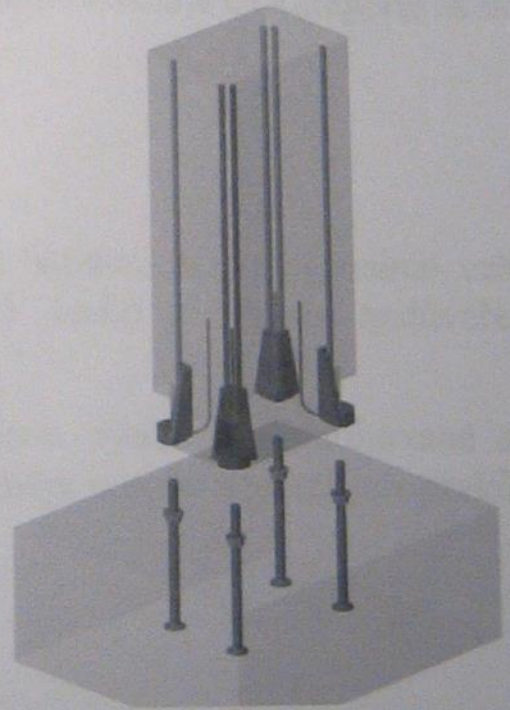


Structure joint



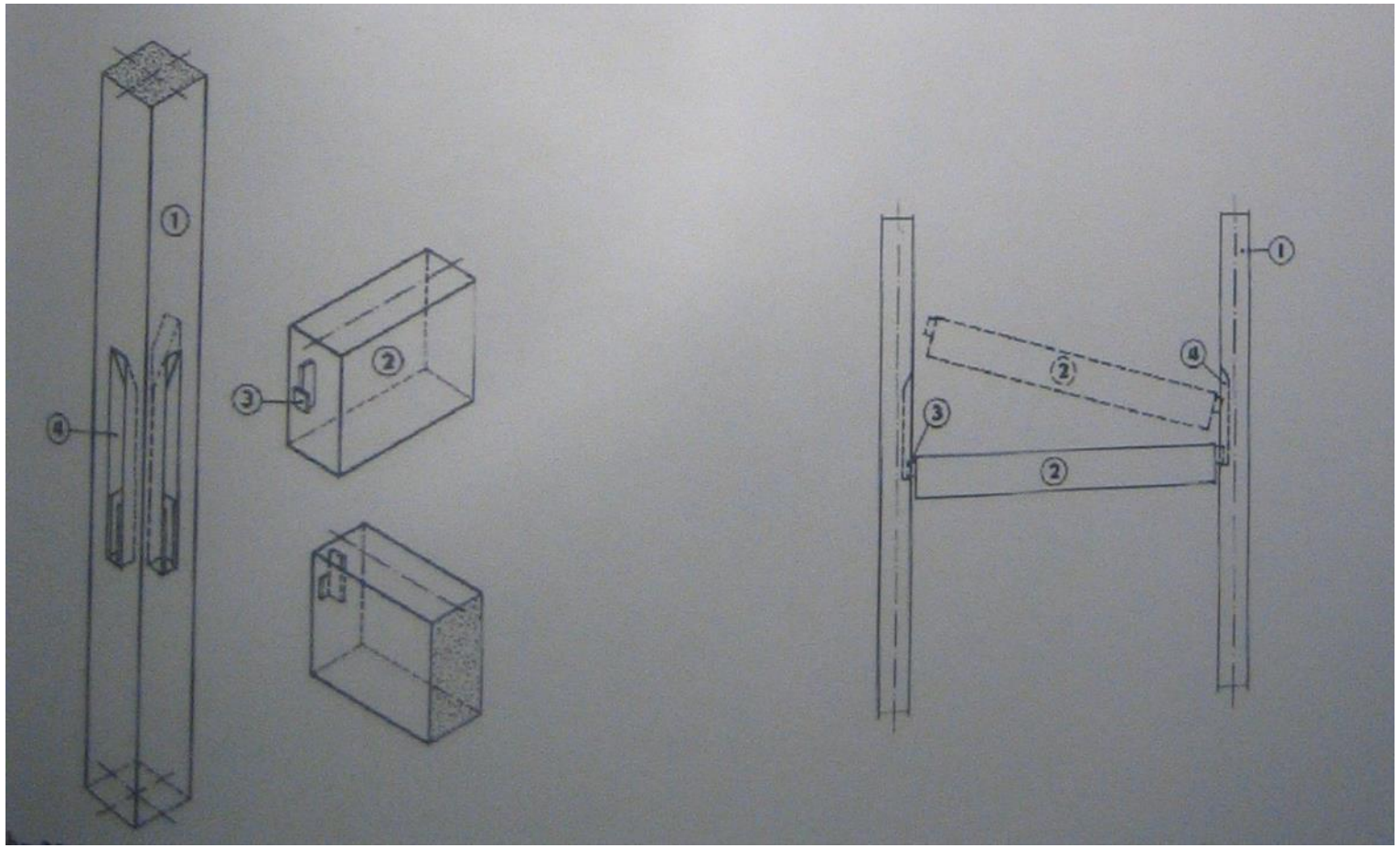
Structure joint

Obr.12 Styk sloup – průvlak – sloup
(oba převzaty z [18])

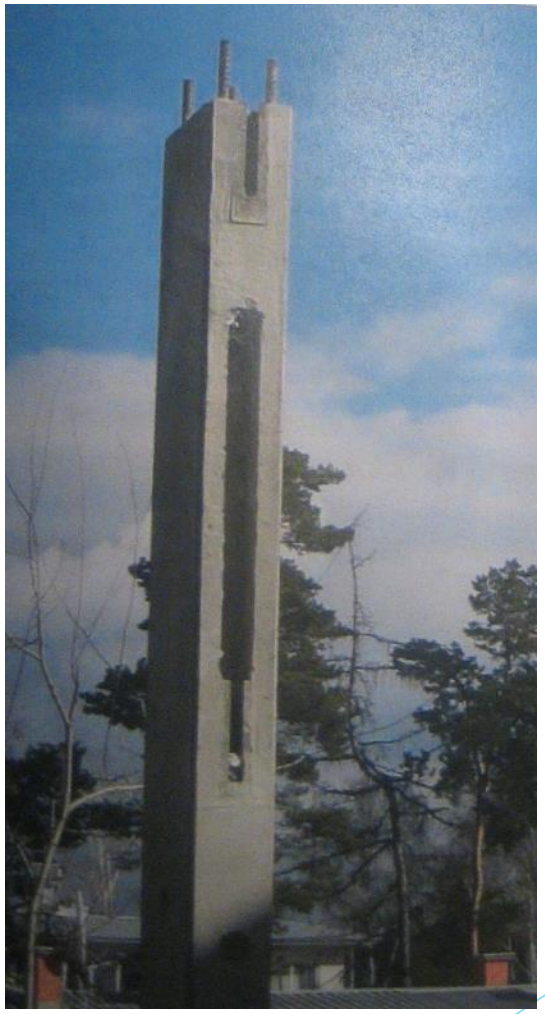


Obr. 13 Sloupová botka

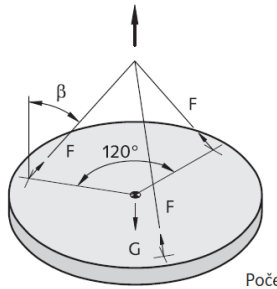
Structure joint



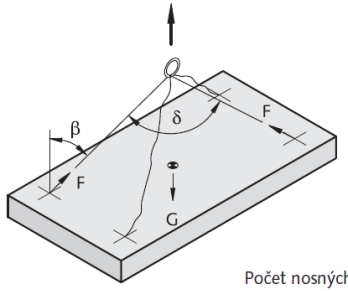
Structure joint



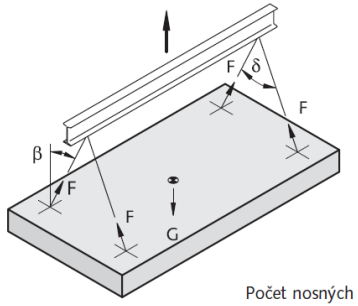
Lifting System



Počet nosných úchytů: n = 3



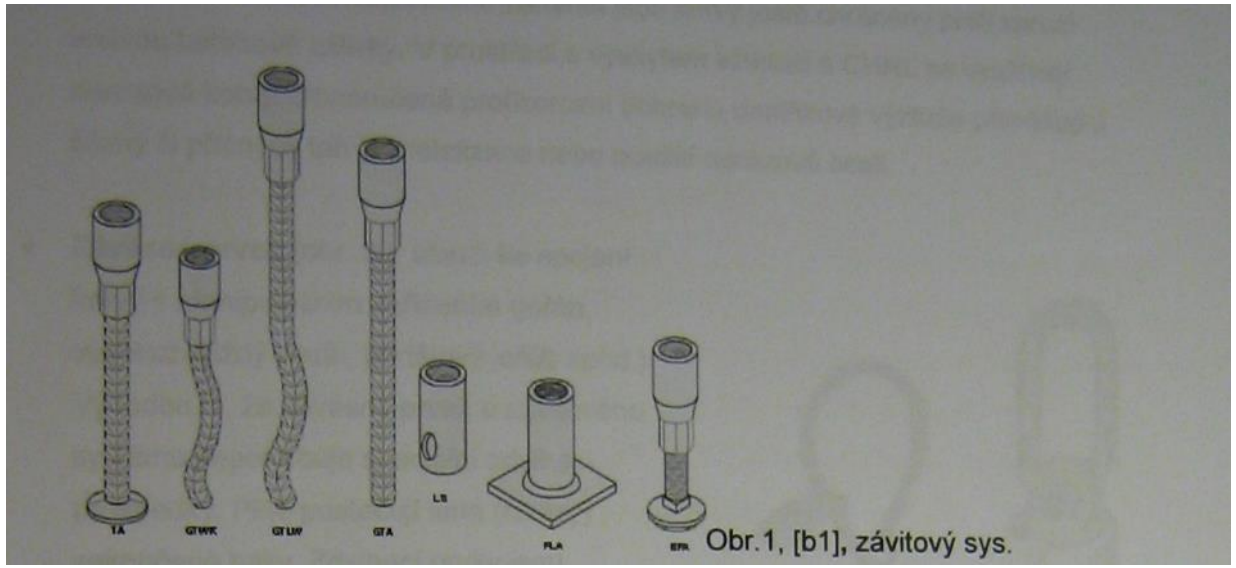
Počet nosných úchytů: n = 2



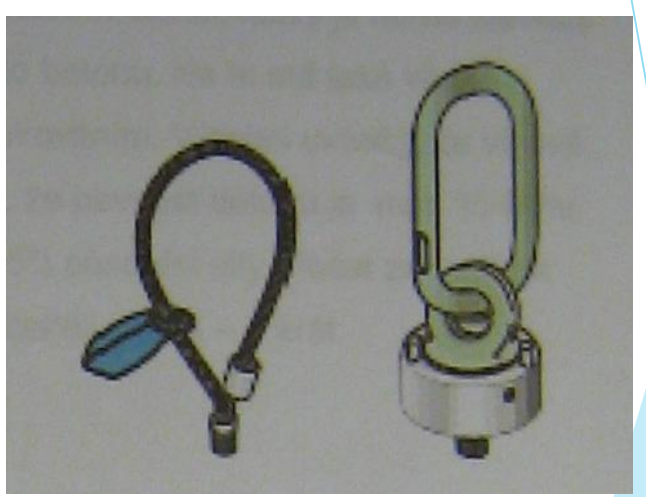
Počet nosných úchytů: n = 4

Lifting System

- Thread System

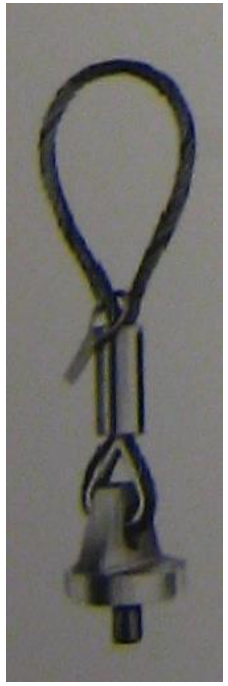


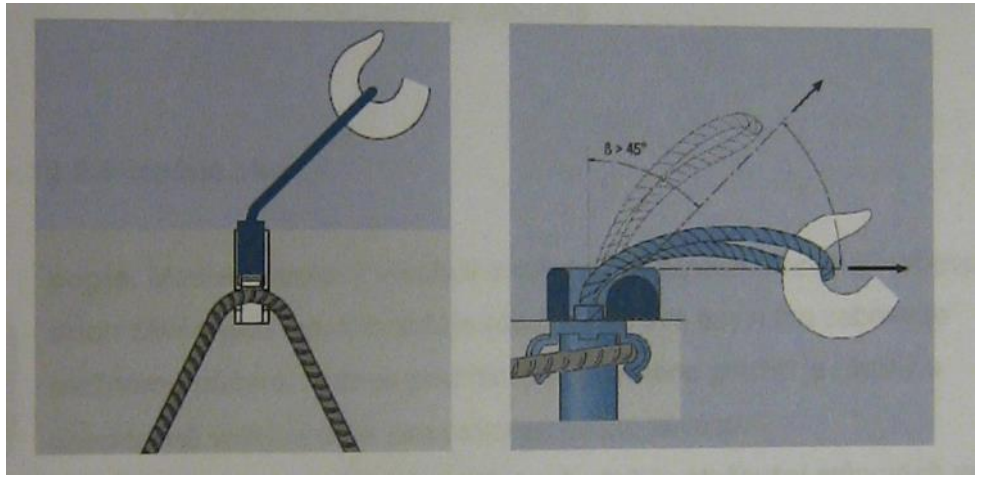
Obr.1, [b1], závitový sys.



Lifting System

- Wire Loops System





Lifting System

- Spherical Lifting System

Design Lifting System

$F_P = V \cdot \rho$ self-weight panel

$F_{adh} = A \cdot q$ => influence adhesion formwork,

where:

A interface between the element and the formwork

q coefficient of friction

Coefficient of friction	
Smooth with oil	q = 1 kN/m^2
Smooth without oil	q = 2 kN/m^2
Rough	q = 3 kN/m^2

Design Lifting System

$$N_{d,1} = \delta . \frac{\gamma_{go}}{n} . \left(F_p + F_{tah} \right)$$

$$N_{d,2} = \delta . \frac{\gamma_{go}}{n . \cos \beta} . F_p$$

where:

δ	Dynamic coefficient,
γ_{go}	Safety coefficient 1,35,
n	number of active manipulation of elements,
$\cos \beta$	Angle handling element,

Design Lifting System

Dynamic coefficient	
Stationary crane	1,0 – 1,2
Floating crane	1,3 – 1,4
Lifting and transport on flat terrain	1,5 – 1,65
Lifting and transport on uneven terrain	> 2,0

Theoretical basis of presented results were gained in support of the project FRVČ 915/2013 “Nástroje pro výuku navrhování betonových a zděných konstrukcí v anglickém jazyce”.