

SPECIAL LOADBEARING STRUCTURES

T2

SUMMARY OF METHODOLOGY

	VIERENDEEL TRUSS	FRAME + VERTICAL LOAD	FRAME+HORIZONTAL LOAD
<i>structural model</i>			
<i>simplified structural model for estimation (+ loads - distributed vs point force)</i>			
I.	<p>determine support reactions $T=2*P$</p>	<p>normal forces in columns $V=2*p*l/2$</p>	<p>shear forces in columns $H=P/2/3$</p>
II.	<p>shear forces in beams $\Sigma F_V=0$ $V=(T-P/2)/2$</p>	<p>moment diagram of beams modelled as beam on fixed supports $M_1 = p*l^2/12$ $M_2 = p*l^2/24$</p>	<p>moment diagram of the part in consideration based on the shear forces (H) + rigid corner-joints $M_1 = H*b/2$ $M_2 = M_1/2$</p>
III.	<p>normal forces in beams $\Sigma M_A=0$ $H=(T-P/2)*l/2/b$</p>	<p>shear forces in the columns derived from moment diagram $H=M_1/(b/2)$</p>	<p>shear forces in beams derived from the moment diagram $M_1+M_2-V*l=0$</p>
(:) <i>final step</i>	<p>internal force diagrams $M=V*l/2$</p>	<p>calculating support reaction forces</p>	<p>calculating support reaction forces</p>

Note that the above summary is to be considered as a SUPPLEMENT to the notes taken during practical and lecture! Any formula given above is only applicable as is, if the geometry of the structure fulfils the requirements discussed during practical.