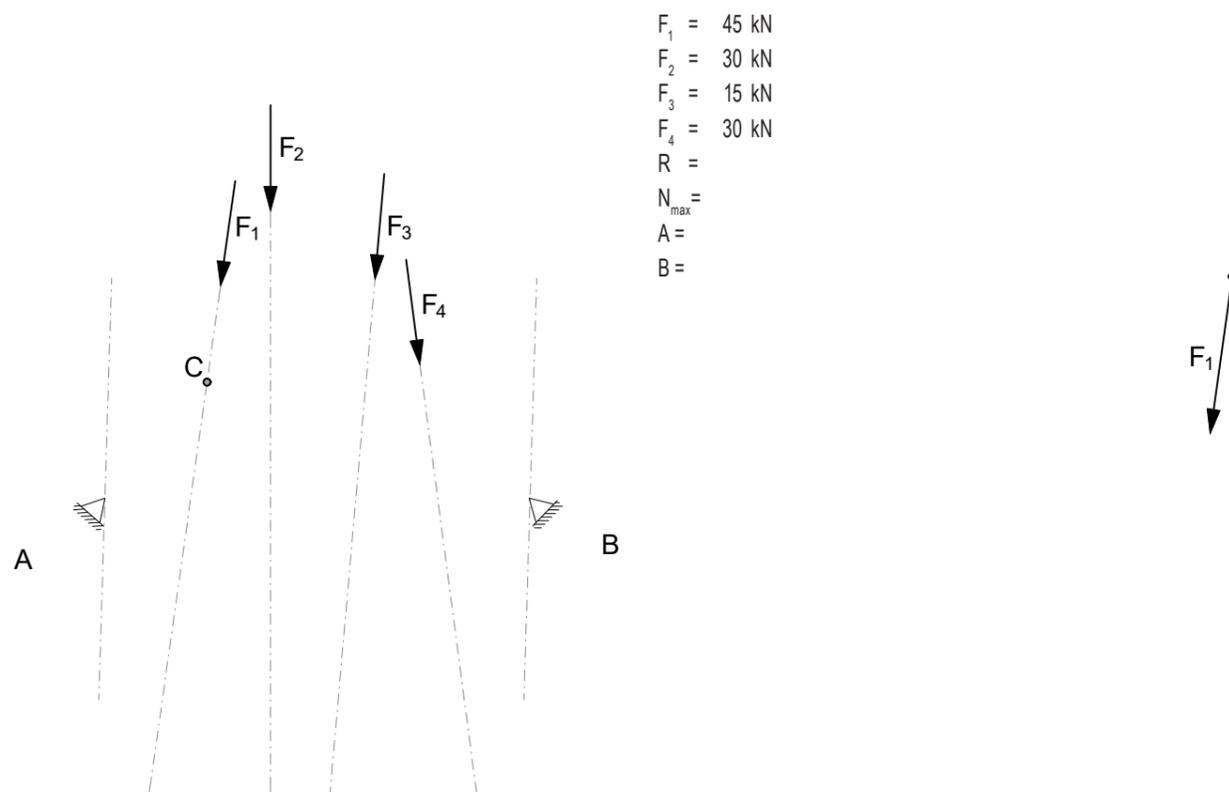


Task 1 Finding the thrust line using the Trial Funicular

Find the position and magnitude of the resultant R. Draw the thrust line through points A, B and C. Indicate the dominant stress in the arch. Draw the direction and determine the magnitude and direction of the reaction force. (See Fig. 6)



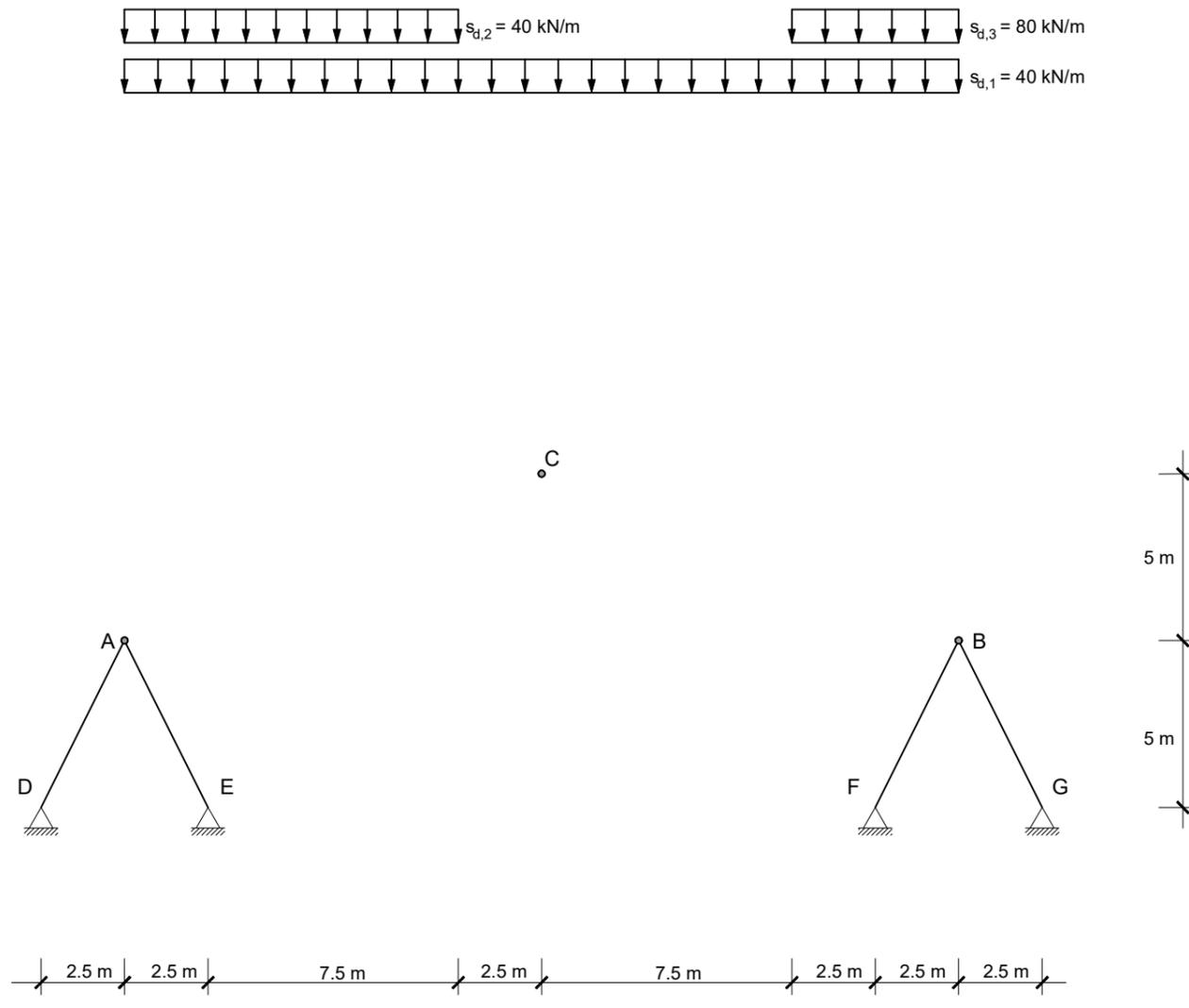
- $F_1 = 45 \text{ kN}$
- $F_2 = 30 \text{ kN}$
- $F_3 = 15 \text{ kN}$
- $F_4 = 30 \text{ kN}$
- $R =$
- $N_{\max} =$
- $A =$
- $B =$

Form diagram 1:250

Force diagram 1cm $\hat{=}$ 20kN

Task 2 Finding the thrust line using Partial Closing Strings

There is a given case with two support points A and B. Find the thrust line of the arch that spans between supports A and B and passes through point C. Draw the form and force diagrams. How big are the reaction forces D to G? Use partial closing strings as help for your construction. (See Fig. 8)



form diagram 1:200

D=
E=
F=
G=

force diagram 1cm=200kN

Task 3 Finding the thrust line using Superposition

Find the thrust line through points A, B and C in cases a) and b). Draw the corresponding force diagrams.

Draw the thrust line and the corresponding force diagram for case c), that consists of the combination of a) and b) by applying superposition.

Indicate the dominant stress in the arch as well as the support reactions. (See Fig. 7)

