

Truss Stability

Description

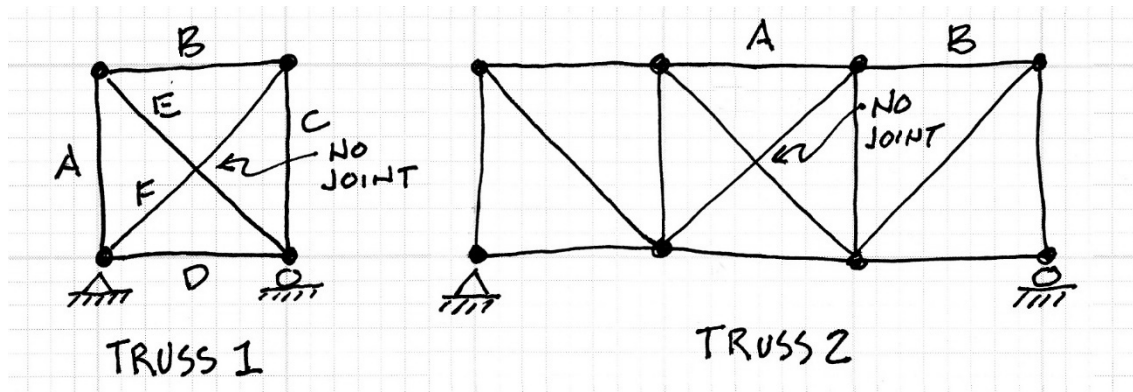
This project takes a look at the stability and instability of trussed structures based on member number and placement

Goals

- To make use to the truss stability equation.
- To observe limitations of the truss stability equation.

Procedure

1. Use the truss stability equation, $k=2j-r$, to determine whether Truss 1 is unstable, stable, or indeterminate.
2. Make a sketch of Truss 1 with member A removed. Based on the stability equation, what is the status of the truss now? Would you agree?
3. Now repeat this for each of members in Truss 1 one at a time. Does the truss remain stable in each case?
4. Use the truss stability equation to determine whether Truss 2 is unstable, stable, or indeterminate.
5. Make a sketch of Truss 2 with member A removed. Based on the stability equation, what is the status of the truss now? Would you agree?
6. Make another sketch of Truss 2 with member B removed. Based on the stability equation, what is the status of the truss now? Would you agree?
7. Try removing other members from Truss 2. Make a sketch of two of these showing one which remains stable and one which becomes unstable with one member removed.



$$k = 2j - r \quad \text{if} \quad \begin{array}{l} m < k \text{ then unstable} \\ m = k \text{ then stable and determinate} \\ m > k \text{ then stable and indeterminate} \end{array}$$