AEC 205

Truss Analysis – Method of Joints

Preliminary Steps

- 1. Identify the truss chords that are unknown
- 2. Draw the FBD of the truss
  - 2a. Identify the unknown reactions, X and Y
    - Unknown reactions are dependant on the connection type
- 3. Solve the reactions
  - 3a. Resolve all forces into their X and Y components
  - 3b. Solve $\sum F_x=0$
  - 3c. Solve $\sum F_Y=0$
  - 3d. Solve $\sum M=0$

Primary Steps

- 4. Isolate the first joint
  - 4a. Draw the FBD of the first joint
    - Each chord is assumed to be in tension or compression
    - Arrows going into the joint indicate compression
    - Arrows going away from the joint indicate tension
- 5. Solve the equilibrium equations for the joint
  - 5a. Solve $\sum F_X = 0$
  - 5b. Solve $\sum FY = 0$
    - Do not try to solve for Moments, the connections are assumed to be pinned and can freely rotate
    - If a negative result is achieved, the tension or compression assumption (see 4a) should be reversed

Continue

- 6. Proceed to the next joint
  - 6a. Draw the FBD of joint 2 (see 4a)
    - Each chord is assumed to be a ***2 force member,*** so use the result from the first joint in your FBD
  - 6b. Return to step 4 and continue
- 7. Repeat for each joint
  - When you are done, label the truss diagram with the forces and T or C, for tension or compression