# Frame

(i) Please see the joint section for information related to the nodes at either end of a frame object.

**Frame** objects, used to model beams, columns, braces, and truss elements in planar and 3D systems, are straight lines which connect two nodes. Biaxial bending, torsion, axial deformation, and biaxial shear are all accounted for in the beam-column formulation (Bathe and Wilson, 1976) which characterizes frame behavior. Material nonlinearity may be modeled through the assignment of frame hinges. Multiple straight segments may be used to model curved members, and features are available for non-prismatic members. The CSI *Analysis Reference Manual* (Chapter VII: The Frame Element) provides additional information on frame objects.

## **Related Content**

### Articles

#### **Tutorials**

- Cold-formed steel truss
- Hinge first steps (CSiBridge)
- Hinge first steps (SAP2000)
- Import frame properties from shape libraries
- Modeling a pin connection between crossing members
- Radial point load
- Reinforced-concrete column and beam design
- Steel-frame pipe rack
- Vibrating-machinery steel skid on piles

### **Test Problems**

- · Align solid and hollow sections
- Effect of insertion point on beam reactions
- End offsets
- Frame to shell connections
- Hinge response when yield point changes
- Insertion point and transform stiffness
- Partial end releases
- Temperature load vs. insertion point

