# Yield, ultimate, and expected stress

**Yield, ultimate, and expected stress** values are defined on the Material Property Data form. Yield (Fy) and ultimate (Fu) stress values are properties of the material. These values are used in structural design, and in the definition of fiber hinges.

Expected yield (Fye) and expected tensile (Fue) stresses are the product of a code-prescribed factor and the expected strength of the material. This factor is typically around 1.1, as with FEMA 356 Table 5-3. These effective stress values represent the material response which occurs approximately halfway along the x-axis of the force-deformation relationship. FEMA 356 recommends using effective strength for deformation-controlled actions. Minimum strength represents the lower bound of nonlinear material response, which is best for force-controlled actions. Expected stress values are used to automatically generate hinge properties for P-M2-M3 and P-M hinges.