**DEFINITION:** “An influence line is a graph of a response function of a structure as a function of the position of a downward unit load moving across the structure.”

**RECALL:** Influence lines are piecewise linear for all statically determinate structures.

**TRUSS ANALYSIS**

Typically, use the equilibrium method for determining the influence line functions of truss members. When making a section cut through the truss, remember to skip over the cut panel. Since the ILD is piecewise linear, this portion of the member force response can be constructed by linearly connecting the calculated linear influence line functions for the truss member.

**STRUCTURE LOADS**

**Concentrated Load** (P):
- Response Function = P * y; y = ordinate of ILD
- Maximum Response = P * \( y_{\text{max}} \)

**Uniform Load** \((w_l)\):
- Response Function = \( w_l \times \text{Loaded Area of ILD} \)
- Maximum Positive Response = \( w_l \times \text{Positive Area of ILD} \)
- Maximum Negative Response = \( w_l \times \text{Negative Area of ILD} \)

**RECALL:** Uniform dead load is applied to the entire span of the structure.

**Wheel Load Series:** Response Function = \( \sum P_i \times y_i \)