J. Design Procedure for Laterally Supported Beams

There is no standard set of design steps but the following will give some indication of how most designs proceed:

**Step 1: Design Load**
Find the maximum moment \( M_u \) and the maximum shear \( V_u \). The beam diagrams and formulas are helpful for the case of unusual loads.

**Step 2: Select a member.**
Use Load Factor Design Selection Table to find the lightest beam which has a moment capacity \( \phi_b M_n \) greater than the load \( M_u \).

**Step 3: Check member.**

- **Deflection:** Check if deflections for the unfactored live load and for the service load are less that \( L/360 \) and \( L/240 \), respectively. The Beam Diagrams and Formulas are useful in this step. If deflections are too large, use the Moment of Inertia Selection Tables to find a beam with a larger moment of inertia.

- **Shear:** Check if the shear capacity \( \phi_V V_n \) is greater than the maximum shear \( V_u \). If the shear capacity is too small, find a heavier and deeper beam using the Load Factor Design Selection Table.

- **Moments:** Calculate the moment capacity \( \phi_b M_n \) using the design formulas. The result should be very close to the value tabulated in Load Factor Design Selection Table.