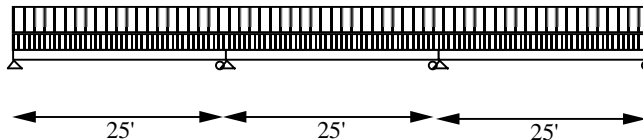


Continuous Beams

Problem No. 1

Design three A36 steel simply supported beams in a row (see figure below), each spanning 25' and carrying 1,100 lb/ft live load and 500 lb/ft dead load. Design for shearing, bending and deflection (floor beams). Which of the three governs?

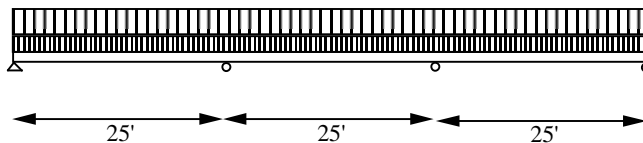
dead load = 400 lb/ ft
 live load = 1,100 lb/ ft



Problem No. 2

Redesign the beams for shearing, bending and deflections, assuming that they are rigidly connected at the joints (*i.e.*, it is a continuous beam with three spans; see figure below). Apply all loads acting on each span of the beam. Determine the required cross section for the entire length of the continuous beam (prismatic beam).

dead load = 400 lb/ ft
 live load = 1,100 lb/ ft



Problem No. 3

Repeat the design of the continuous beam for shearing, bending and deflections, applying the most critical loading conditions (alternate loading) for both mid spans and supports. (four loading cases shown in the figures below). Which sections are critically loaded for each loading case? Compare with your answers to problem no. 2 above. Determine the required cross section for the entire length of the continuous beam (prismatic beam).

