

Consider the load at joint (4). In this case, joint (3) will be supported by a pin reaction. The reaction will be equal to 3,000 pounds.

The member AB may be shown by the Method of Sections to be in Compression 3,750 pounds, and the members DC and FE both in Tension 3,750 pounds.

The results of the preceding discussion are tabulated in Fig. 147.

The Dead and Live Load Stresses having been determined independently, of one another, the combined effect of Dead and Live Load may now be examined.

As previously pointed out, the Dead Load is composed of the weight of the truss and any fixed objects that may be on the bridge. This being the case, the stresses determined by considering the Dead Load alone will exist when the bridge is *not* in use. Furthermore, because the Dead Load is always on the truss, there will always exist the tendency to produce these Dead Load Stresses, although, as will be seen, these stresses may be modified, and in some cases reversed, from Tension to Compression by the Live Load.

A plus sign before a value in Fig. 147, indicates Tension, a negative sign indicating Compression.

Considering first the member AB, it is seen from Fig. 147 that this member is always in Compression. The maximum combined stress due to Dead and Live Load is 15,000 pounds, given when the Live Load is over joint (2) (Fig. 140).

Member	Dead Load Tension	2	3	4	Maximum Stresses
AB	-4,750	-6,250	-8,000	-9,750	-15,000
DC	+5,250	-1,250	+5,000	+8,750	+10,250
FE	+1,750	-1,250	-2,500	+3,750	+5,500

Fig. 147.

Consider the member DC. This member is in Tension 5,250 pounds, due to the Dead Load. The effect of the Live Load taking up a position at joint (2) is to destroy 1,250 pounds of the Dead Load Tension.

The Live Load *alone* at joints (3) and (4) places DC in Tension; that is, in either of these positions the Live Load augments the existing Tension due to Dead Load. It is evident that the maximum stress in DC is 10,250 pounds Tension, given when the Live Load is at joint (3).