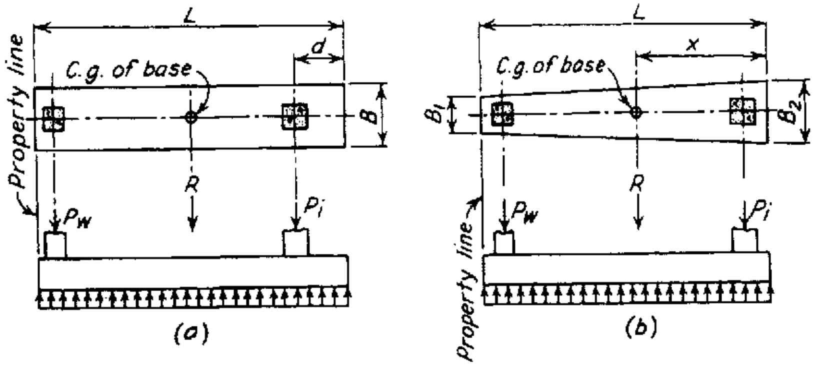

FIGURE 25.1. Diagram illustrating forces acting on combined footings of (a) rectangular and (b) trapezoidal shape.

adjacent construction at the other. The dimensions B_1 and B_2 can be determined from the solution of two simultaneous equations: one equation expresses the location of the centroid; the other equates the sum of the loads to the product of the allowable soil pressure and the area of the footing. In this manner the two criteria discussed in Art. 25.1 are satisfied.

The solution of the two equations mentioned in the preceding paragraph leads to the following expressions for the widths of a trapezoidal footing.

$$B_1 = \frac{2A}{L}\left(\frac{3x}{L} - 1\right) \qquad 25.1$$

and

$$B_2 = (2A/L) - B_1 \qquad 25.2$$

where A is the area determined by dividing the sum of the loads by the allowable soil pressure; other symbols are shown in Fig. 25.1*b*. Inspection of eq. 25.1 shows that the width B_1 is zero when x is equal to one third the length of the footing. If this condition exists, a triangular footing is needed to satisfy the requirement of uniform soil pressure. In tentative designs, whenever the distance x approaches or is less than $L/3$, the length L should be increased by increasing the projection at the wide end.

25.3. Cantilever Footings

A third relatively common type of combined construction is the cantilever footing (Fig. 25.2). It is designed to support a wall column near its edge without causing nonuniform soil pressure. The cantilever princi-

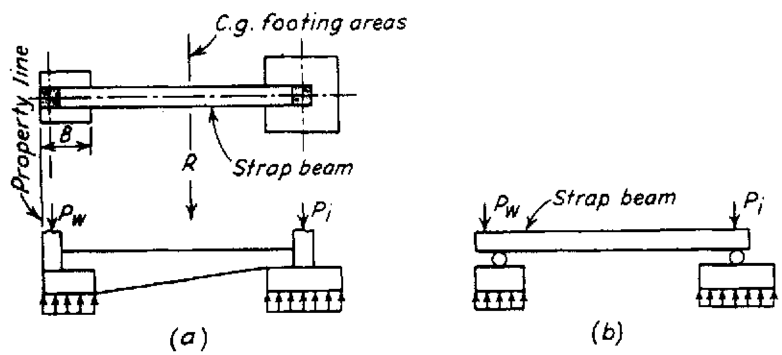

FIGURE 25.2. Diagram illustrating (a) forces acting on cantilever footing. (b) Principle of cantilever footing.