(c) Re-entrant room shapes may be divided into separate, smaller rectangular areas and the closest spacing arrived at by the above method applied to the whole room (Figure 20.3). Thus a room of 25 m × 20 m with a 10 m × 10 m re-entrant portion at one corner may be considered as two areas of 20 m x 15 m and 10 m × 10 m. For a luminaire mounting height of 3 m the larger area has a room index of 2.8, suggesting a minimum number of cells of $4 \times 6 = 24$ at a grid spacing of 3.75 m × 3.3 m. The smaller area has a room index of 1.7 indicating a minimum number of points as 16 at a spacing of 2.5 m × 2.5 m. A grid of points spaced at 2.5 m would be applicable to the whole space.

Illuminance measurements should be made at the centre of each cell, at the height of the working plane, over the whole space or over the task area, as required. If the working plane is not specified, measurements should be taken on a horizontal plane at 0.8 m above the floor. A portable stand or tripod is useful to support the photocell at the required height and inclination. Care should be taken not to cast a shadow over the photocell when taking the readings.

Two-line method

This method applies to rectangular interiors lit by a regular layout of ceiling-mounted luminaires that are installed at or below the manufacturers' maximum spacing-to-height ratios. It is not suitable for measurement of average illuminance in non-uniform installations, installations with a mixture of mounting heights, other unconventional layouts or those consisting of mixtures of different ceiling mounted luminaires or uplighters. In such cases the full grid measurement method must be used.

In the two-line method, measurements are taken at evenly spaced intervals along two perpendicular lines parallel to the two axes of the room. The spacing of the measurements may be at any convenient distance but must not exceed the spacing of the cells calculated from Table 20.1 and must include a reading at the intersection of the two lines. The intersection point should be chosen to avoid positions exactly below or midway between luminaires. The average illuminances along the two lines of measurement are calculated. The overall average illuminance of the installation (E_{av}) is then given by:

$$E_{av} = E_x E_y / E_{is}$$

where: E_{is} is the illuminance at the intersection point of the two lines
E_x is the average illuminance along line x
E_y is the average illuminance along line y

20.4.3 Exterior lighting

For exterior lighting installations, a full grid of measurements should be used. The cells are usually rectangular and the cell size in each axis should be a whole number. The illuminance is measured at the centre of each cell. The maximum cell size may be determined from the equation

$$p = 0.2 \times 5^{\log d}$$

where: p = grid interval
d = size of the longer reference axis