Technical profile #8A was an overview of the most important aspects pertaining to the placement of brick veneer control joints. This profile illustrates alternative approaches to their placement. There are a few points to keep in mind while reading this profile. First, the placement of vertical and horizontal control joints, CJ's, creates panels of brick. Second, lintels are loose angles bearing on the brickwork while shelf angles are angles attached to the frame. When brickwork is supported by a shelf angle, the panel needs vertical and horizontal CJ's to ensure that the brickwork is not supported by both the foundation and the frame. Third, control joints should not go through the lintels.

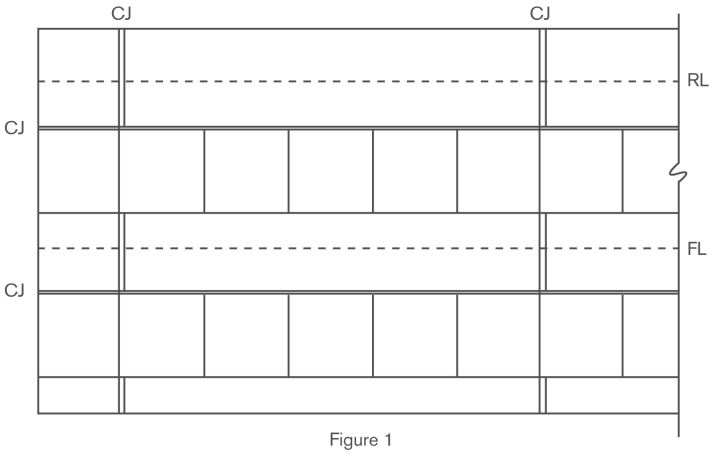

Figure 1

Figure 1 illustrates a two story commercial building with continuous or strip windows. Normally for this type of construction, the brickwork over the windows is supported by shelf angles going from column to column. These shelf angles are good places to locate the horizontal CJ's in the veneer. Since the veneer is separated horizontally by continuous angles, the vertical control joints can be placed anywhere along the length of the wall. It is best to place CJ's at least at the columns and then, if desired, in between the columns. Figure 1 shows one possible arrangement for the control joints.

Figure 2 illustrates a two story commercial building with separate or "punched out" windows. Horizontal control joints are created at each floor by shelf angles while brick over the windows is supported by loose angles (lintels), that bear on the brickwork on each side of the window. The angles do not need to be bolted to the frame. Since the lintels bear on the brickwork at the window jambs, it is not recommended that a vertical control joint be placed at the window jambs; instead place them away from the window, possibly in the middle of the brick piers between the windows as shown in figure 2. With a shelf angle at the roof line, it is possible to add extra vertical control joints on the parapet walls if the normal spacing of the CJ's was too far apart for a parapet.

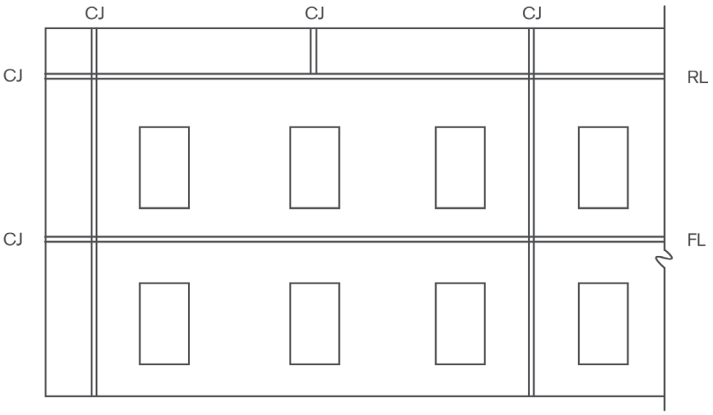

Figure 2

If the building shown in figure 2 has continuous shelf angles over the windows as shown in figure 3, vertical control joints can be placed at the window jamb. Also, the CJ's could be placed anywhere between the windows.

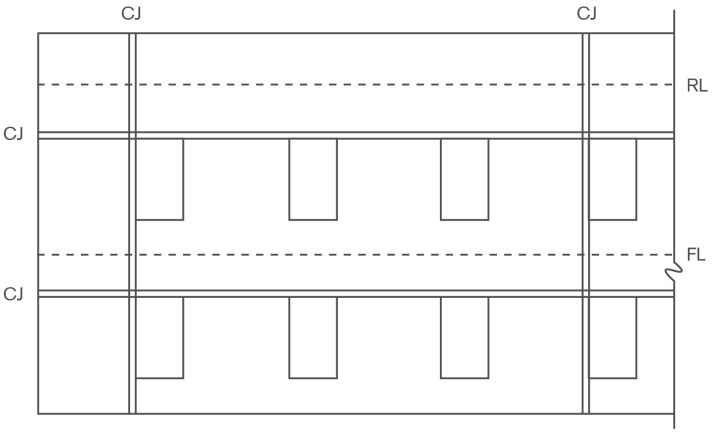

Figure 3

There are instances when a building has walls of different heights as shown in figure 4. Since the short wall moves differently from the taller wall, separating the two walls by a CJ will prevent cracking. It is good design practice to place vertical control joints in the wall where the wall height changes as illustrated in figure 4.

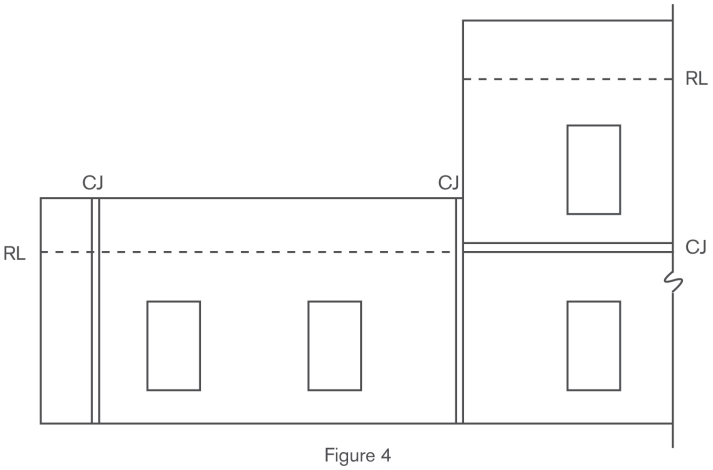

Figure 4

A different building design but a similar control joint placement situation, as illustrated in figure 4, is shown in figure 5. In this scenario the short wall is supported by a steel beam at the second floor. Figure 5 shows the control joint on the tall wall, however, the CJ could just as well have been placed on the short wall at the inside corner. The placement of the CJ's on the tall wall needs to follow normal guidelines for control joints near a corner. There needs to be space just under the beam supporting the short wall to allow for vertical expansion in the wall below the beam.

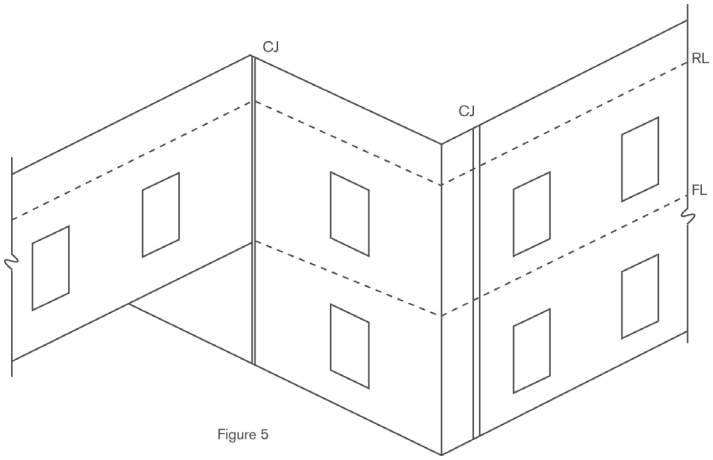

Figure 5

When brickwork is to be supported over a large opening as shown in figure 6, there are a number of different possible options for control joint placement. In figure 6 the shelf angle that supports the brickwork over the opening is extended beyond the masonry opening to the vertical control joints. Since each of the windows in the building are wide, it would be necessary to support the brickwork over the windows with shelf angles. In this case it was decided to stop the shelf angles at the window jambs. This detail then requires vertical control joints to be placed at the window jambs as illustrated in figure 6. At the building corners there are no shelf angles, consequently the vertical expansion of the brickwork at the top of the wall can be considerable. It is necessary to provide sufficient room for this expansion between the top of the brick wall and the underside of the coping.

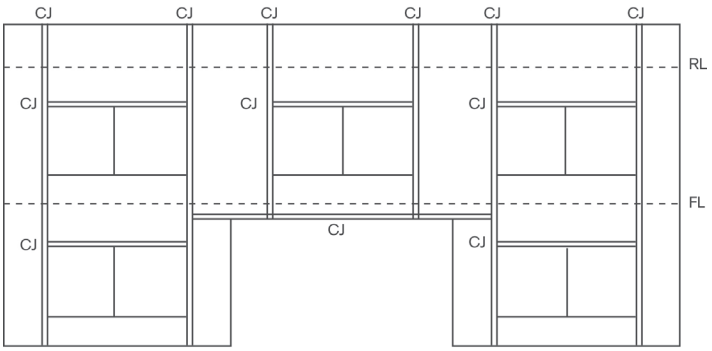

Figure 6

An alternative to the control joint placement shown in figure 6 is the design shown in figure 7. Here the shelf angle over the entrance opening stops where the masonry begins with the vertical joints starting at the end of the angle. Horizontal shelf angles were placed continuously above the windows all around the building. Vertical control joints can be placed anywhere in the brickwork above the shelf angles.

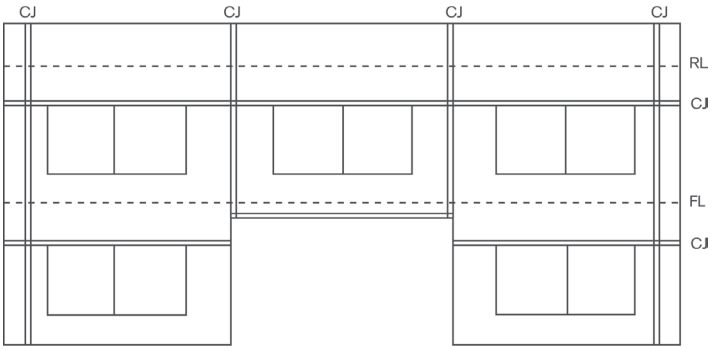

Figure 7