

III-4. The Aesthetic Analysis of Low-Rise Masonry Walls

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ABSTRACT

Brick throughout history has been aesthetically used as a permanent masonry wall material. Careful study and refinement of scale, proportion, color and texture can create a wall of timeless beauty. Additional factors or principles of design that contribute to that end are as follows: 1) the structural expression of the wall, 2) the function of the wall, 3) the bonding pattern, and 4) the method and type of fenestration. Each one of these principles effects the visual impact of the wall, but it is the interaction of all the factors that produces the final aesthetic statement.

STRUCTURAL EXPRESSION

In the nature of material, brick has historically assumed a compressive or load-bearing expression. The classic question arises how to architecturally treat or express the character of bearing and non-bearing walls within a building design. Perhaps a solution lies in the overall concept of the building form. Although principles of design should serve as guide posts, many times the direction is clear but the methods for achievement vary.

With brick masonry walls being used as infill panels and cladding systems, there is a natural tendency to sense that the brickwork is accomplishing more than an enclosing skin. The non-structural character should be resolved by careful attention to the details and the clarifying of the building structure, so as to reveal the true non-bearing nature of the wall. (Figure 1)

Bearing wall expression in comparison gains from the bearing qualities of the wall. In general, it should have greater mass and solidness in relationship with surrounding walls. The wall should be securely anchored to the ground and pierced with a minimum number of carefully placed openings. Roof loads should cap the wall to give it the visual stability it requires.

The low-rise wall tends to have a horizontal quality and expression. One form that has a definite vertical sense is when the bearing element is transformed into a series of masonry piers or columns. Even though this system takes on part of a skeleton expression, it should still utilize mass and proportion to emphasize the load carrying expression of each bearing element.

WALL FUNCTION

The wall is directly influenced by the function it performs. For example, when a wall surrounds a garden or outside space versus the walls of a building, the garden wall being a non-bearing element must take on a greater thickness or utilize piers or some form of stabilizing support. This fact profoundly effects the wall character and expression. The garden wall can by using reinforcement be made considerably thinner, but the wall element will lack the mass required visually when it freely stands alone. Many times light and air are required to penetrate the wall or some method to lighten the visual effect of the wall. This can

be accomplished by carefully working with the bonding pattern. Without weakening the wall, a select number of bricks are removed to produce a subtle statement of wall penetrations. (Figure 2)

Certainly building walls can be influenced by the program of the building they enclose. The choice of allowing the function of the plan dictate the elevation, versus the elevation imposing a strong constraint on the plan is a vital design decision. When exterior expression and internal function are complimentary and reinforce each other, the aesthetics of the building are heightened.

BONDING PATTERN

Perhaps the most significant factor in adding an inherent richness to masonry is the selection of an appropriate bonding pattern. Today, running bond is used in the majority of building walls. No question where economics and speed of construction are of prime importance running bond is selected. The nature of this bond is a pattern of uniform texture and lends itself to walls where mortar joints can be either blended into the brickwork or a horizontal joint line expressed.

The other two basic bonding patterns, English bond and Flemish bond add a new dimension to the elevation. They each have distinctive characteristics. The English bond with alternate courses of headers and stretchers applies a counterbalancing vertical effect. While the English cross variation, which is produced by alternately shifting the stretcher courses by one header, develops a diagonal pattern with both brick and mortar joints. The Flemish bond pattern produces a texture that transcends the individual header and stretcher into a series of cross figures. Double stretcher Flemish bond retains the cross figure, but a vertical emphasis is superimposed over the pattern. There are many other variations within these three basic systems, but the point is that the texture of the wall is a combination of brick and mortar joint pattern, color and texture, plus the controlled order of the arrangement.

FENESTRATION

The treatment given to wall openings in masonry construction can be classified into the following two basic types: the punched opening or the strip opening.

Punched openings can be detailed using either a lintel or an arch support at the head condition. Depending on the design of the building, the arched opening visually tends to structurally express the compressive loads flowing around the opening. While linteled openings tend to blend into the horizontal and vertical proportions of the wall. Punched openings take on major importance when window and door openings are recessed within the wall plane. With the light and shadow highlighting the opening, the recess emphasizes the wall thickness and mass. (Figure 3)

Strip openings clearly divide the wall into wall and opening segments. The wall elements tend to become a dominant feature of the building by expressing a long, flowing horizontal elevation. The one exception to this tendency would be when the segment is shortened and increased in depth to produce a series of masonry piers. (Figures, 4,5,6)

The main concern with each type is the careful use of size, number, and arrangement of openings. When the punched opening disrupts the visual integrity of the wall, modifications would be needed. The position of openings becomes extremely critical when using either English or Flemish bond pattern in that sufficient distance is required to establish and maintain the bonding pattern. Also if the opening is too large or near the edge, the wall visually breaks up into two or more segments. The successful treatment of punched openings could be compared to placing an opening in a highly patterned fabric or knitted material. The opening or void does effect the pattern, but

by keeping the pattern flowing and at the same time contained it unifies the elevation into a whole wall element.

CONCLUSIONS—NEW FORMS FOR THE FUTURE

Good design and aesthetics should not add cost to the construction. The factors I have outlined add a quality, which is dependent on additional factors of technical details, material selection, and workmanship. It is that combination that imparts a lasting statement for society.

Today's demands for energy-efficient systems need not present a problem in masonry design. The massive nature of brick bearing walls and infill cladding systems are both energy saving and aesthetically pleasing. When the wall has fewer openings, the integrity of the wall is visually strengthened, while creating a mass capable of tempering or storing thermo energy.

The brick has an appropriate scale and discipline, therefore great care should be used in applying new forms not in character with the design. I see the development of an endless variety of masonry shapes, colors and textures, and innovations in bonding patterns. Each has the potential of adding a new enduring richness to the architecture of the future. It is a natural method to achieve depth and beauty within the ordered context of masonry. New techniques will develop and refine the manufacturing and workmanship of the material, but it will be the imaginative and creative mind that will show the direction for future forms and aesthetics.

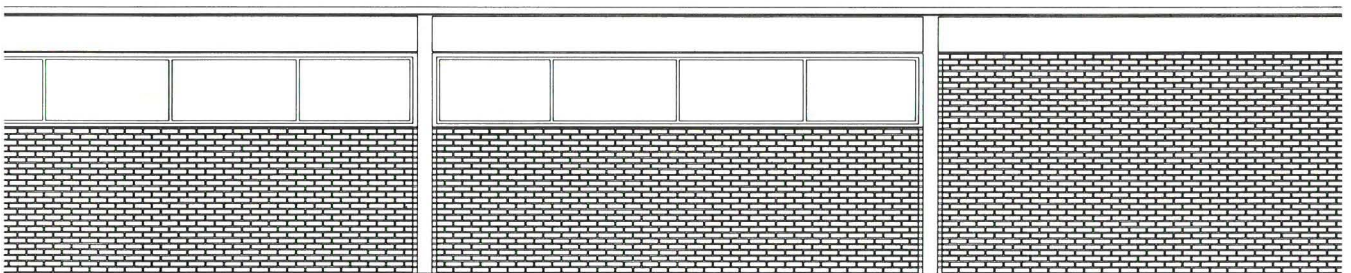


Figure 1. Elevation—running bond, non-bearing infill.

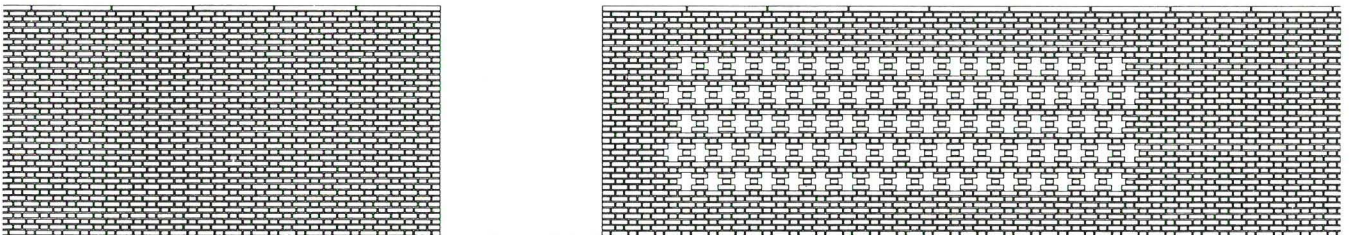


Figure 2. Elevation—Flemish bond, garden wall.

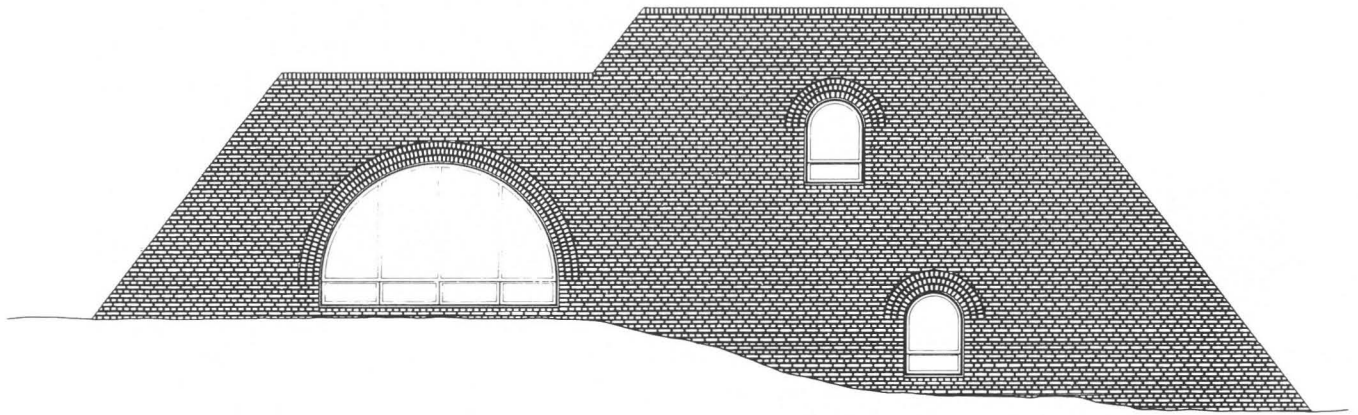


Figure 3. Elevation—English cross bond, arched, punched openings.

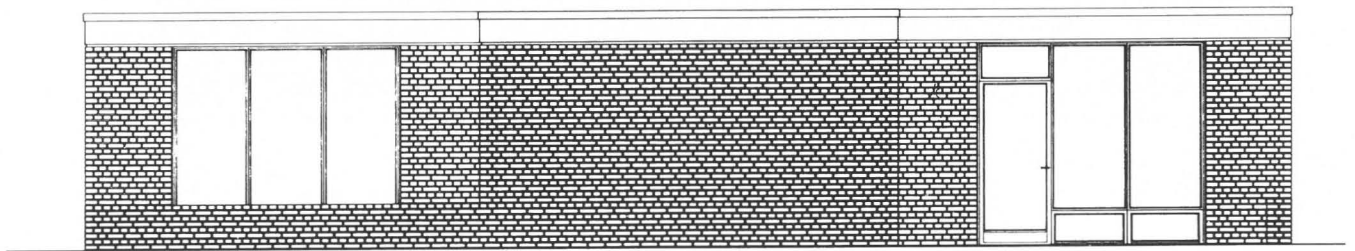


Figure 4. Elevation—English cross bond, strip openings.

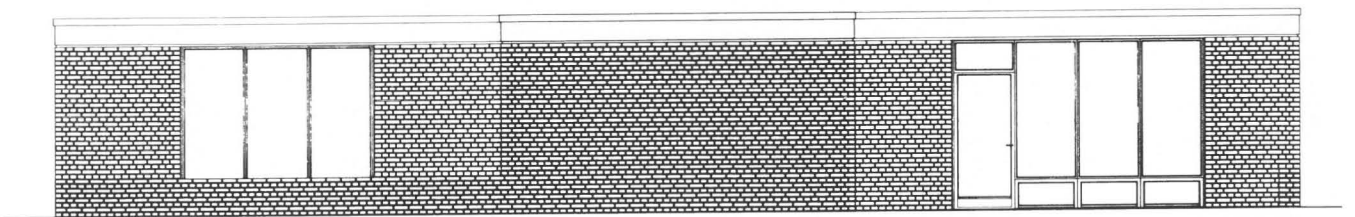


Figure 5. Elevation—English cross bond strip openings.

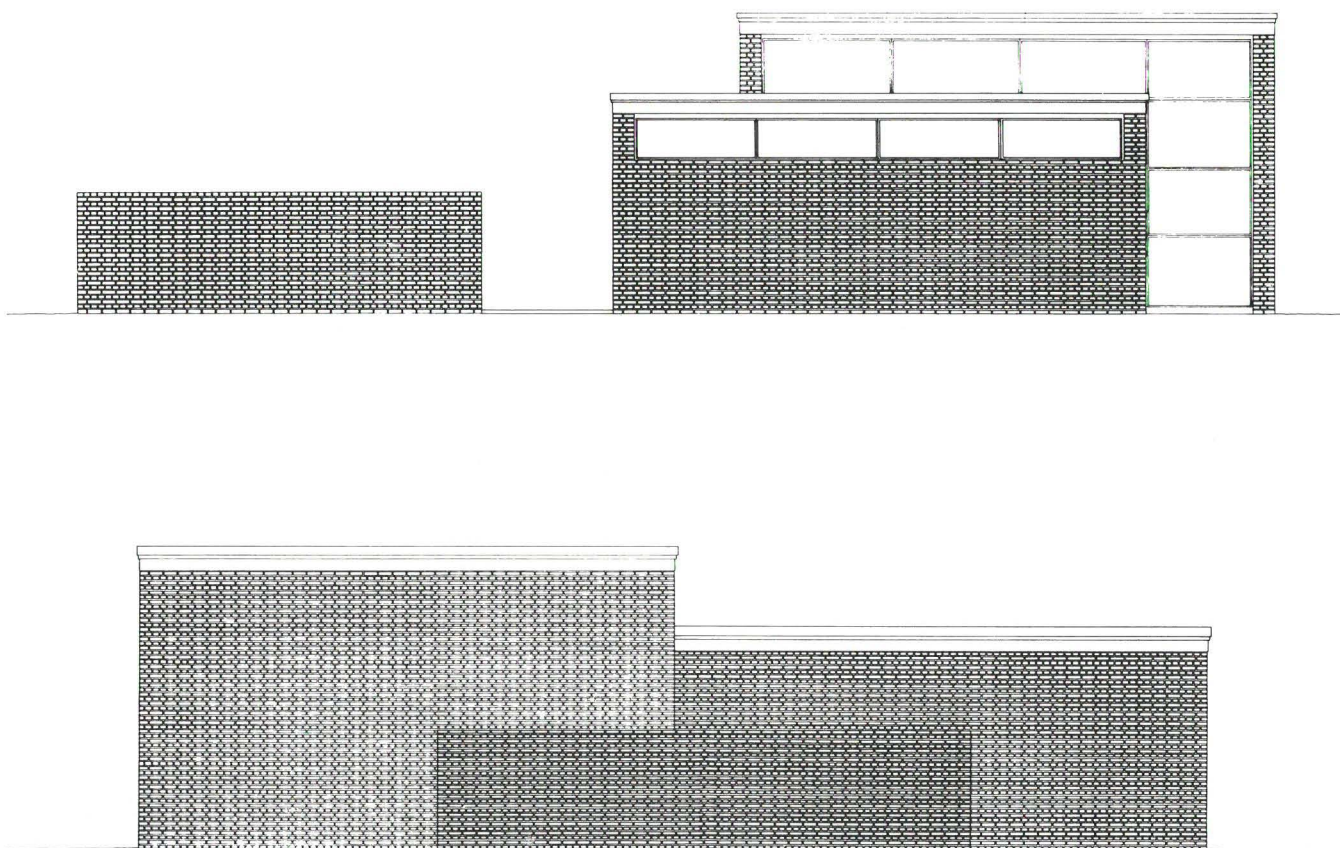


Figure 6. Elevation—English bond, strip openings.

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