

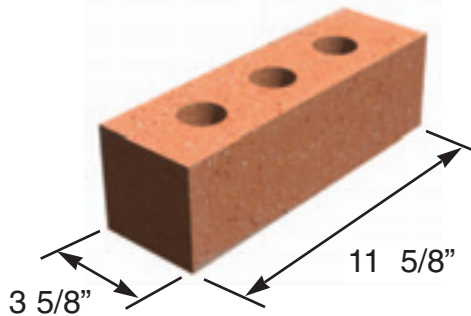
Utility Brick Bonding

1/3 Bond is More Economical Than 1/2 Bond

By Jason Yana

Introduction:

The utility size brick is becoming more and more popular. Many new schools are being built with this size brick for economy reasons. Details are our defining moments, they bridge the gap between a good design and a great one. Here, as in most design situations, careful attention to detail can avoid problems in the future, thus saving money. When using utility size brick, the 1/2 bond pattern requires a large quantity of cut brick. Since field cutting brick is a costly option, using 1/2 bond with utility brick is not the most economical detail. The solution to this problem is to simply use the typical 1/3 bond pattern. I have included a series of drawings which compare the two bonding strategies, highlighting the units used to complete the bond pattern.



Typical Utility Brick

Expansion Joint Details:

1/2 Bond:

Closure of 1/2 bonded utility brick at expansion joints requires cutting. The length needed to close off the coursing is 5 5/8". Since expansion joints are usually located approximately every 30ft on center, The cost to use this bond pattern could become \$7-\$10 per running foot of expansion joint.

1/3 Bond:

Since the space needed to close off 1/3 bond at an expansion joint is either 7 5/8" or 3 5/8", there is no costly field cutting necessary. The designer uses a 7 5/8" closure brick (a standard size) as shown in Figure 1.

Figure 3 shows the use of a header to fill the remaining third (3 5/8").

Figure 4 shows the most ideal solution, using both the 7 5/8" closure unit and a 3 5/8" header to continue the bond pattern right through the expansion joint.

Figures 2 and 3 effectively reverse the bond pattern at the expansion joint. Figure 4 maintains the bond pattern for the least noticeable expansion joint detail.

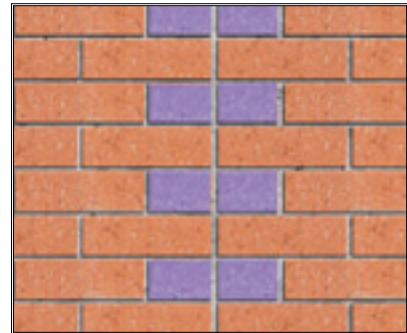


Figure 1 - Half Bond at Expansion Joint (cut units highlighted)

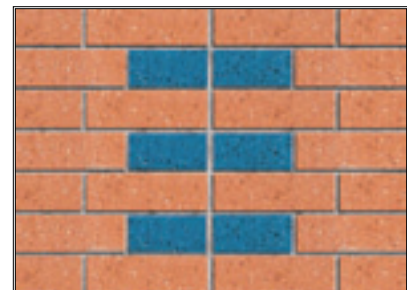


Figure 2 - 1/3 Bond at Expansion Joint (closure units highlighted)

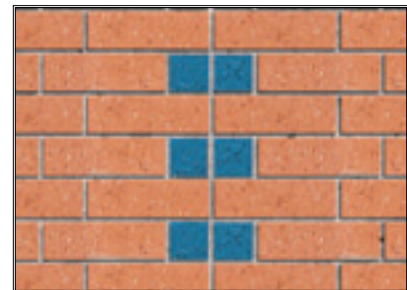


Figure 3 - 1/3 Bond Option 2 (split closure units highlighted)

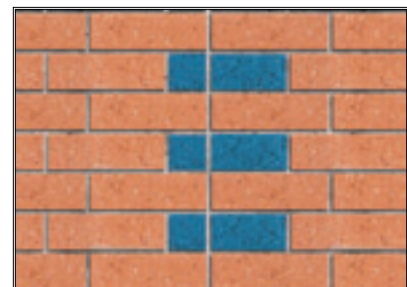


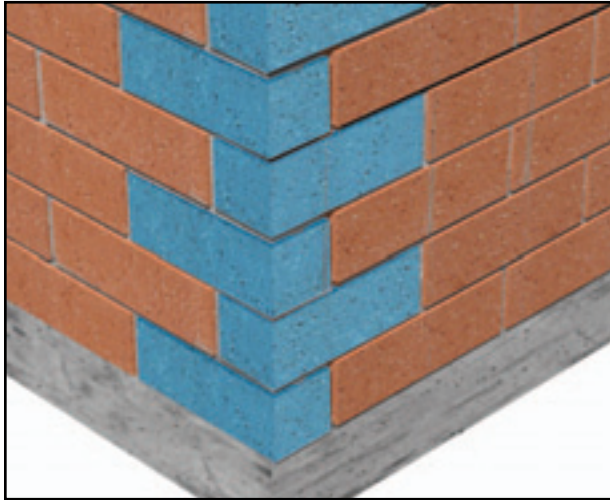
Figure 4 - 1/3 Bond Option 3 (combination of split and whole closures)

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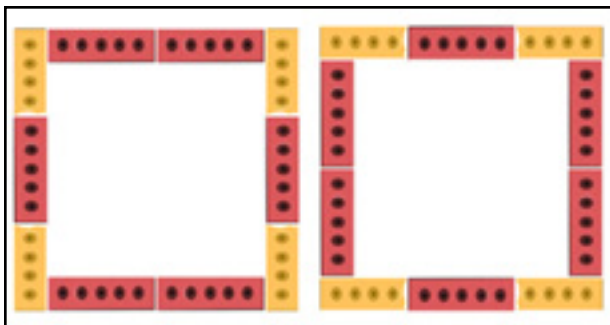
1/2 Bond Corner

To achieve proper closure when laying a utility-sized brick in 1/2 bond, there must be an adjustment.. This is achieved by field cutting a special length unit at 9 5/8" . All of the cutting involved with this detail can be avoided by using 1/3 bond as shown to the right.



1/3 Bond Corner

Since a one-third bond pattern divides the 12" nominal brick into thirds, turning the corner is as natural as it is economical. Since the head of the brick is 4" nominal, it is one third of the total unit length, therefore bonding around the corner with no cuts at all.



2'8" Pier:

With the previously mentioned corner problem, creating a 2'8" Pier requires 12 field cuts per 1 ft. of height (\$20-\$30 per ft.), while 1/3 bond would require none..

Conclusion:

Using 1/3 bond and closure brick (routinely manufactured for this specific purpose), instead of 1/2 bond always lowers the cost of a utility brick wall. [Using a 9 5/8" closure in half bond, a full size brick must be purchased, a cut must be paid for, and the resulting waste must be removed from the site, adding further cost].