



Technical Bulletin

Choosing the Right Block for Stucco

TB-ST 01-07

Concrete block is an excellent base for Portland cement-based stucco. In fact stucco applied to concrete block is one of the most successful and popular building systems in Florida. A thorough understanding of how these two components work together is essential in assuring the continued success of this process.

BEST RECOMMENDATION

The ability of the stucco to bond to the concrete block is key to the performance of the system. There are two mechanisms that influence bond, the texture of the surface of the block and the ability of the block to absorb water.

In a general sense, the rougher the block texture, the better the mechanical bond. However, in some parts of Florida a “sand finish” or “smooth finish” block texture is the typical industry standard.

ASTM C90 the Standard for Concrete Masonry Units directs the purchaser to check with the local concrete block suppliers regarding the availability of particular features of the block, such as surface textures. If desired features are available, they should be specified.

As illustrated below, a mechanical bond is created in the manufacturing process of the block. A rough texture creates good mechanical key for the stucco, while a sand finish or smooth finish block limits the mechanical key.

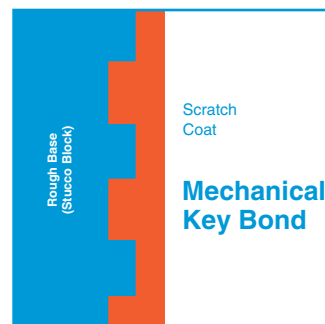


Figure 1 – Mechanical key bond

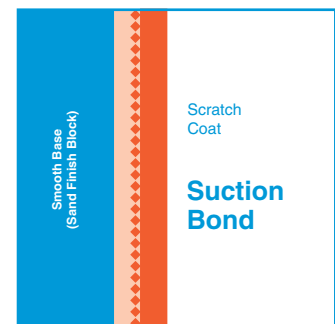


Figure 2 – Suction Bond

MORE DIFFICULT

Despite the smoother texture, a “sand finish” block can still provide an excellent base for stucco. This is done through a mechanism called suction bond, as illustrated above. The success of suction bond depends on the controlled amount and rate of suction that the water and cement fines are being absorbed into the surface of the block. Too much or too little suction will diminish the extent of bond between the stucco and the block.

Weather and jobsite conditions can also influence the ability to achieve suction bond, which could lead to bond failure and subsequent delamination of the stucco from the block. However, properly applied and cured stucco can still achieve excellent bond.

For more information on stucco bond refer to TB-ST 02-07 "Stucco On Block".

In extreme cases, the use of a bonding agent or dash bond coat is recommended.

Care must be exercised in choosing a bonding agent. Some bonding agents will re-emulsify when they get wet, causing the stucco to release. Other bonding agents require an air-drying process, which is a contradiction to the normal recommended practice of moist curing. Bonding agents for exterior use should comply with ASTM C 932. Non-reemulsifying bonding agents must be used and the manufacturer's recommendations for use should be followed.

ARCHITECT'S CONSIDERATIONS

How to Finish the Other Side

It should be remembered that should you choose a Rough Texture block for good bond; the same texture

Photos illustrate block textures

Rough, Medium or Smooth Texture

For best results, consult your manufacturer and make sure that you are specifying a block that is specifically designed to provide mechanical bond. Some manufacturer's may call this a Stucco or Rough Texture, others may offer a Medium Texture, both will achieve the desired results.



will appear on the opposite side of the block. The choice is often made to finish the opposite side with a paint coating, and this can normally be accomplished with the use of a block filler primer coat prior to the application of the finish coat of paint.

For an even smoother texture, consideration should be given to a veneer plaster of gypsum or Portland cement products.

Additionally, there are some excellent proprietary products on the market that should be considered.

To be certain that the result is equivalent to your desire; a sample panel should be constructed and viewed prior to specifying the finish.

Stucco Coats & Thickness

The recommended practice for applying stucco on concrete block in Florida is a two coat, double-back method with little or no delay between the base coat and finish coat. The total thickness of the stucco need not exceed 1/2". Extra thickness only puts additional weight and stress on the bond. For detail information on stucco thickness, refer to ASTM C 926.

TEXTURES

ROUGH

This texture will provide for good mechanical bond.

MEDIUM

This texture will also provide for good mechanical bond.

SMOOTH

This texture is too smooth to achieve mechanical bond. A suction bond can be achieved. Use of a bonding agent or dash-bond coat should be considered.