

BrickSync

The facts behind brick and cement masonry

Special points of interest:

- The history of brick and concrete
- How brick and concrete are made
- Single wythe brick vs. single wythe concrete



The aesthetic differences between clay and cement can be seen in these two photos

Architects, contractors, and developers are looking to create, build, and sell commercial and residential projects using masonry. There are an abundance of products and options available in our market including brick veneers, thin brick, concrete masonry, and thru-wall brick. As knowledgeable representatives of building materials, we feel it is our responsibility to educate our clients on these materials so they can in turn select the material that will best suit their project. This newsletter will target the distinct and many differences between concrete masonry and true brick masonry.

Throughout the course of history, brick has been one of the most versatile and widely used materials for construction. Brick is made by mining clay, a natural material, and creating a slurry, which is extruded through a machine. The end or cap where the brick comes out is referred to as a "pug". The pug determines the size and sometimes the texture of the brick. Once the brick is cut and dried, it is fired in kilns at up to 2,000 degrees.

Brick walls often served as the structure, weather barrier, vapor retarder, insulator, and sometimes the interior finish of a structure. Brick buildings, up until the in-

roduction of concrete masonry units (CMU), were built by stacking multiple wythes of brick and tying them together. The wythes of brick supported the load of the structure. Flemish bond was a common way of tying multiple wythes of brick together. The advent of Cinderblock in 1917 changed this method of construction. Now CMU supports the weight of the structure and the brick acts as a veneer to conceal the CMU.

Other advances that helped make clay masonry what it is today was the creation of portland cement. Portland cement gave mortar much higher compressive strengths, giving a brick wall even more overall strength.

The most significant difference between CMU and brick is how the materials are manufactured. CMU is made of portland cement and aggregates, usually sand and gravel. CMU is cured at high humidity and temperatures to create a bond between the cement and aggregates.

The differences in manufacturing and material content give CMU and brick very different physical properties, affecting the units long after they are installed. CMU will shrink while brick expands. Therefore, CMU requires control joints while brick requires expansion joints. Control joints are meant to control the

cracking that occurs due to the units shrinking. Over time the sealant used in control joints must be replaced. The units must be sealed and the mortar must also contain a sealant; all of which add to its installed cost. Brick buildings will continue to expand for the first couple of years, ultimately giving them a tighter seal.

The color of brick is dictated by the color and type of clay that is mined. CMU's color is based on pigments that are used to paint the units. Overtime, the weathering these units must incur can fade the pigments.

CMU's physical properties also explain why its absorption rate is different from brick. CMU is a very porous material and will absorb water at much higher rates than brick.

Both brick and CMU offer units designed for single wythe, exterior construction. The information provided in this newsletter was intended to inform the reader of the differences that exist between these two very different materials. We pride ourselves in being the most educated representatives in the Chicago market so please bring us your questions!



Thru-wall brick at Park Blvd (35th and Federal), Chicago IL.



A pillar made of brick. The sun's UV rays and other weathering have impacted its color.

These are some of the questions are clients have been asking

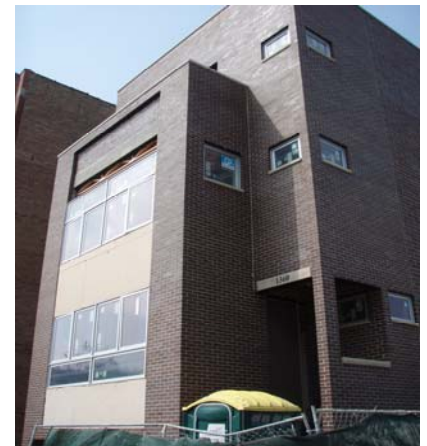
- Q: Doesn't concrete masonry cost less than clay brick?
- R: Concrete masonry requires control joints, which adds cost compared to clay bricks expansion joints. Replacing the joint sealant every few years also adds cost. Sealing the units adds expense. Conclusion: the long-term costs associated with CMU break-even with the cost associated with actual brick.
- Q: Concrete brick looks just like brick, right?
- R: Nope. Brick's color comes from the clay and shale used in its manufacturing while CMU/brick color comes from painting and shading. This paint fades over time. Still think they look the same? Ask you Bricks Inc representative for images from projects we have visited.
- Q: Concrete brick carries a warranty so I'm covered right?
- R: What we find comical about the warranty is that brick has never had a warranty. Why? Because real, clay fired brick does not need a warranty. It has been used for hundreds of years, proudly standing the tests of time. Your brick warranty probably only covers the units themselves. Who is going to pay for their removal and re-installation?
- Q: Can I use concrete units on my exterior elevations if my project is located within Chicago?
- R: Mayor Daily has banned the use of CMU on any projects receiving city subsidies or certain zoning approvals. DCAP (Department of construction and permits) denied permits based on the specifying of this material. Some suburbs, including Schaumburg, have also banned the use of CMU in many areas.

TOP 10 reasons to consider when considering the use/specifying of CMU

1. The use of control joints- control joints are expensive and need regular maintenance
2. Fading color- The sun's rays will fade the paint on your unit over time
3. Inconsistent color- pigments are added to the paste and therefore not homogenous
4. Installation costs- control joints, mortar sealant, wall sealant and the associated labor...they add up!!!
5. Cleaning difficulties- will stain easily so extreme care must be used during installation
6. Shrinking of the units- cement shrinks, opening the head joints while brick expands
7. Chicago and some suburbs banning of the material- water penetration and problems with the aesthetics have forced the city and some suburbs to ban the use of CMU on exteriors
8. Sealing- walls must be sealed and re-sealed. Mortar also requires sealant
9. Not time tested- still relatively new to the market place
10. Water penetration- CMU is a very porous material and will absorb large amounts of water. As the units shrink, water will also enter through the head joints which have now been pulled apart.



Fading color and shrinking: 2 big reasons to reconsider using CMU



Atlas thru wall brick at 1360 W Ohio Chicago, IL