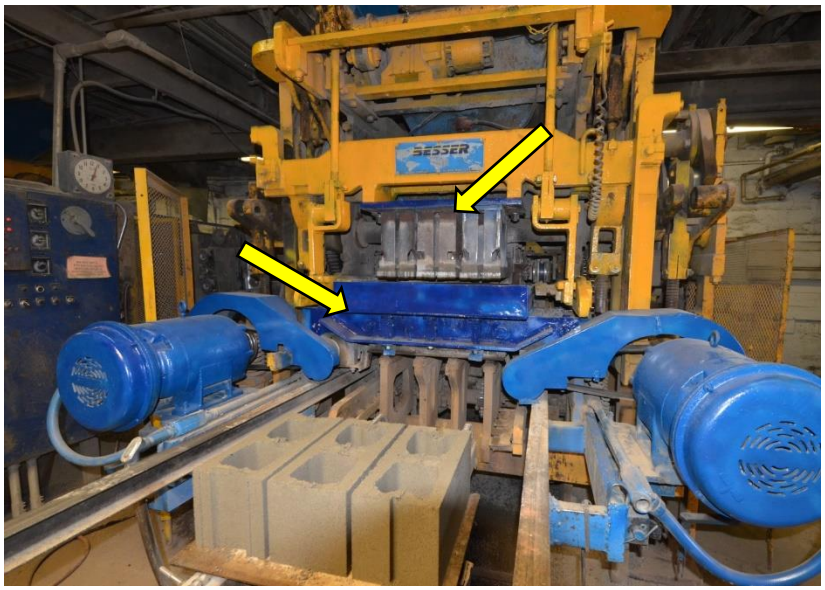
Barnes & Cone
ARCHITECTURAL MASONRY
Manufacturers of Concrete Masonry Since 1926

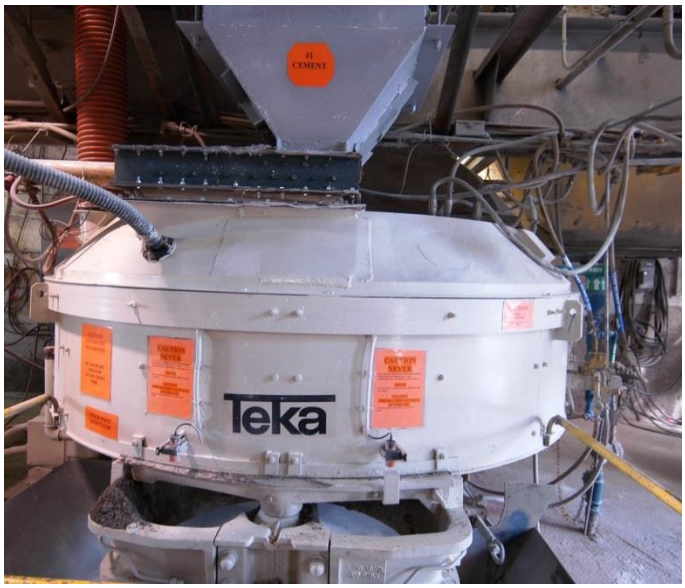
How To
Minimize the Cost Of
Architectural Concrete Masonry

The goal of this document is to explain some of the design considerations that can increase or decrease the cost of an Architectural Concrete Masonry building. This information can be particularly important if you are working with a limited budget.

Concrete masonry production is similar to most other forms of manufacturing, costs are driven by raw materials and how many of the product can be produced per hour. Architects understand that white sands from quarries outside New York State are more expensive than local earth tone aggregates from nearby quarries. However, our manufacturing efficiency, how many Architectural CMU we can produce per hour, has a far greater impact on the price.



Besser Block Machine-Arrows show the top and bottom of the mold assembly



Teka 80 Cubic Foot Mixer

The photo above shows our block machine running 8 x 8 x 16 standard gray CMU. We manufacture about 11,000 CMU in one shift. One mold, running the entire shift increases our efficiency, lowers our cost and reduces the price of the CMU.

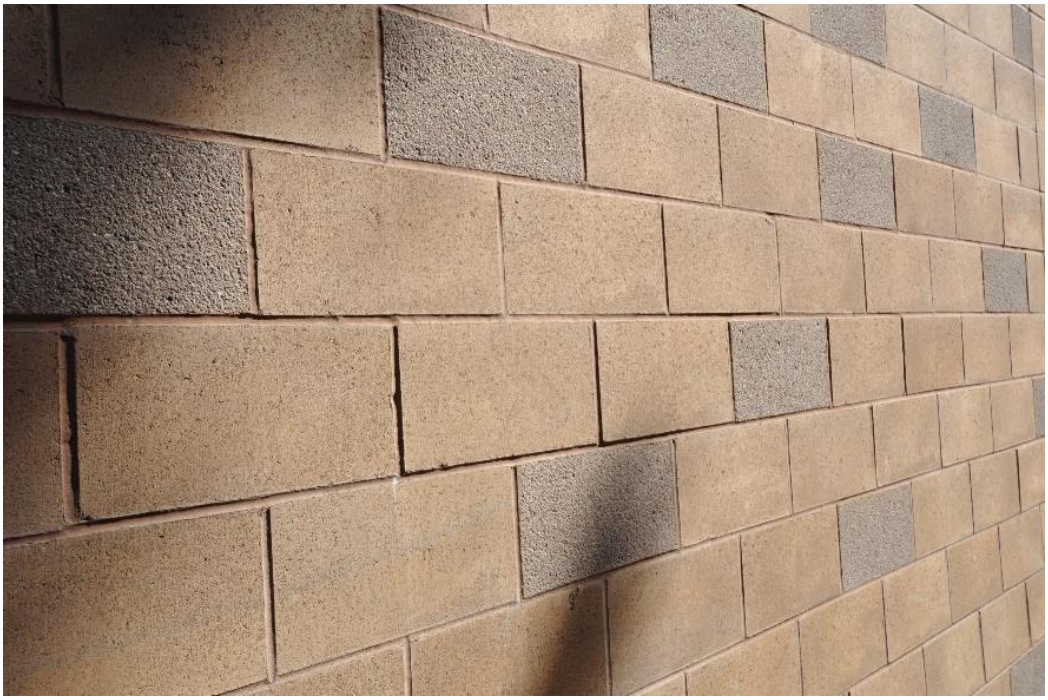
When we manufacture Custom Made Architectural CMU for a building, every time we have a different size or shape to produce, we shut the system down, and remove the top and bottom sections of the mold from the block machine (see arrows in photo). We then install a new mold to produce the next shape or size. The downtime of one mold change consumes about an hour of production time. In that one hour of downtime, we could have manufactured about 1,200 standard gray CMU. If it's practical to limit the number of sizes and shapes in your design, it will lower the cost of the building.

The mixer for the block machine is on the second floor of our block plant. It mixes over 6,000 pounds of colored CMU mix in one batch. After mixing about 5 minutes, the batch dumps directly into the top of the block machine that is on the first floor of our plant and begins feeding into the mold. Every time we change colors we shut the system down and thoroughly clean the mixer and block machine so one color doesn't contaminate the next. This creates additional plant downtime. When you design one color for your building, the cost of the masonry is significantly less than when your design has two or three colors.

Starbucks, Niagara Falls, NY-14 different shapes and colors

On large projects like the building shown above, the cost of downtime from mold and color changes is offset by the large number of CMU in the building. On smaller jobs the downtime could add several dollars to the cost of a CMU. We are not trying to discourage creative design. Creative masonry is a great value to building owners as it's the public's perception of that operation. However, when you have a small budget to work with, designs using the least number of sizes, shapes and colors, will be the most cost effective for both labor and material.

There are ways to provide an attractive creative appearance on a limited budget.


Rosamond Gifford Zoo in Syracuse, shadows are from surrounding trees

The least expensive architectural CMU is an integrally colored Smooth Face CMU. We can run our block machine at high speeds, producing a large quantity per hour. When Smooth Face Colored block come out of the kiln, they are taken directly to our yard for additional curing and then shipped to the job. One step, no additional processing or handling required. The reason Smooth Face Colored CMU aren't often used for entire walls of a building, is there is a large range of color that many see as unattractive.

When we produce Ground Face or sand weathered Decro Face, we take this same Smooth Face Colored CMU and polish it in our grinding machine or sand weather it in our Decro Face Machine. The photo above is of the Rosamond Gifford Zoo that is being built now. 80% of the wall is Bainbridge Brown Smooth Face CMU, an inexpensive CMU. 20% of the wall is Bainbridge Brown sand weathered Decro Face a more expensive CMU. Because they both use the same mold and color, plant efficiency is very high and prices reflected this.

Mason's stock: 80% Smooth Face
20% Decro Face

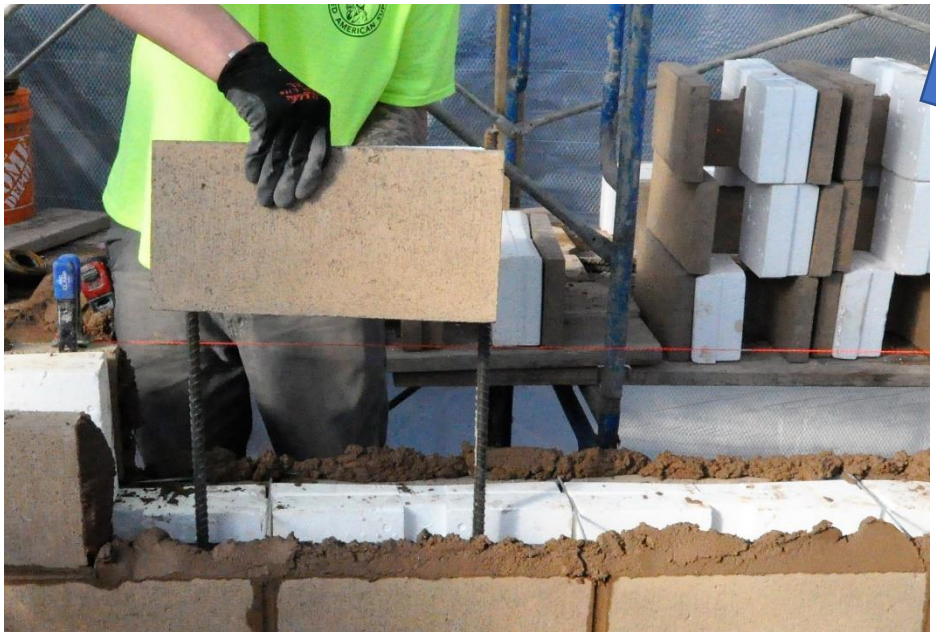


Photo shows typical stock pile the mason pulls CMU from

This design was labor efficient. The architect specified for the mason to randomly install the two different textures in the wall. As the mason tenders stocked the CMU by the wall for the masons to lay, they simply put two Decro Face in the stock pile for every eight Smooth Face Colored CMU. The masons didn't have to sort through the stock, they picked block from the pile and laid them in the wall. The focus was to minimize the number of times the masons must stop laying block.

This was a unique way to create an inexpensive wall with an attractive and balanced blend of color and texture. There are many design considerations like this example that facilitate an architect's creativity and keeps the cost of your masonry wall reasonable.

Another cost saving example is the new generation of Pre-Insulated CMU that can comply with the prescriptive table (402.1.4) in the 2020 Energy Conservation Construction Code of NYS.

Masons, laying one Hi-R H can replace multiple layers of materials and the different trades required to install those layers.

The Hi-R H system provides:

Structural masonry walls	Attractive exterior and interior finish	4 hour fire rating
Thermal mass energy performance	High performing moisture barrier	Great impact resistance

For further information on Hi-R H or assistance with your design and budgets, please do not hesitate to contact us**.**

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