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Masonry Sample Panels

There is nothing more frustrating than an owner being disappointed in the appearance of their newly completed masonry building. One of the easiest and most effective tools to minimize this happening is a jobsite sample panel.

Sample panels are a quick and inexpensive way to show how a masonry project will be constructed and how it should look when it is completed. Because sample panels play such an important role in quality control during the job and in determining the acceptance of the finished work at the end, several points should be reviewed in detail:

The "Building Code Requirements for Masonry Structures" requires in section 1.6 D that:

> **"For masonry governed by Level B or C Quality Assurance, construct sample panels of masonry walls."**

Consider the following:
Many people are surprised that sample panels are required by the "Building Code Requirements for Masonry Structures". But it's not surprising, once you consider that the interpretation of what is acceptable workmanship and material aesthetics can be very subjective.

Specifications can only go so far in describing what terms like "uniform mortar joints" or "clean masonry" means. A jobsite sample panel lets the mason contractor demonstrate how they intend to build and clean the walls according to the contract documents and allows for the architect to see and approve how the finished walls should look- even before they are built.

Jobsite sample panels are then left on the jobsite for masonry field managers and owner's representatives to reference as a quality control tool. At the completion of the job, the sample panel becomes the reference point for acceptance of the finished work.

If jobsite sample panels are built according to The "Building Code Requirements for Masonry Structures" there should never be any surprises at the end of the job because the sample panel was the visual reference point of agreement at the beginning of the project.

The "Building Code Requirements for Masonry Structures" states in section 1.6 D a.:

"Use materials and procedures accepted for the work."

Consider the following:
All submittals should be approved before the sample panel is constructed. The sample panel should not be used for color selection of the masonry units themselves, unit masonry color selection should be made from samples provided during the submittal process before the masonry is manufactured for the project.

Materials used in the sample panel should never be built from units left over from a different project manufactured at a different time. CMU's used for the sample panel should be selected by the manufacturer using masonry units manufactured for the specific project the sample panel will be constructed on. This will insure that, within reason, the full range of color and textures that will be present in the finished walls of the building will be displayed in the jobsite sample panel.

The practice of building the sample panel from one or two pallets of units from the first delivery is also not recommended. This practice may show the range of those one or two pallets, but will not demonstrate the full range of color and texture that will be in the finished walls of the new building. The manufacturer is in the best position to sample units after they have been produced because the units are inspected as part of that manufacturer's own quality control process as they are cubed (packaged).

The "Building Code Requirements for Masonry Structures" states in section 2.0 :

"The acceptable standard for the Work is established by the accepted sample panel."

Consider the following:
Sample panels should be formally approved just like any submittal. They then become an important tool in the evaluation of how the installation is proceeding during construction and a critical tool for the acceptance of the masonry work when the installation is complete.

The National Concrete Masonry Association's (NCMA) publication "Inspecting and Testing of Concrete Masonry Construction" was developed to provide masonry inspectors information on the masonry construction requirements found in The "Building Code Requirements for Masonry Structures". Many industry standards are identified to help designers, inspectors and mason contractors fairly judge and control the quality of the masonry construction. Even the distance and lighting inspectors should evaluate the sample panel. This is detailed in the publication: "After cleaning, the sample panel should be viewed from a distance of 20 ft under diffused lighting to evaluate the results."

If you would like a copy of "Inspecting and Testing of Concrete Masonry Construction", please contact our office.

The "Building Code Requirements for Masonry Structures" states in section 1.6 D:

> **"Each procedure, including cleaning and application of the coatings and sealants, should be demonstrated on the sample panel"**

Consider the following:

Cleaning

Masonry walls left with significant stains and discoloration at the end of the job can undo the entire effort that went into designing the building. The "Building Code Requirements for Masonry Structures" requires the masonry to be cleaned but what "clean" means is extremely subjective. **A reference point for how clean the masonry building will be when it is turned over to the owner is one of the most important functions of the jobsite sample panel.**

Being realistic is critical. Demonstrating the cleaning process on a relatively clean sample panel is close to worthless. Demonstrating the cleaning process on a sample panel with similar mortar and grout stains that the mason crew will leave on the walls of the building during construction, requires the mason to clean the sample panel using the detergent, detergent strength and scrubbing action that will be required on the building. Now you have a realistic representation of what the finished walls of the building will look like when they become as stained as the sample panel was and cleaned using the same techniques as demonstrated on the sample panel. If you approve this appearance, within reason you should expect the building to look the same.

Understanding that every masonry building ever constructed had minor mortar and grout stains, even after it was cleaned is important. The stains should not detract from the overall aesthetics of the masonry. What does that mean? The best answer is go to your favorite masonry building in your community that was built in the last year. When you closely examine the wall you will find minor grout, mortar and efflorescence stains. Remember, this was your favorite masonry building, so these minor stains did not detract from the overall appearance. When you were admiring the building, you didn't notice them. When you went looking for stains- they were easily found. It's simply the nature of masonry and it's why the building code itself requires evaluations to be made standing 20 feet away. We suggested that you look at your favorite masonry building that was built within the last year, because many (not all) of these minor mortar and grout stains will weather off as the building is subjected to rain and ice throughout the seasons.

You want the sample panel to show these minor stains that will remain when the building is turned over to the owner, because if the panel truly represents how the building will look- the sample panel becomes a realistic tool to judge the finished walls. Most masons take great pride in their work and if they are reminded everyday as they walk past the jobsite sample panel, that this is how the walls must look when they are completed- they will strive everyday to work as cleanly as practical.

Sealing

Masonry walls are sometimes sealed, either with clear siloxanes or clear high gloss coatings.

It is important not to apply these sealers until the cleanliness of the walls has been approved. While it is true that most sealers enhance the color of the masonry and will mask some minor discoloration, if sealers are applied onto walls with significant stains, those stains will still be visible after the coating has been applied. It is difficult to go back and reclean sealed masonry as the sealer must be stripped off the wall first, a difficult task to accomplish without damaging the masonry.

Your jobsite sample panel is an easy and effective tool to avoid this problem. After the "cleaning" portion of the sample panel has been approved, the sealer should be applied to only one half of the masonry units on the sample panel that are intended to be coated. This way half of the sample panel remains uncoated and can used to evaluate if the walls of the building have been satisfactory cleaned. The sealed half of the sample panel can be used to evaluate if the walls of the building have been satisfactory sealed.

The "Building Code Requirements for Masonry Structures" states in 1.6 D 3:

"Retain sample panels at the jobsite until work has been accepted"

Consider the following:
Because sample panels should be used for final acceptance of the masonry work, if the sample panel is destroyed before the work has been accepted, you lose the ability to go back and point out what everyone agreed was acceptable work. Build sample panels on the jobsite at a location where the masonry crews will see them everyday and where they can remain unharmed until the masonry is 100% complete.

Hopefully this detailed explanation of aspects of the jobsite panel illustrates how effectively they can be used to control quality throughout the construction process and deliver a great looking masonry building to the owner.

Leave time for the sample panel to be built and cure. Because samples panels are intended to be built from the masonry units manufactured for the specific project the sample panel will be constructed with, it is important to plan ahead. Leave adequate time for the submittals to be approved, the masonry to be manufactured and the sample panel to be built. If there is disagreement between the mason and architect over aspects of the panel such as the meaning of "clean", it is important to leave time to settle the difference without delay to the start of construction. Rushing the sample panel process, can diminish the value of this invaluable tool.

The Building Code references and considerations listed in this paper are focused on the often overlooked points pertaining to masonry sample panels. This paper is not meant to address all sample panel requirements.

Many of these considerations listed above are taken directly from the following Industry Publications:

"Building Code Requirements for Masonry Structures"
"The Masonry Designers Guide", published by the Masonry Society
"Inspection and Testing of Concrete Masonry Structures" published by The National Concrete Masonry Association

Additional technical information on Concrete Masonry can be found on the home page of our website at: **http://www.barnesandcone.com .** Click on the orange NCMA Tek Manual.

If you have any questions on sample panels or if we can be of any service on other aspects of masonry, please contact us.

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