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Technical Notes

USE OF COLORED MASONRY MORTARS

The architectural trend towards the use of colored masonry mortars can create more character in wall assemblies and expand the demand for masonry construction. Understanding the differences in working with colored masonry mortars compared to traditional gray mortars is the key to successful projects. There is a saying, "beauty is in the eye of the beholder", but there are steps that should be taken to minimize any surprises. The first step should always be a clear understanding between the purchaser (owner) and the provider (mason) before starting any project. A sample panel should be constructed, agreed upon and retained for future reference until final acceptance of the project. With that said, all parties should be aware some variation in appearance is a normal design feature of CMU's, brick and mortar, whether colored or not. The sample panel should always be constructed using the entire contents of the sample mortar and all materials and finishing techniques - including washing of the sample panel - should be the same as will be used during the actual construction. It is typical for mortar to lighten in color as it cures so all evaluations need to allow for this process.

The key to achieving a uniform appearance is keeping everything consistent from batch to batch. Key factors include consistent mixing water, mixing times, handling, placing, tooling techniques and the final cleaning process. In addition to these workmanship factors there needs to be a clear understanding that curing conditions can also play a role on the final appearance. In general, conditions which speed the drying rate of the mortar will lighten the color while conditions that slow the drying rate of the mortar will darken the color. All of the above factors need to be controlled as much as possible to obtain the desired appearance.

Always try to maintain a consistent water to cement ratio throughout the project. Always use clean, potable water for mixing. Adequate mixing is necessary to obtain a uniform mix. Typical mixing times are 3-5 minutes after all materials are in the mixer. We recommend color mortars be thoroughly mixed for the full 5 minutes to obtain a consistent mixture. Unlike traditional mortars, re-tempering colored mortars can impact the final color and should be avoided for best results.

The tooling technique used and the timing of tooling can have a significant impact on the final appearance. Testing performed by the Portland Cement Association and others indicate tooling of mortar when it is highly plastic/flowable will tend to pull a higher water content paste to the surface, resulting in a lighter color joint surface. If the mortar becomes too stiff before tooling, the mortar surface will result in a dark streaked surface. For these reasons, it is recommended that tooling be done when the mortar has stiffened so a thumb print is barely visible. Concaved or "V" joints are preferred for optimum weather resistance. Excessive or lack of joint finishing will also impact the final color. Special care must be taken to assure the joint surface is not discolored with metallic deposits from the jointer. The use of ceramic, stainless steel, or plastic jointers are recommended for color mortars.

When it comes to cleaning masonry, less is better. Careful workmanship includes implementing skills that minimize mortar smears and droppings on the face of the masonry. Covering the tops of walls at the end of each working day will prevent rain from entering the walls and help reduce the possibility of discoloration or efflorescence. Always use the least aggressive cleaning technique possible. Verify cleaning procedure on a small test area before moving forward. It is not recommended to use muriatic (hydrochloric) acid on colored CMU's or mortar.

Creating eye catching projects with colored mortar are very possible when all parties have a common understanding and consistent work practices are employed.

This photo from the Portland Cement Association demonstrates how tooling while the joint is fresh (top) versus when stiff (bottom) can impact the final appearance.