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Stone: Basic Identification

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Identifying Common Architectural Stone.

The goal of this article is to help identify architectural stone types in a few simple steps.

The reason we identify stone types can vary from trying to source replacement stone to determining how and why damage has occurred or even how to repair, preserve or restore each type. A word of advice - In some situations knowing the exact type of stone and what it is composed of can be vital. There are specialized labs that can provide analysis of building stones. I'm not dismissing these services but I will caution you with the following question:

1. **What will you do with the information once you have it?** If you are looking to replace damaged stone with exactly the same stone you may want to spend the time and money to have a mineralogical analysis performed. Then you will need to find a source to quarry the new stone and have that stone tested to determine if it is a match.
2. **What if the “new stone” matches perfectly in physical makeup but the color is not acceptable?** There are many other roadblocks that can cause this process to be costly and frustrating. Before you begin any testing program, determine if the results are critical to the project. If you are performing a period correct repair to an ancient tomb, then test away, but if we are repairing a church built in the 1800s, the money spent for elaborate testing can likely be used in a better fashion.

I've seen thousands of dollars spent on sophisticated testing only to result in using an “off the shelf” product or readily available replacement stone.

The Basics:

Starting with simple tests like visual examination can get us pointed in the right direction. If the stone has a sandy appearance or sea shells present, these can be key in identification. Look for inclusions, spots or deposits in the stone that look out of place (see examples below). Touch the surface of the stone. Using both your eyes and hands, you can determine quite a bit about stone composition.

The Usual Suspects:

When we talk architectural stone, a few are so common that even people outside the industry can name them... Limestone, Sandstone, Granite & Marble. Within those four types you find hundreds if not thousands of local variations throughout the lower 48. So, for the sake of this article, let's use those four categories as our main concern.



Granite: Cannot be easily scratched with a steel knife blade. Pattern is typically speckled or blotchy, finishes range from polished to rough texture. Granite is so hard that weathering is rarely visible.



Marble: Softer than Granite, can be easily scratched with a steel knife blade. Pattern is typically veined, finishes range from polished to rough texture. When weathered it can get a "sugary" appearance (grains sugar on surface).



Sandstone: "Sandy" finish, often multicolored but can be monochromatic as well. Finishes range from honed to rough texture and colors from light tan to dark reds and browns are common. Weathering of the surface is often random as soft layers are common in most Sandstone types.



Limestone: Uniform finish when new but over time the surface becomes bumpy due to hard and soft deposits in the stone. Normally monochromatic but some variations have multiple colors, finishes range from honed to rough texture. Weathering tends to be uniform unless concentrations of wear factors are present.

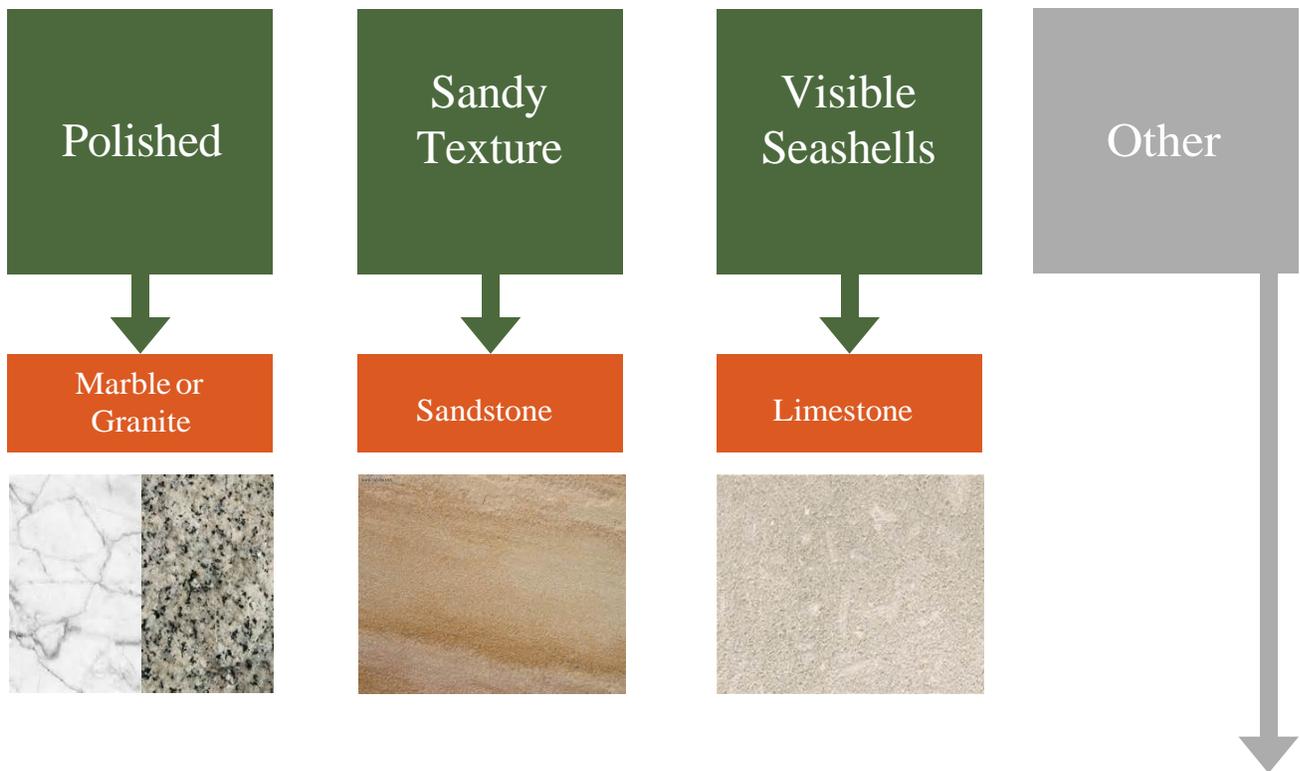
Process of Elimination:

Common Marble and Granite finishes range from a high polish to a rough texture. Limestone and Sandstone do not respond to the polishing process so it is very rare to see either of them used in a polished application. Polished finish virtually eliminates Limestone and Sandstone.

Sandstone almost always has a “sandy” texture; when you look closely, you can see grains of sand on the surface. It is formed by grains of sand that become “cemented” together. When you see and feel the sandy texture it makes Sandstone your likely suspect.

Limestone is created through biological activity. It is composed of marine life skeletons deposited on the sea floor. In some types of Limestone sea shell patterns can be seen in the stone. Look closely and you will begin to see the familiar patterns of either entire shells or crushed shells.

Using the methods above you can rule out some of the types and help narrow your choices. In some cases you will be able to identify the stone with no further investigation. The chart below may help you sort out the process.



The Others:

When observational testing is not providing a clear indication, the next course of action is an acid sensitivity test. Using an acidic liquid such as household vinegar or a mild solution of muriatic acid 10:1 (water to acid), place a few drops of the solution in an inconspicuous area. Limestones are calcareous and will react with acidic solutions by bubbling or fizzing. Similar to the reaction when vinegar is mixed with baking soda. So, if no reaction is present, then the stone is not from the Limestone family. Some Marble types will also have a mild reaction, so this test can be useful for positively differentiating Granites from Marble.

Stay Tuned...

In the next installment in this series of stone articles, I'll explore stone wear and damage for each type. The wear patterns of each type will help us determine why the damage has occurred and the best course of repair. Follow me and Conproco on LinkedIn to catch the next installment.



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