

# An Expert's Guide to Natural Stone

By Mikenna Pierotti

Stone building is arguably the foundation of modern human civilization. From the creation of the first stone tools more than 2.5 million years ago to the first granite and marble mines, humans have always sought the warmth and strength of stone. Although structural building with stone has become rare, this durable, versatile, and ancient material is still playing a leading role—especially in sustainable design, says **Tolga Altug**, product and sourcing manager at **Materials Marketing**, America's sole fully integrated manufacturer of hand-carved architectural and dimensional stone and tile. "When you select natural stone such as marble for your floors ... there is a good chance the chosen material could be more than 200 million years old," he says. "Some of the criteria that influences your decision may have been applied by ancient architects and builders dating back to the Bronze Age."

Materials Marketing is America's oldest and largest stone manufacturer. Since 1965 the company has grown substantially, purchasing smaller factories and quarries and sourcing its stone from all over the world to ensure the highest quality—and most sustainable practices—from quarry to final product. This allows their team of designers to walk customers through the entire process, from material selection to AutoCAD renderings to delivery. Specializing in residential work primarily, the company is also experienced with commercial projects, the largest of which is a California shopping mall with more than 145,000 feet of stone.

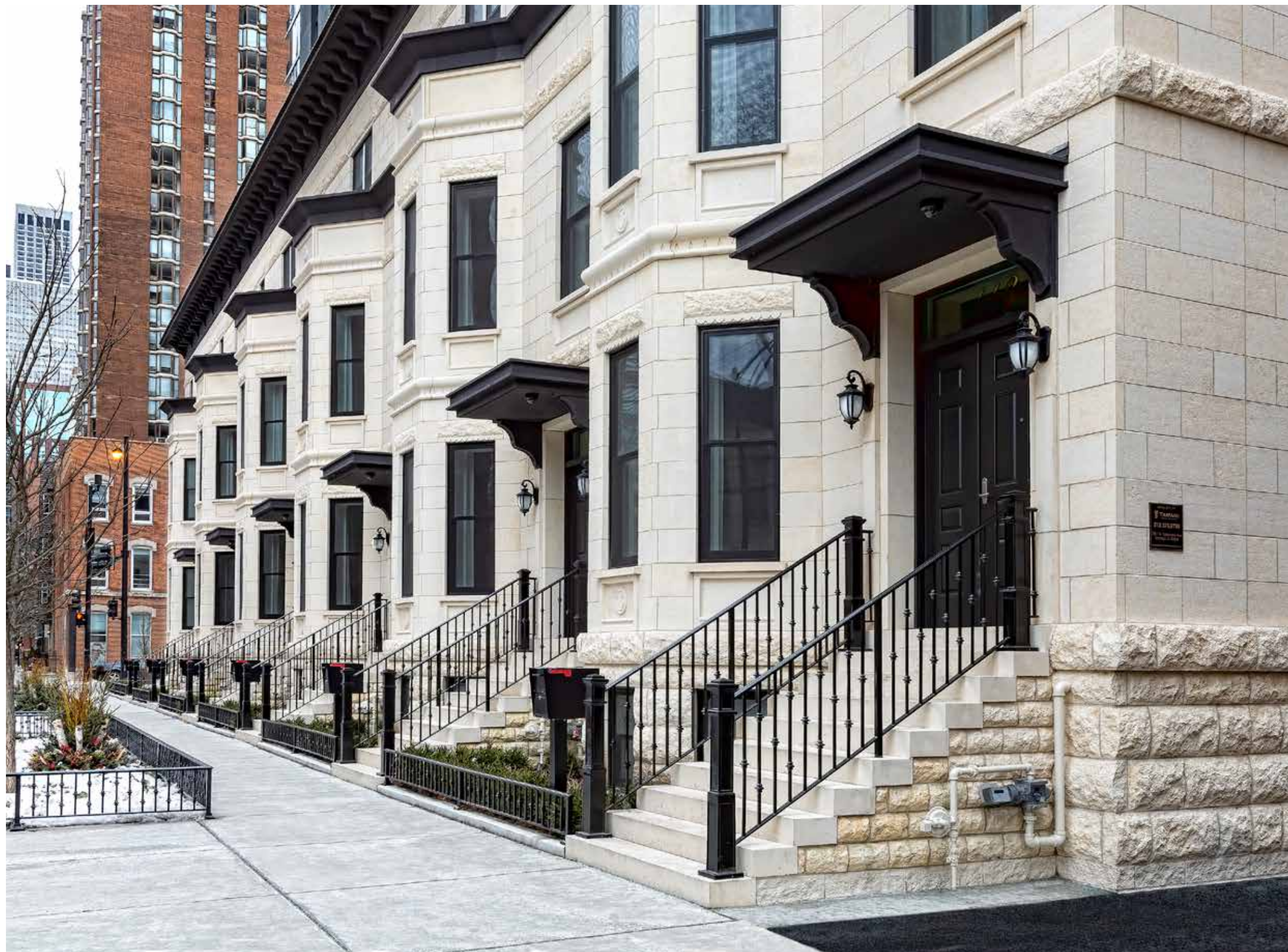


PHOTO: MIKE CREWS PHOTOGRAPHY





## What are the Most Popular Stone Types?

Limestone, travertine, and marble are three of Materials Marketing's most popular types of natural stone. Each carries with it a unique story that can be applied to modern design. And, each has its own character that stems from its history and geography.

Limestone formed millions of years ago under warm, shallow seas or lakes.

It's mostly made of accumulated marine debris and minerals from shells, bones, and coral. This makes limestone highly malleable, yet strong and versatile.

Travertine, a type of limestone, forms from the evaporation of mineralized water, often in caves. All types of limestone can include small particles of minerals that change the look and feel, like quartz, feldspar, clay minerals, and pyrite.

Marble is limestone that has been subjected to extreme heat and pressure, often in volcanic regions. But that makes it even more durable with a unique aesthetic. "Marble is composed very strongly with more crystals, which gives it a particular shine," Altug says.

This Chicago project included Cream Limestone with rosette hand-carved panels and a custom, hand-carved bay window detail.



## How is Each Stone Best Used?

The three variants of limestone have been used to build some of history's most beautiful structures—including the Great Sphinx, the Parthenon, and the Lincoln Memorial. And, you'll see marble and travertine in iconic buildings like the Taj Mahal and the Colosseum.

Today natural stone still finds its way into every type of building, whether commercial or residential, high-end or inexpensive. Window and door frames, terraces and paving, interior and exterior wall cladding, kitchen worktops, washbasins, fireplaces—stone is an option for nearly any project. All you have to do is match the requirements of your space to the material's characteristics. "These materials differ greatly in terms of their technical characteristics such as water absorption, compression strength, heat storage capacity, or frost resistance," Altug says. "Depending on whether the material is milled, cut, pointed, broached, sanded, or polished, a new look and aesthetic is created."

The look of a stone reveals little about its qualities. Materials Marketing's limestone, for example, comes in speckled mochas, cool beiges, and warm greiges. Marbles vary from icy pale shot through with gray to chocolate browns to something akin to the surface of the moon. Travertine can have a mottled appearance, with notes of blue and slate appearing in pockets throughout a neutral base color.

But each stone has uses for which it's most suited. "Limestone is a very machinable, workable material," says **Robert Copeland**, director of operations at **AJ Brauer Stone**, a limestone manufacturer in Texas owned by Materials Marketing since 2012. That makes it perfect for carving and shaping everything from window and door surrounds to fireplaces to exterior cladding.

Travertine, with its soft, natural appearance, is a good choice for flooring, patios, and gardens as well as tub surrounds and vanity tops.

Marble, with its durability and shine, often finds its way into building exteriors, flooring, stair coverings, or countertops.

## Where Does the Stone Come From?

The process starts at the mines. Altug says about 85 to 90% of natural stone mines are open pit. It's more economical. With total control of how earth is removed and replaced, reclamation can be an ongoing and tightly controlled process.



Copeland says limestone mining has many layers. "We quarry 12 ledges or sections of stone, and each section changes as you go down." From these ledges, AJ Brauer sells everything from dimensional cut stone to thin stone veneers to retaining wall blocks. "It's like a hog. You try to use absolutely everything."

From quarries all over the world, the stone is transported to manufacturers for refining. Depending on its use, it might be squared, cut, carved, flattened, honed, polished, or treated with epoxy resin and then offered for sale. After a customer makes a selection or settles on a custom design, the Materials Marketing design staff helps pack and ship the finished products.

## How is Natural Stone Sustainable?

Building with natural stone is sustainable, too, Altug says. "Extraction requires only a small energy expenditure. It can be easily disposed of and recycled since natural stone does not

### NATURAL STONE CHARACTERISTICS

TRAVERTINE	MARBLE	LIMESTONE	CANTERA
Metamorphic stone	Metamorphic stone	Sedimentary stone	Volcanic stone
Similar density to marble but different cavity structure	High density composition	Softer density and medium porosity	Soft density and high porosity

contain any major pollutants." And it lasts for generations.

The process of turning raw stone into finished work is tightly controlled at Materials Marketing's quarries. "We try to utilize all the waste we can for different products," Copeland says. Land reclamation begins immediately, with topsoil and overburden saved for backfilling later. Once a portion of the site is spent, topsoil and planted native grasses do their work, returning the landscape to rangeland.

Whether the stone is being finished and polished by expert hands for a cus-

ing are cooled by water," Copeland says. That water carries a slurry of limestone dust and cuttings that are then settled out, pressed into patties or cakes, and reused in the reclamation process. Then the cleaned water is used again for cooling.

With modern blades, techniques, and computer-aided design, there's almost nothing stone can't do these days. And Materials Marketing plans to

be at the forefront in this new era. "In the past few years, this building material experienced a renaissance, not least because of its ecological properties,"

Materials Marketing's Cream Limestone is tooled for a project and then hand-finished.



tom piece or turned out quickly with high-tech tools, every step emphasizes reusing and recycling. Water is one area where reclamation is both smart and economical. "The diamonds we use in cutting the stone and all the tool-

Altug says. "The special feature of natural stone is its versatility, which makes every surface—be it a facade, roof, or floor—unique and offers architects and builders countless design options." **gb&d**