Webinar by Gökhan Karakus  July 5, 2020

TURKISH TRAVERTINE IN ARCHITECTURE
Today’s presentation

Our topic today is travertine from Turkey and its use in contemporary architecture and design.

- Introduction to Turkish Stones
- Introduction to Travertine
- Travertine from Turkey
- Examples of Turkish Travertine in contemporary architecture
- Properties of Travertine
- Technical details
- Design tips and trends for using travertine.
Turkish Stones

Different natural patterns and tones of marbles such as Anadolu Beige, Anadolu White, Anadolu Black along with Travertine from Turkey are complemented with signature marbles of Turkish Stones only from Turkey such as Elazığ Cherry, Marmara Marble, Milas Lilac.
NATURAL STONE QUARRIES IN TURKEY
MARBLE QUARRIES BASED ON COLOR

- Beyaz: White
- Bej / Krem: Beige / Crema
- Çok Renk: Multicolor
- Kahverengi: Brown
- Mavi / Yeşil: Blue / Green
- Pembe / Kırmızı: Pink / Red
- Siyah: Black
Turkey’s natural stone sector is globally a number one marble and travertine exporter with 1,8 billion dollars exports. Turkey exports various stone types such as marble, travertine, basalt, granite etc. either as blocks or as processed stone.
TRAVERTINE FROM TURKEY
Travertine—a variety of limestone formed from calcium carbonate deposits in or near hot springs or limestone caves—is one of the most popular types of stone used in architecture, and has been for centuries.
Travertine from Turkey is one of the most popular natural stones used in architecture today. The Turkish province of Denizli is the source of travertine with many quarries.
Pamukkale – Denizli, TURKEY

In fact, the UNESCO World Heritage site at Pamukkale in Denizli, Turkey, is composed of travertine with its thermal hot spring pools and terraces making it an important tourist destination in the world.
Travertine Pools at Pamukkale in Denizli, Turkey

Hot underground waters emanating from springs in a cliff almost 200 m above the plain. These calcite filled waters at Pamukkale or Cotton Castle have generated a landscape of mineral waterfalls and terraced basins.
Roman city of Heiropolis, Turkey

Some of the largest travertine quarries are in Turkey where travertine has been used in construction since Ancient times.
What is travertine?

Travertine is a type of limestone that has had additional heat and pressure applied to it by the earth's crust. It is formed by minerals dissolved in ground water, which are then deposited on the earth’s surface by rivers, natural springs, or geysers.
Travertine is made by nature

It is naturally formed in millions of years by water, minerals, heat and pressure.
Turkish Travertine in Contemporary Architecture

The Triangle House in Tokyo by Shigeru Ban is a modern take on travertine; the inner and outer surfaces of this building are clad in Turkish Travertine.
Features

DESIGN PROPERTIES OF TRAVERTINE
Today, Turkish travertine is prized as a durable, elegant, and character-filled material in architecture and interior design including flooring, countertops, backsplashes, shower and tub surrounds, fireplace surrounds, and outdoor pavers used on patios and walkways, and around swimming pools.
The Look of Travertine

Travertine has a naturally weathered look that suits both casual and formal decorating styles.
Warm, Neutral Colors

You’ll find travertine pavers, slabs, and tiles in many soft, warm neutrals, including ivory, gold, beige, brown, rust, and peach.
The Timeless Beauty of Patterns

Typically, the color swirls and waves throughout the stone, creating unique patterns that give travertine its timeless beauty.
Understated Colors of Turkish Travertine

Most travertine has tone-on-tone coloration and patterns far more understated than those other popular stones.
Variety of colors of Turkish Travertine.

Travertine comes in many different natural colors including beige, brown, gray, and gold. There may also be slight undertones of green, red, and rust, depending on the origin of the stone and the minerals inherent in the specific selection. The color of travertine is the result of iron compounds and other organic impurities.
Casual and Formal

Travertine from Turkey has a naturally weathered look that suits both casual and formal decorating styles.
Travertine from Turkey has finishes ranging from matte to shiny.

Once travertine has been quarried, it’s generally finished in one of four ways for decorative use in homes and commercial settings. Polished, Honed, Tumbled, Brushed
Examples

TURKISH TRAVERTINE IN ARCHITECTURE
College for Journalism and Communication, Doha, Qatar, Antoine Predock
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Berggruen Gumusluk Houses, Bodrum, Turkey, Sandell Sandberg - architecture
Berggruen Gumusluk Houses, Bodrum, Turkey, Sandell Sandberg - architecture
Villa Logika, Sotogrande, Spain, Ark Architects
Villa Logika, Sotogrande, Spain, Ark Architects
Interior, London, UK, Jamie Fobert Architects
Swissotel Bodrum Resort, Bodrum, Turkey, GAD Architecture
Swissotel Bodrum Resort, Bodrum, Turkey, GAD Architecture
Vinero Wine, Galipoli, Turkey, Tekeli Sisa Architects
Vinero Wine, Galipoli, Turkey, Tekeli Sisa Architects
Vinero Wine, Galipoli, Turkey, Tekeli Sisa Architects
Yalikavak Marina, Bodrum, Turkey, Emre Arolat Architecture
Yalikavak Marina, Bodrum, Turkey, Emre Arolat Architecture
Examples

TECHNICAL DETAILS
Technical Details

FINISHES OF TRAVERTINE
Travertine

- Travertine is a banded, compact variety of Limestone formed along streams, particularly where there are subterranean mineral springs or underground rivulets that are hot or cold.

- Calcium carbonate is deposited where evaporation of the water leaves a solution that is supersaturated with chemical constituents of calcite.

- This process happens on a large scale and takes millions of years.
Tumbled Travertine is a porous, pitted stone to begin with. With a tumbled finish it can look even more aged and antiqued. The stone is gently machine-tumbled with small stones to produce soft, rounded edges. Tumbled stone is perfect for designs with a interested in a Mediterranean look.

A popular treatment for areas where there will be little or no direct contact, such as backsplashes or wall wainscot, and also for exterior paving.
Tumbled
Filled and honed

The most popular travertine finish.

In this method, the natural pits are filled with epoxy resin and then the surface is sanded down or honed.
Filled and honed
Brushed

- Brushed stone is often unfilled and not as common as honed or tumbled stone.
- You’ll find it combined with patterned travertine.
- Has a slightly rough, brushed surface which provides adequate traction should they be used outdoors but be used anywhere that honed and tumbled travertine is applied.
Split face

• Split face is the roughest finish available for travertine.

• The stone is cut at varying angles; it is not honed or filled in any way.

• Split face is used exclusively for walls, fireplace surrounds, and backsplashes
Split face
Split face
Polished

- The most clean, modern, and sleek finish.
- Edges are precisely cut to perfect 90-degree angles and the surface is polished to a glass-like high gloss.
- Polished finish is produces a high-end, dynamic look for travertine.
- Works well for formal spaces such as entrances, where impressions are important.
Polished
Chiseled

• Chiseled is an edge treatment only.
• Edges are chipped away either manually or mechanically to produce a ragged bevel that accepts more grout than a conventional round or beveled edge.
Chiseled
Bush hammer

- A bush hammer has a unique waffle-like face.
- Striking the travertine with a bush hammer produces a distinctive, even, pitted face.
Technical Details

GRADES OF TRAVERTINE
Grades of Travertine

• There are three grades of travertine: premium, standard, and commercial.
• *Premium grade*, or first grade, is a tile that has been perfectly cut and has a uniform thickness throughout with very little filler.
• *Standard grade*, also called second grade, will also be perfectly cut with a uniform thickness, however, there will be a bit more filler in the stone.
• *Commercial grade*, also known as third grade, may not be perfectly cut on all sides and it will not have a uniform thickness. Additionally, there will be a great deal more filler within the stone.
Premium Grade

- This grade offers the greatest selection of colors free from black or gray discoloration in the travertine tiles.
- The travertine tiles are carefully chosen to be consistent in color.
- The tiles are double filled, first, by machinery and then by hand if any holes remain.
- None of the travertine tiles of this grade will have large holes that were filled.
- The edges of the tiles are smooth and evenly sized with uniform beveled edges.
Standard Grade

• This grade offers the second largest selection of travertine tile colors free from gray or black discoloration.
• The travertine tiles are carefully chosen to have a consistent color throughout the lot.
• Tiles are double filled as in the premium grade.
• Some large holes are allowed in standard grade travertine tiles. Additionally, some holes may be filled through the full thickness of the tile.
• The color may contain some striations or swirls.
• The edges of the tiles are smooth and evenly sized with uniform beveled edges.
Commercial Grade

- Large color variations are allowed within the tile including gray or black markings.
- Small unfilled holes are allowed as are small defects in sizing and honing.
- The tiles are not hand filled.
- It is acceptable for large voids to be filled.
- Small holes that run from the surface to the bottom of the tile are allowed.
- Edges may be cracked or broken.
- Tiles may be delivered without color selection or sorting.
Technical Details

CUTS OF TRAVERTINE
Cross cut vs. Vein cut

- Stone is mined in blocks from quarries.
- It is from these blocks that slabs are sliced out into thin slabs that you can work with.
- The difference in the designs is that travertine have straight lines in the vein cut while the other one that comes with designs of all shapes and sizes is the cross cut.
Cross cut vs. Vein cut
Cross cut
Vein cut
Quality Turkish Tavertine Tiles checklist

- All four corners of the tile should be cut at 90 degrees.
- Color of the stone should not be marred by rust colored markings on either side.
- No pores in the filling of the stone.
- The filling should consist of a hard resin that will not chip; cement is unacceptable for interiors.
- Side cuts should be perfectly perpendicular; a slope is unacceptable.
- Color of the tile should be consistent throughout the lot with limited color variations.
- The thickness of the tile should be measured in inches and should be 18” x 18”.
- Shipping crates should be strong wooden pallets suitable for forklifts.
- Face of the tile should be visible from both sides of the shipping crates.
- Styrofoam should be used on the bottom and sides of the tiles for protection.

Many of these standards are also applicable to marble tiles.
Tips

DESIGNING WITH TRAVERTINE
Colors

- Turkish Travertine comes in a variety of colors due to its geological formation.
- Surrounding minerals such as iron and clay influence the color and tone of travertine.
Colors of Travertine

• The color of travertine depends on the purity of the mineral water that forms the stone.

• When pure, travertine is white, but often is brown to yellow due to impurities. When carbon dioxide-rich water percolates through rocks in limestone areas, the water dissolves the limestone and becomes saturated with it.
Popular Colors of Turkish Travertine

Gold  Classic  Walnut
Noche  Tuscany  Silver
Color & Price

The popularity of Turkish travertine results primarily from the excellent price/performance ratio and the large selection of varieties and colors.

Turkish quarries deliver a wide range of travertine from deep brown to medium or light beige tones.
Design Tips

PATTERNS
Some tiling patterns for Travertine and Marble
Tips

TRAVERITNE DESIGN EXAMPLES
Bodrum Houses, Bodrum, Turkey, Richard Meier
College for Journalism and Communication, Doha, Qatar, Antoine Predock
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Berggruen Gumusluk House, Bodrum, Turkey, Urlaubsarchitektur - interior, Sandell Sandberg - architecture
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THANK YOU!

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