

Realtà MAPEI

NORTH AMERICA

MAPEI ❤️ NYC
Rehabbing an icon

ISSUE 34



Luigi Di Geso
President and CEO,
MAPEI North America

Weathering the perfect storm

2020 was unprecedented in the modern era. As we were slowly emerging from the worldwide catastrophe of the pandemic, we looked forward to steady growth and a return to normalcy in 2021. However, the reality did not match the expectation.

We were met with a stronger than anticipated economy, which quickly outpaced the availability of raw materials even on the international markets. This was then compounded by an ice storm that shut down production in Texas – threatening the already challenged global supply of materials for multiple markets, including construction. Combine this with staffing shortages due to concerns about workforce reentry and subsidies, which also spiraled into shipping and container shortages – and we were faced with the perfect storm of challenges. The start of 2021 was anything but normal.

Our perseverance has allowed us to fight through these challenges, and the future is now looking much brighter. In fact, we are positioned for a solid finish to 2021, which will prepare us to start 2022 on a fresh, positive note. We are continuing our forward expansion with new plants coming online in Wildwood, Florida; Calhoun, Georgia; and Laval, Canada. We also have several new products on the horizon, including a venture into an entirely new space designed to further our goal of helping installers work more efficiently and effectively.

This would not have been possible, and we would not have been able to meet all of these challenges, were it not for the hard work and dedicated focus of all of MAPEI's employees. From the sales teams, to operations, to purchasing, to the crews on the factory floors, I thank you. This has not been easy, and I am proud of the commitment that every employee has shown. As the storm clouds part, let's all keep pushing forward toward a bright 2022.

A handwritten signature in black ink, appearing to be 'Luigi Di Geso'. The signature is stylized and fluid, with a long horizontal stroke at the end.

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MAPEI USA
MAPEI Canada



ON THE COVER

The Empire State Building's much-visited observation deck now features a MAPEI tile and stone system solution designed to withstand the millions of feet that will step across the renovated floor. See Page 25.

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THE WORLD REALLY IS OUR JOBSITE

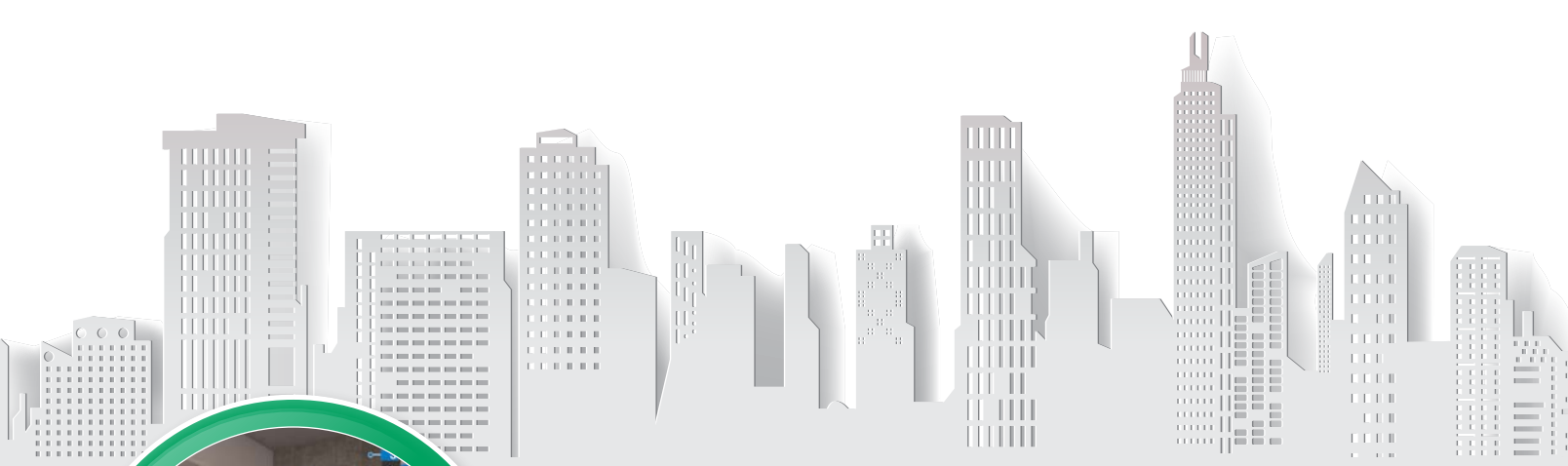
Wherever you go, MAPEI is there

It sounds like hyperbole: "Wherever you go, MAPEI is there." But a brief tour through any metropolitan area will quickly uncover opportunities for the use of MAPEI's system solutions – and not just the products themselves. These solutions begin with the projects as MAPEI supplies technical assistance with the CADs and specifications for any of the solutions. They also include research and development, to ensure that the solution meets the specific jobsite challenge. The world over, there isn't a jobsite that couldn't be met by MAPEI's innovation.

Let's begin at the port. Your cruise ship has just docked at your vacation destination. The time at sea was fun and relaxing – you never really paid attention to the floors beneath your feet, except once, when that drink tray was spilled and you wondered how the server did not slip. That's because the flooring was part of MAPEI's **Products for the Marine Industry** line, which offers products that can not only replicate the look of teak and terrazzo, but do so in a lighter-weight, non-slip and easy-to-clean fashion.



With your baggage collected, you hail a taxi and watch as the sleek town car pulls away from the port and into traffic. A slight incline and soon the daylight is blocked. You have entered a tunnel and are traveling beneath the harbor and into the city. Unknown to you, MAPEI's **Products for Underground Construction** and Underground Technology Team (UTT) were instrumental in the construction of this tunnel, providing waterproofing and shotcrete on the invert and on the walls.



The entrance to the hotel is blocked by a tour bus – perhaps one of the football teams that is in town for the big game? Exciting! But it means that your driver is forced to drive past the main entrance and around through the parking garage in order to double back. As he drives through the garage, you sit up, looking for famous faces. There aren't any, but you do notice that repair work is taking place. It looks as if the side of the garage has been nicked – the concrete is missing and the rebar is exposed. The crew is working, and as you pass you notice bags of product – MAPEI. What you can't see as you drive past are the products themselves – anodes, repair mortars and coatings from MAPEI's **Concrete Restoration Systems** (CRS) line.

As your taxi drives up to the valet station, the bus is now gone. The valet quickly whisks your bags out of the car and inside. You step into the lobby and are greeted by an open, welcoming expanse that smells fresh and clean. The valet points you to the check-in desk and wheels your luggage across the marble floor. Those imported, large marble slabs have narrow grout joints in between them and are incredibly popular. What you don't know is that they can also be incredibly difficult to install – without the proper materials. Fortunately, this hotel used products – including primer, waterproofing, mortar, grout and sealer from MAPEI's **Tile & Stone Installation Systems** (TSIS) product line – to install the slabs on the floor and also the matching slabs that grace the walls. Not only did they want the lobby to make a five-star-worthy impression, they wanted it to be sanitary, easy to clean and rugged. A lobby must be welcoming, beautiful, durable and clean all at the same time. This one is, thanks to MAPEI. With no evidence of the football team in sight, you check in and head upstairs.



Suddenly – daylight. You leave the tunnel and are now on the highway approaching an overpass leading into downtown. The highway's concrete features water-reducing admixture technology from MAPEI's **Admixtures for Concrete** line.

Standing strong below, as your car glides up the ramp to the overpass, are the support pillars. If you were able to look closely, you would see that one of them bears the faint traces of a run-in with a car. The driver was fine, but the pillar needed structural repair, so the city crews turned to MAPEI and our **Products for Structural Strengthening** line. The custom-engineered, carbon-fiber polymer-impregnated wrap repair is almost undetectable, and the pillar is stronger than before. But you will never see or know this fact because your car has long since passed and you are safely approaching your destination – a five-star hotel.



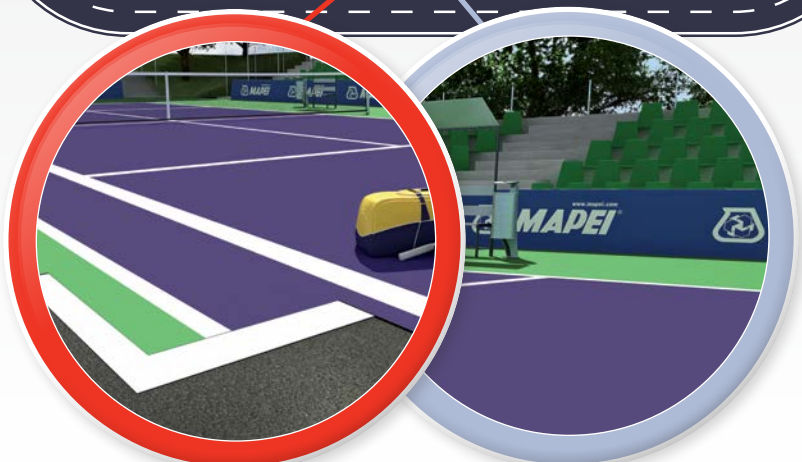


A quick elevator ride – the elevator pit and the cab itself feature products from MAPEI's CRS, **Waterproofing Systems** and TSIS lines, including below-grade waterproofing, mortars, grouts and sealers – and you are in your room. But a glance at your watch tells you that there is no time to rest. You have a lunch date with friends at a world-famous restaurant a few blocks away.



It is a beautiful late fall day, so you decide to walk. A block away from the hotel, you notice a park with a playground. The children's happy laughter echoes in your ears the rest of the way to the restaurant. If you had stopped, you would have seen that the playground equipment sits on top of MAPEI's sports turf products from our **Products for Sports Flooring** line. No nails or staples mean safe play, and the artificial turf saves the city thousands of dollars each year in water bills. But there is no time for playgrounds – lunch at one of the city's most popular restaurants awaits.

Wood. That's the concept of the restaurant. Everything in the restaurant is either smoked, grilled or served flambé. The walls are paneled and the floor – the floor is hand-hewed planking installed by a local artist, using the very best techniques and materials. In fact, when the restaurant opened, the local museum held an exhibit there. And the press interviewed the artist/installer. Asked how he installed the floor, he said that he meditated over each beam and used MAPEI's **Products for Wood Flooring**.





Nothing finishes off a great lunch spent catching up with friends quite like continuing the conversation at a sporting event – a Pro-Am tennis match, to be exact. A quick cab ride, and the three of you are at the Squinzi Sports Complex. Inside are tennis courts featuring the latest in sports-flooring technology from MAPEI's **Products for Sports Flooring** line. From the underlayments to the striping, everything is designed to provide comfort and peak performance for the athletes. The stands in which you sit are built with innovative technology from MAPEI's **Cement Additives** division.

Game over, your friends want to go for drinks, but you've had a long day. You'll see them all tomorrow at the big game. Passing the entrance to the tram station (which also features MAPEI's UTT and TSIS technologies), you grab a cab and return to the hotel.



Before heading up to your room, you decide to pop into the sundries shop and grab a sandwich for dinner. Tired, you drop your wallet and bend down to pick it up. Next to your wallet is an abalone shell, or a part of one, and there's another, and another – no, that can't be. You suddenly realize that it is a terrazzo floor, so reminiscent of the floors that you've seen on vacation in Venice. "How old is this floor?" you ask the woman behind the register, knowing that real terrazzo is hard to find now. "It has been six months since the remodel," she says. "Isn't it beautiful? Don't tell the boss, but I like it more than the imported marble slabs, even though this is resin." That's right. The sundries shop floor features products from MAPEI's **Cementitious and Resin Flooring Systems*** line.

Back in your room, it is time to grab a quick shower. To your eyes, the bathroom is clean and welcoming. During COVID, the hotel took advantage of the downtime and refreshed the old tile showers without the hassle of a tear-out. Using MAPEI's unique system from our **Floor Covering Installation Systems** line, they have covered over the tiles with luxury vinyl tile (LVT) that looks like marble. Stepping out and drying off, you step onto what should be a cold tiled floor and then the carpet tiles; however, you are so

tired that you barely register the transition. Although, to be fair, the flooring was installed using MAPEI's self-leveling underlayments and low-profile transitions between the ceramic tiles and the carpet tiles. The reason the tiles aren't cold is because the flooring also features MAPEI's **Mapeheat™ radiant floor-heating system**. The warmth radiating up from the flooring fills the room. Combined with the warm shower and early morning start, it is time to sleep.

As you drift off, you think about the big football game tomorrow at MAPEI USA Stadium. You've only seen it in photos, but you know that it was built using MAPEI products throughout the complete construction process – from the below-grade waterproofing, right down to the paint on the skyboxes and the turf on the field. It's been a long day and that treat will wait for tomorrow. Maybe you'll see a player or two in the lobby in the morning...

For more information about MAPEI products and the other locations in which you will find them, visit www.mapei.com.

*Cementitious and Resin Flooring Systems products are available in Canada and Puerto Rico... and coming soon to the United States.



CEMENT ADDITIVES

Bringing efficiency and sustainability to cement



Construction materials such as brick, block and stone are widely used around the world. To build with these materials, a “glue” must be used to bond the structure together and to provide structural integrity. The most common “glue,” cement, can be dated back thousands of years and remained relatively unchanged. However, with the progress of cementitious materials, that “glue” material has now advanced to the current technology that has produced masonry cements. These are typically a combination of Portland cement or hydraulic cement combined with a plasticizer and other materials that are added in order to improve the masonry cements’ features, such as durability, setting time, water retention, etc. In addition to the use of masonry cement for bonding construction materials, masonry cements are also used to produce stucco.

Masonry cements are generally produced in Type N, Type S and Type M mortars at different strength levels, as determined in ASTM C91. This standard defines the classifications and the applications for which the masonry cements are typically used. The chart on the next page provides a breakdown of the three classifications and the building applications. **Type N** is a general-purpose mortar, typically used on interior walls and above-grade exterior walls. **Type S** is a structural load-bearing mortar. Type S mortar can be used on exterior applications and for at- or below-grade applications. **Type M** mortar is the strongest mortar and is used for concrete masonry unit (CMU) block applications.



Building Segment	Type
Exterior, above grade,	
Load-bearing	N or S
Non-load-bearing	N
Parapet wall	N or S
Exterior, at or below grade	S or M
Interior	
Load-bearing	N or S
Non-load-bearing	N

Chart data courtesy of PCA: Portland Cement Association

ASTM Specification C270 describes how to specify these masonry cements, depending on the use and strength that will be required. This is extremely important, as the masonry cement mortar is the final “glue” that masons apply to structures to hold them together.

Improving on history

Although masonry-cement quality is important, and the final product has to meet the ASTM C91 specification, it is possible to enhance important characteristics, such as improving the workability of the mortar in field conditions, extending or shortening the mortar’s pot life, preventing moisture evaporation, controlling bleed, providing finer texture and increasing spreadability. To achieve these properties, masonry producers employ process addition during the masonry-cement (or clinker) grinding process. One of the categories of process-addition material is “masonry grinding aid.” And MAPEI’s Cement Additives Division (C-ADD) plays a leading role in this process, helping to create masonry cement that is not only durable, but is also sustainable.

MAPEI’s C-ADD provides various grinding aids to the cement industry, including masonry grinding aids. MAPEI’s masonry grinding aids mainly function to introduce air in a controlled fashion, which creates air entrainment in stable micro-bubbles. These micro-bubbles are distributed throughout the masonry cement in a highly homogeneous fashion, providing a strong, smooth mortar. MAPEI’s masonry grinding aids can reduce bleeding, improve workability and extend board life, as well as improve freeze/thaw resistance.

According to C-ADD’s research, the technical advantages of using MAPEI’s masonry grinding aids can include:

- An increase in output and a decrease in energy consumption for the grinding mill.
- Lower grinding media consumption.
- Decreased mill internal temperature.
- Better flow of ground cement in transports and silos, as well as during the truck loading and unloading process.
- Speeding up the process, affording facilities with an “output reserve” between 10% to 30%.

These are just some of the international findings that have been published in a variety of technical studies and papers. For more information, see <http://cadd.mapei.com/wp-content/uploads/2016/03/2002-04-Petrochem.pdf>.

Further, the use of cement additives renders masonry-cement production more sustainable by decreasing the CO₂ emissions and limiting the use of non-renewable raw materials. The CO₂ reduction is calculated globally using the following criteria:

- Average CO₂ emission per ton of clinker (kg/t), based on geographical areas and specific fuel/kiln technology
- Clinker reduction (%) per category of cement additives in use
- Average CO₂ emission per kWh of electrical power (kg/kWh), based on geographical areas and specific power generation
- Electrical power savings (%) per category of cement additives in use
- CO₂ emissions related to the production and transport of MAPEI’s cement additives

Because MAPEI believes in transparency, these CO₂-elimination numbers are reported in a rolling tally on the Cement Additives Division homepage (<http://cadd.mapei.com/en-us/>). And, as with all MAPEI products, C-ADD products are continually reviewed for their possible contributions to environmental certification programs.

Whether the “glue” is Type N, Type S or Type M, it can benefit from the addition of cement additives. The ancient formula of limestone, sand and water can – and should – be improved upon to produce masonry cement that is more durable and sustainable than ever. MAPEI’s Cement Additives Division is committed to bringing these innovative solutions to the cement market.

AEC air-entraining and waterproofing additives for masonry cement

AEC additives are air-entraining and waterproofing agents formulated for grinding masonry cements. AEC tailor-made additives are formulated for the production of high-quality masonry cements Type N, M and S complying with the standards ASTM C91-95c and ASTM C270.

Characteristics

AEC additives increase air entrainment and water retention, improve workability and waterproofing characteristics, control the setting time, and extend the board life. Air entrainment can reach 15% to 21%, improving the workability of the product. Water retention can easily exceed 90%. AEC additives' resulting entrainment of air in micro-bubbles, homogeneously distributed, improves the workability, the yield per surface unit and the resistance to freeze/thaw cycles. Micro-bubbles, with controlled diameter and high stability, act as a lubricant between mortar layers, improving flow as well as workability. AEC additives' resulting water retention prevents the mortar's mixing water from migrating toward the external substrate, thereby improving adhesion and reducing plastic shrinkage.

Usage

AEC additives are formulated to improve the characteristics of masonry cements. They must be added to the mill during grinding for correct dispersion and to maximize performance.

See full product details at www.mapei.com.

Dosage (0.08% To 0.3%)

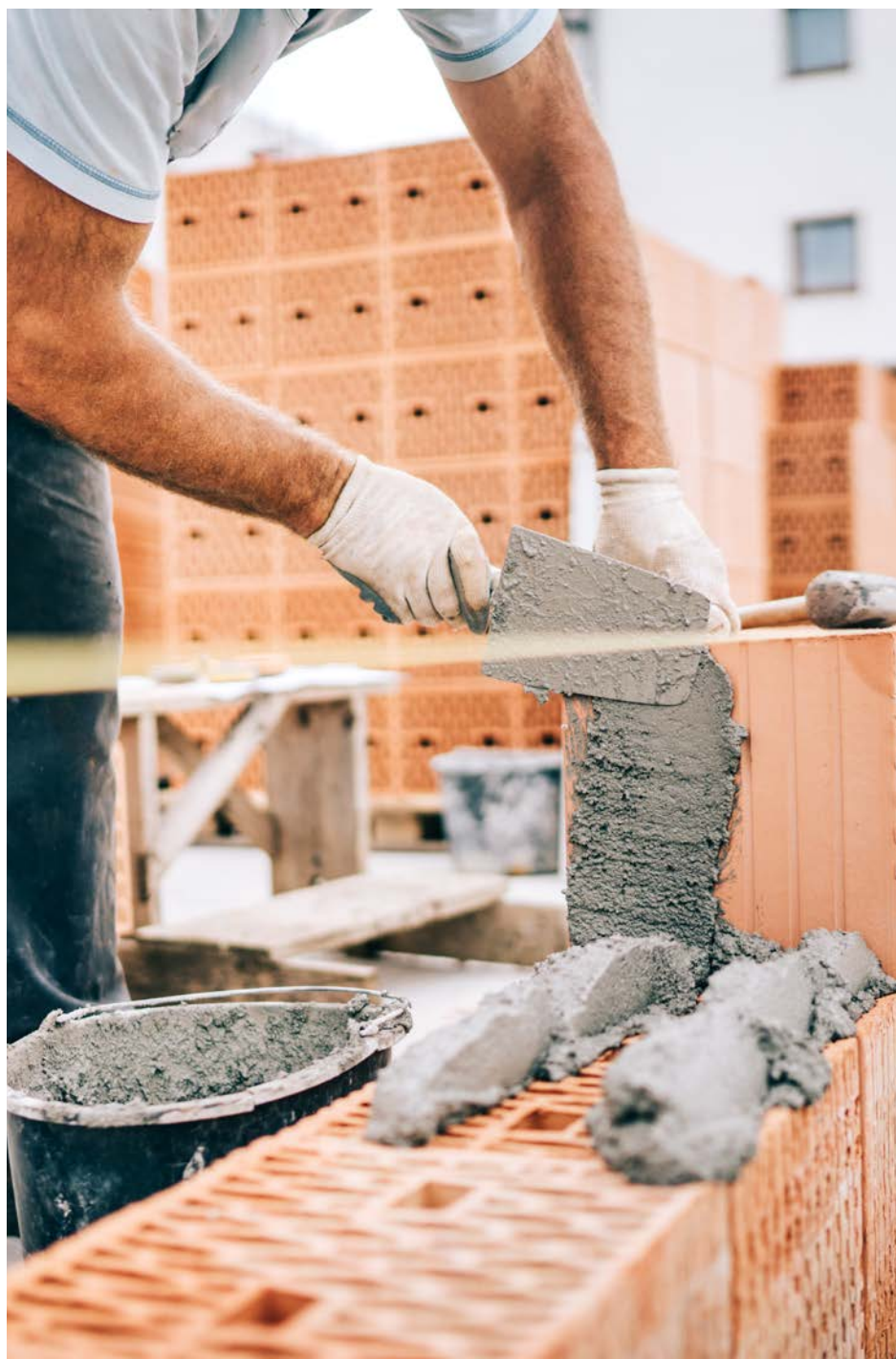
The optimum dosage depends on the type and fineness of the masonry cement. In any case, optimum dosage must be determined through a reliable industrial trial, preferably with the help of MAPEI's Cement Additives Division (C-ADD) technicians.

Packaging

AEC additives are available in plastic totes measuring 275 U.S. gals. (1 041 L) and in bulk tankers with 45,000 lbs. (20 412 kg) in capacity.

Storage

Maintain the additives at a temperature above 32°F (0°C). In normal conditions, the shelf life for AEC additives is at least 2 years.



MAPEI UTT Shotcrete Solutions

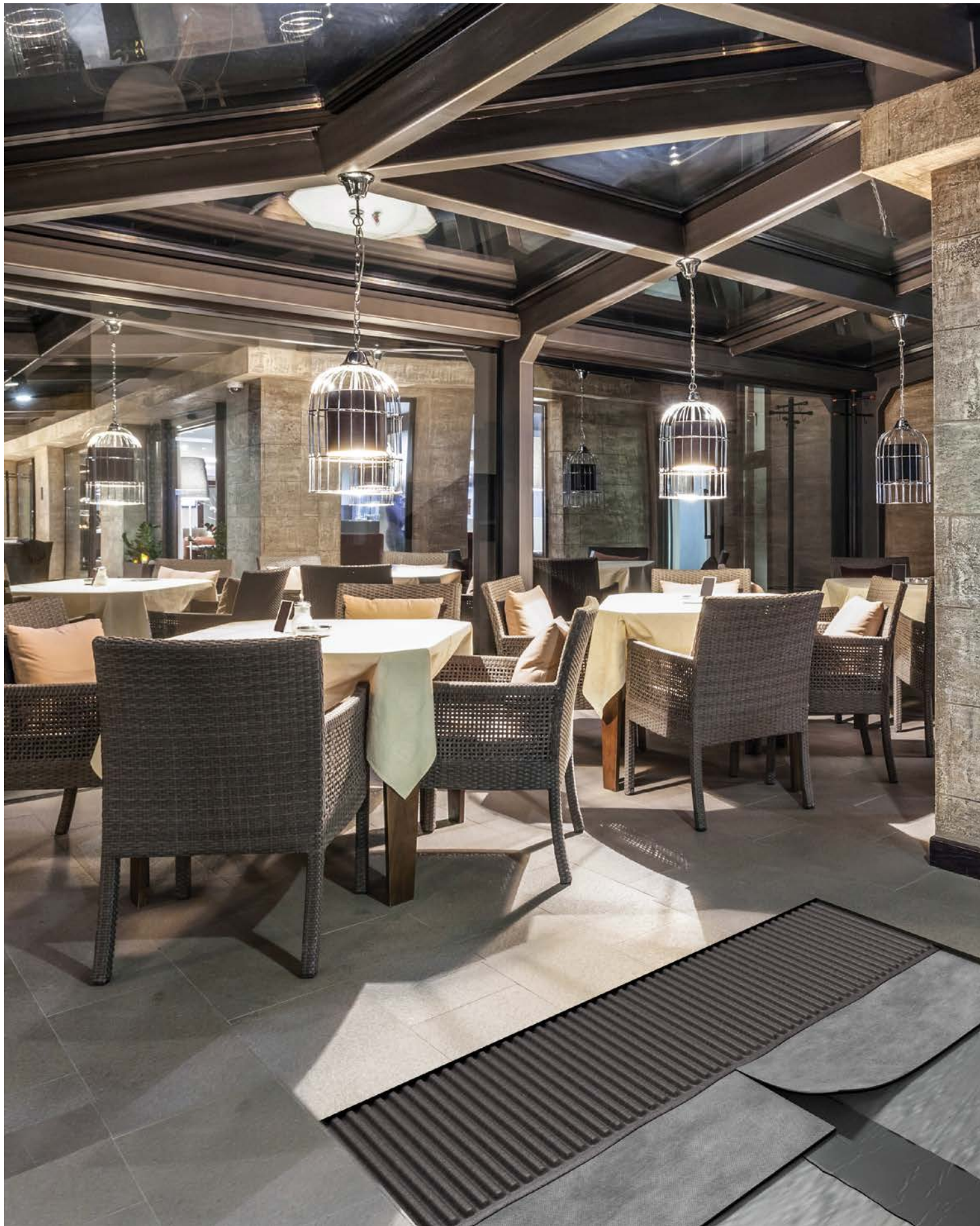


MAPEI's Underground Technology Team (UTT) combines go-to expertise for shotcrete technology and the product solutions to match.

- › Accelerators and synthetic fibers are among our full range of underground construction and mining solutions, which also include superplasticizers, water reducers, hydration control, retarding agents and curing compounds, as well as packaged and bagged shotcrete mixes.
- › All products can be supplied directly to your jobsite – even in bulk.
- › Our technical experts can work with project engineers to help with the design, bidding and specification processes.
- › We can provide hands-on field support with our own trained and certified shotcrete technical experts.
- › Our technical experts are experienced with most makes and models of shotcrete equipment.
- › MAPEI's UTT experts are certified in current shotcrete standards and practices, including the ACI Nozzleman Certification.

From the specification to the nozzle, the UTT group has the solutions for your shotcrete projects. For more information, visit www.utt.mapei.com.







PROTECTION ON A ROLL

MAPEI's membrane solutions handle cracks, sound and waterproofing

If you are specifying a project and are in need of sheet-membrane protection, look no further than MAPEI. We have one of the largest product offerings of sheet-membrane solutions in the industry. "Our multipurpose line of sheet membranes offers the widest selection of options for crack isolation, vapor management, waterproofing and sound reduction available," said Sonya Moste, MAPEI's Product Manager of Crack-Isolation, Sound-Reduction and Floor-Heating Membranes.

All of our multipurpose, bitumen-based, sheet membranes have been certified by SCS Indoor Advantage™ Gold for low volatile emissions (VOCs). This means that they have been vetted by an ISO-accredited, third-party certification body and tested by an industry-independent laboratory.

Further, all of these membranes are thin and low-profile, making them perfect for use in both new construction and in remodeling projects, even over challenging substrates. They all feature varying levels of protection, including:

- Crack isolation up to 3/8" (10 mm) wide.
- Sound reduction up to 72 IIC (impact sound) and 66 STC (airborne sound).
- Waterproofing (when used with **Mapetape™ BB** for select environmental exposure classifications).
- Vapor management (when used with **Mapetape BB** and **MAPEI HM Primer™**).

Depending on your need, MAPEI has a membrane solution and an application type to match. Visit MAPEI online – www.mapei.us in the USA or www.mapei.ca in Canada – to learn more about our sheet membrane options.



Meet the family

MAPEI's family of sheet membranes provides unique protection for specific applications. When used as part of a system solution, the sheet membranes provide a layer of protection that, although invisible when installed, will be a crucial part of the flooring system.

Mapeguard® CI is a flexible, thin (1/16" or 1.5 mm) membrane providing crack isolation, for tile installations.

Mapesonic™ 2 is an all-in-one membrane, providing crack isolation, sound reduction, vapor management and waterproofing in a 76-mil, fabric-reinforced, load-bearing membrane.

Mapeguard 2 is a 3-in-1 membrane for crack isolation, waterproofing and vapor control. It contains 5% post-consumer recycled material.

Mapesound 90* is a flexible, thin, 90-mil (2.3-mm) lightweight, load-bearing, fabric-reinforced "peel-and-stick" sound-reduction and crack-isolation membrane.

Mapetape BB is a butyl-based, waterproofing sealing tape for use with MAPEI peel-and-stick, crack-isolation membranes (*Mapeguard 2, Mapesonic 2, Mapesound 90 and Mapeguard CI*).

MAPEI HM Primer is a ready-to-use, low-VOC, water-based, quick-drying, high-tack membrane primer. It is specifically formulated to promote maximum adhesion of MAPEI peel-and-stick sheet membranes to high-moisture substrates.

MAPEI SM Primer™ is a ready-to-use, fast-drying, water-based, latex primer for use under MAPEI's peel-and-stick sheet membranes on residential and commercial indoor or outdoor floors.

MAPEI SM Primer Fast is a ready-to-use, fast-drying, quick-tacking, water-based, pressure-sensitive, nonhydrolyzable latex primer for use under MAPEI's peel-and-stick sheet membranes on residential and commercial indoor or outdoor floors.

"*Mapeguard 2* is a 3-in-1, flexible, 40-mil-thin, load-bearing membrane for crack isolation and sound reduction. And, it can now be used for waterproofing with the addition of our *Mapetape BB*, a butyl-based sealing tape that has been designed for use with our bitumen-based membranes," explained Sonya Moste, MAPEI's Product Manager of Crack-Isolation, Sound-Reduction and Floor-Heating Membranes. When used with the MAPEI primer of choice (*MAPEI HM Primer, MAPEI SM Primer or MAPEI SM Primer Fast*), the sheet membranes become part of a system solution.

*Available in Florida only



INTERIOR

FLOORS

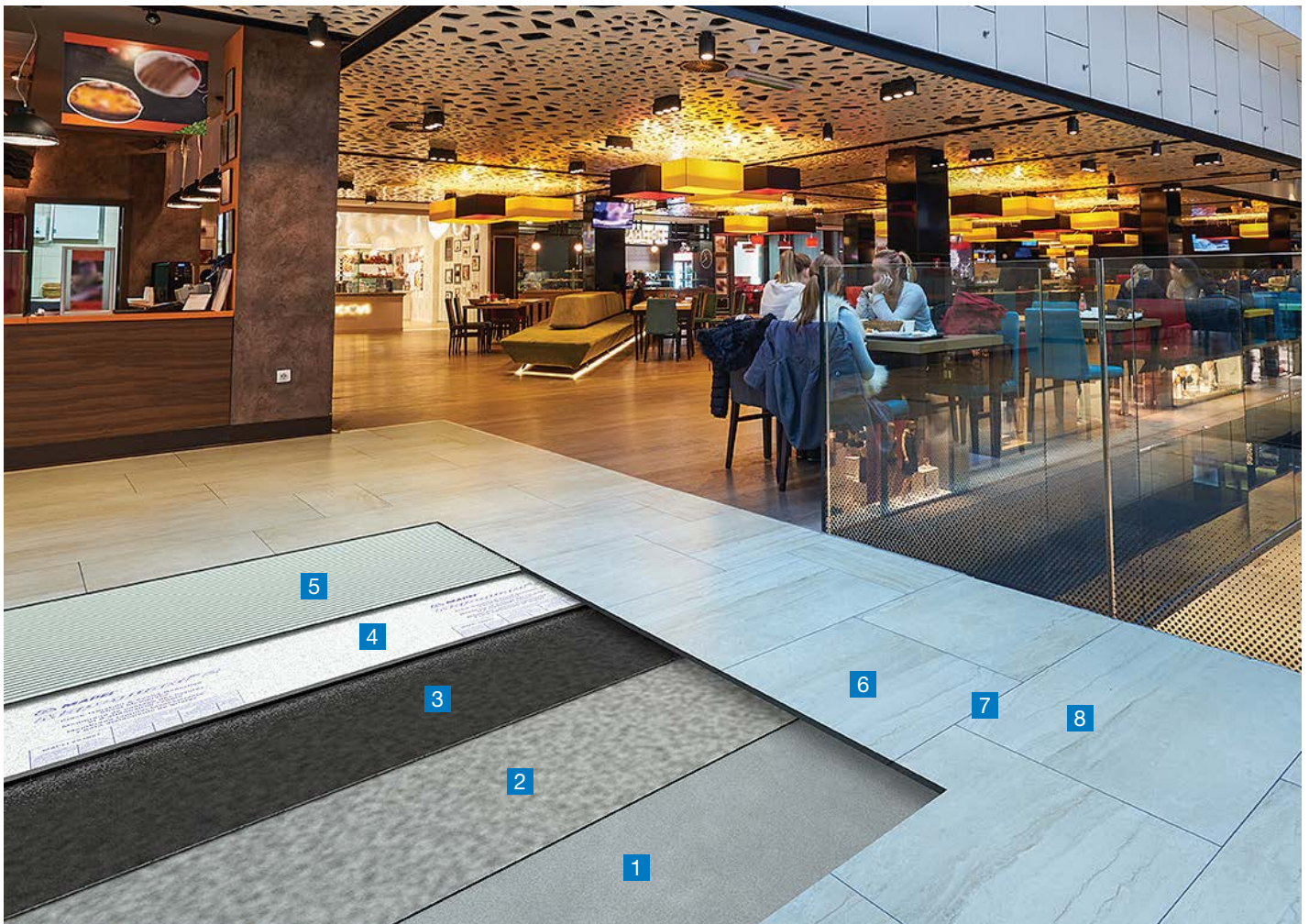
CERAMIC TILE OR STONE

- 1 Concrete
- 2 *Mapecem® Quickpatch*
- 3 *MAPEI SM Primer™*
- 4 *Mapeguard® 2*
- 5 *Keraflex™ Super*
- 6 Ceramic tile or stone
- 7 *MAPEI Flexcolor® CQ*
- 8 *UltraCare® Penetrating Plus SB Stone & Porcelain Tile Sealer*

Tile and stone are synonymous with flooring in shopping malls and other enclosed areas subject to heavy foot traffic. Today's tile can mimic the look of stone, wood and even fabric with remarkable precision. The installation products selected determine how soon the floor can be returned to service and how long it will hold up.

Challenges: Flexibility, pivot area, high traffic, pallet jacks

Solutions: Because there are multiple methods, contact MAPEI's Technical Services Department for guidance.



ELEVATOR PIT WATERPROOFING

A Q&A session with one
of MAPEI's waterproofing
experts

We sat down with Harold Hays, MAPEI's Technical Services Manager – Waterproofing, to get to the bottom of the topic of waterproofing elevator pits. We asked, and he answered. From the very basics to top-level advanced, this article covers a range of information. You may already know the answers to some of these questions, but, as codes have changed through the years as quickly as elevator speeds, some of the information may be surprising.

RMNA: Let's start with the basics: What is an elevator pit, and why does it need waterproofing?

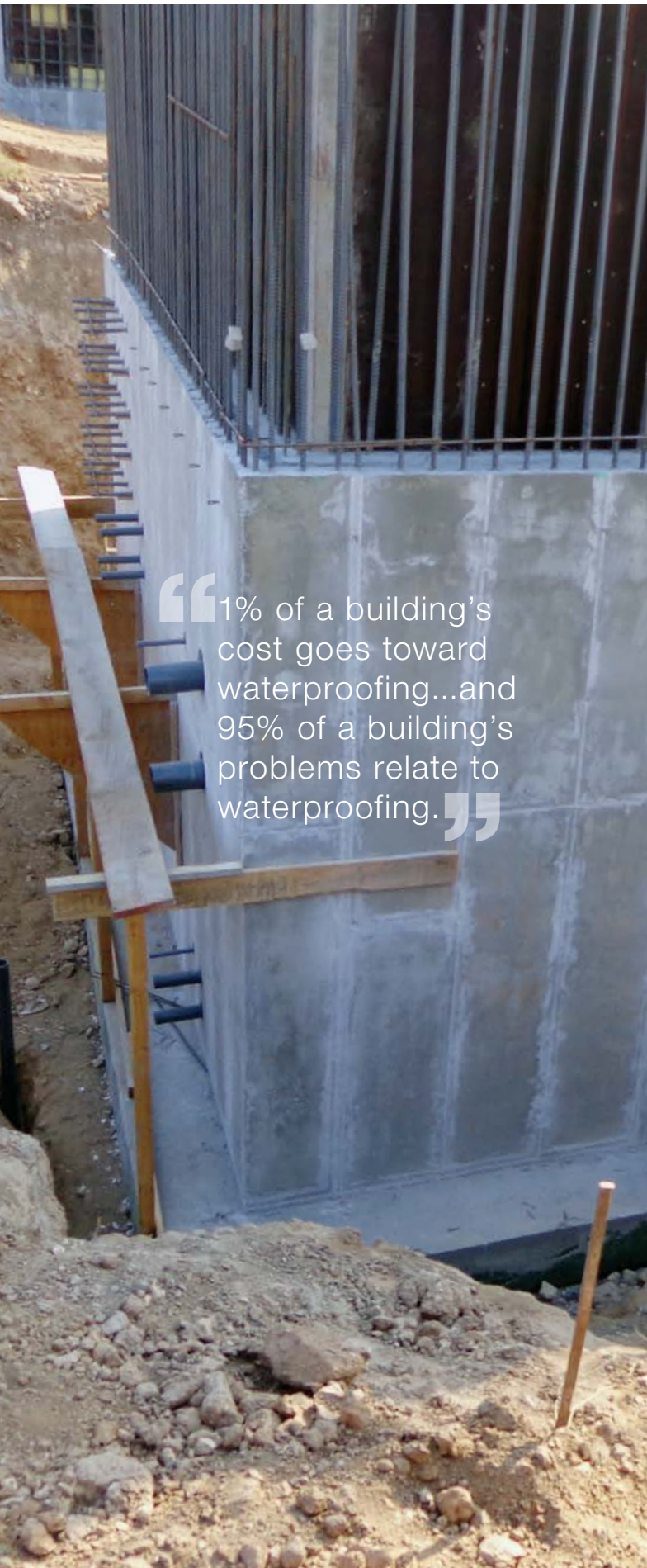
HH: Simply put, an elevator pit is the bottom part of the elevator shaft that extends below the floor slab of the lowest occupied space. The pit usually extends a minimum of 5 feet below the floor slab in order to accommodate elevator equipment, which extends below the elevator so it can operate. The depth of the pit also allows space for the force of the elevator cab when it returns to the lowest floor. The pit must remain dry to prevent the equipment from exposure to moisture, which can cause rust, malfunctions, and premature wear and tear. Moisture in the elevator pit can also promote mildew and mold, and lead to the deterioration of the building's foundation.

Elevator pits are not the only pits found in structures that need to be waterproofed. Other pits that need waterproofing include pits required for escalators, dumbwaiters, moving walks, as well as for material lifts and equipment.

RMNA: How does water/moisture get into the elevator pit, and what can be done to keep it out?

HH: Water/moisture can enter the pit by different means. Water will find its way in through cracks in the pit's walls or slab. Water can also enter through concrete joints such as where the wall meets the footing, pipe penetrations, tie-rod holes for concrete wall forms, and around the elevator plunger in the slab.

Used to build walls, concrete masonry units (CMU) are so porous that water can easily migrate through them and through the mortar joints. If there is hydrostatic pressure caused by a high water table or a perched water table, the pressure will force the water in through any crack or crevice. Water tables are not flat and can fluctuate with the seasons due to rain and snowfall. Rainwater can find its way in through cracks. Most construction projects will have a geotechnical report provided by a geotechnical engineer showing where the water table is located and providing an estimate of historical highs that will show if the water table will come in contact with the proposed building's foundation and pits. The report will determine if there is a need to install waterproofing under the elevator pit slab, footings and walls, or just the walls. The rule of thumb is that it is always safest to err on the side of caution when installing an elevator pit and to also install a waterproofing system.



“1% of a building's cost goes toward waterproofing...and 95% of a building's problems relate to waterproofing.”

RMNA: Should all elevator pits have waterproofing?

HH: Yes. Waterproofing will help to reduce the chance of mold, mildew and smells, structural issues, along with elevator equipment issues related to moisture. Mildew and mold need a water source to live and can be hazardous to human health, and can cause smells or odors in the elevator shaft that transmit to the occupants of elevator cars. Moisture can cause rusting of steel reinforcing in the footings, walls and slab which will compromise the structural integrity of the foundation. Because of these reasons, building codes now mandate the use of waterproofing on building structures/foundations below-grade. The code for elevators is The American Society of Mechanical Engineers (ASME) A17 and can be found at www.asme.org. This code requires that waterproofing be used and that the elevator pit be dry.

RMNA: What is the typical material used in elevator pit construction?

HH: The pits can have concrete footings with poured-in-place concrete or CMU walls and a concrete floor slab poured at the interior. Or, the pits can be constructed with a mat slab and the poured-in-place concrete or CMU walls sit on top. A mat slab is a concrete slab poured to the thickness of a footing and featuring the strength of a footing. This combination of thickness and strength supports the pit walls. These type of pits are built, then soil is backfilled around the pit and compacted.

Pits can also be constructed using blindside construction. With this type of construction, a hole is dug in the ground and the waterproofing is installed – first across the bottom of the hole and then up the sides of the hole. Then, a mat slab is poured. Next, the poured-in-place walls are formed using only forms on the interior side of the pit and using waterproofing attached to the soil walls as the outside forms are permanent. This construction is called blindside waterproofing because after the slab and walls are poured, the waterproofing cannot be seen.

RMNA: Where should the waterproofing system be located? On the exterior or the interior of the pit?

HH: If the waterproofing is installed on the inside of the pit, it is called negative-side waterproofing. If it is installed on the exterior of the building, it is called positive-side waterproofing. Negative-side waterproofing does not protect the substrate because it allows water to enter the substrate (footings, walls and slab). Water in the substrate can make the reinforcing steel rust and affect the structural integrity of the substrate.

Positive-side waterproofing locates the waterproofing system on the exterior side of the substrate so that it is positioned between the water and the substrate so that the water will never touch or even have an opportunity to get into the substrate. This is the most effective way to waterproof a building. Also, waterstops should be used in cold concrete pour joints. Cold concrete pour joints occur when concrete is poured to a certain point and is stopped but is not finished. The concrete will set up and get hard before the next section is poured. This will make a tiny crack between the poured sections through which moisture can travel. A waterstop should also be used around penetrations that travel through walls and slabs. When concrete is poured around a penetration and it cures, then a tiny crack will form between the concrete and around the penetration.

RMNA: We’ve heard the term “dampproofing” used. Is it the same thing as waterproofing?

HH: No. They are not the same. Waterproofing is defined by ASTM as “the treatment of a surface or structure to prevent the passage of water under hydrostatic pressure.” Dampproofing is defined as “the resistance of water in the absence of hydrostatic pressure.” Dampproofing materials will not bridge cracks in concrete or move with the building structure like waterproofing materials.

RMNA: What are the characteristics of a primary waterproofing system?

HH: A waterproofing system must be effective against moisture intrusion, continuous, durable during construction, and last for the life of the building. The waterproofing system must have all the necessary accessories to be a complete waterproofing system. Most of all, the waterproofing system should be properly installed by a reputable contractor – approved by the waterproofing manufacturer – who is familiar, not only with waterproofing in general, but also with the waterproofing system to be installed.

RMNA: What are the characteristics of a waterproofing manufacturer?

HH: A good waterproofing manufacturer has been producing waterproofing for more than five years and has several different waterproofing products with accessories to make a complete waterproofing system. The manufacturer should make all the literature, SDSs, specifications, standard details and installation instructions readily available. The manufacturer should have a technical services department that can answer questions about their products and how to install their products, project document review, waterproofing recommendations and design, provide project specific CAD details, and help with project submittals. They should have someone available for jobsite visits, pre-construction meetings, on-site problem resolutions, and to provide product training for waterproofing contractors, distributors and architect/consultants. And lastly, the manufacturer should furnish warranties covering the waterproofing system.

RMNA: What type of systems can be used to waterproof pits?

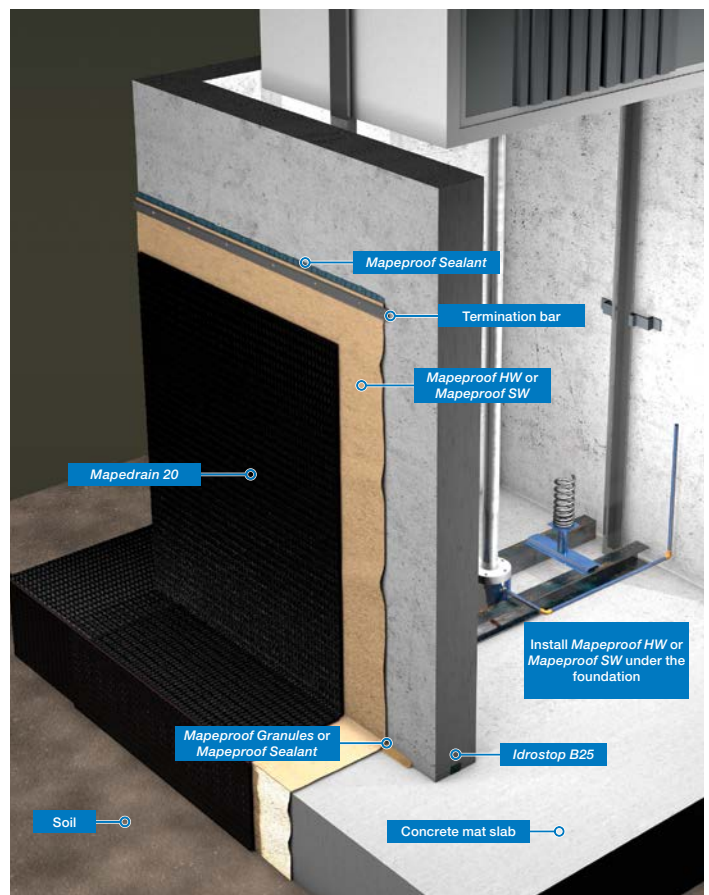
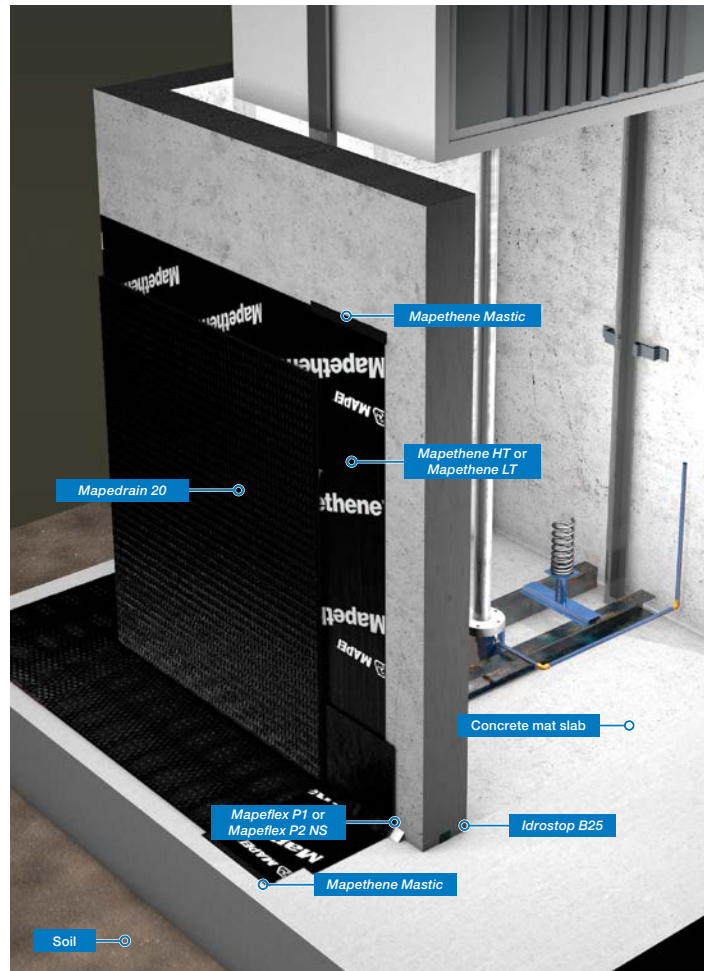
HH: First, there are a few different types of waterproofing that can be used to waterproof a pit:

- Liquid-applied systems,
- Self-adhered sheet membranes,
- Sodium bentonite clay, and
- Pre-applied chemically/mechanically adhered sheet membranes.

All these different types of waterproofing solutions have accessories to go along with them to make a complete waterproofing system, and MAPEI offers all of them. They all have different applications.

The liquid-applied membrane (*Planiseal® CR1*) and self-adhered sheet membranes (*Mapethene™ HT* and *Mapethene LT*) can only be used for post application on backfill walls.

Sodium bentonite clay (*Mapeproof™ HW* and *Mapeproof SW*) can be used for post application on backfill walls and blindside waterproofing applications.





Mapethene HT or Mapethene LT



Mapedrain 20



Idrostop B25



Mapeproof Granules



Mapeproof HW or Mapeproof SW



Mapeproof Sealant



Mapeflex P1



Mapeflex P2 NS



Mapethene Mastic

Pre-applied, chemically/mechanically (**Mapeproof FBT**) adhered sheet membrane can only be used for blindside applications.

Often the application of a waterstop in concrete control joints and around penetrations is forgotten. Typically, a bentonite rope (**Idrostop™ B25**) that swells when exposed to moisture is used.

Planiseal CR1 is a cold-applied, 100%-solid, solvent-free, polyether, liquid waterproofing. Polyether will not revert from long-term exposure to water like polyurethane waterproofing products. It can be applied horizontally or vertically by roller, squeegee or brush. The accessories are **MAPEI LMR Fabric** and a variety of sealants, including **Mapeflex® PU40**, **Mapeflex P2 NS**, **Planiseal CR2-V** and **Mapedrain™** drainage composites.

Mapethene HT and **Mapethene LT** are composed of 56 mils of rubberized asphalt laminated to a 4-mil cross-laminated polyethylene (HDPE) film with a tear-resistant, silicone-coated release paper. **Mapethene HT's** formulation is for applications installed at 40°F (4°C) and above. **Mapethene LT's** formulation is for applications installed between 25°F to 60°F (-4°C to 16°C). Accessories for **Mapethene HT/LT** include **Mapebond™ 710** and **Mapebond 720** primers/contact adhesive, **Mapeflex P2 NS**, **Mapethene Mastic**, and **Mapedrain** drainage composites.

Mapeproof HW and **Mapeproof SW** are made with two polypropylene geotextile fabrics, one woven and one nonwoven, with 1.13 pounds of sodium bentonite clay sandwiched between the two. **Mapeproof HW** is used where the groundwater is not contaminated. **Mapeproof SW** is used where it could be exposed to saltwater or contaminated water or on contaminated jobsites. The accessories for these sheet waterproofing membranes include **Mapeproof Granules**, **Mapeproof Sealant** and **Mapedrain** drainage composites.

Mapeproof FBT is made of a nonwoven polypropylene fabric laminated to a FPO sheet for a total thickness of 67 mils (1.7 mm). The accessories are **Mapeproof FBT Tape**, **Mapeproof BA Tape**, **Mapeproof Fix Tape**, **Mapeproof SA Tape** and **Mapedrain** drainage composites.

General accessories for waterproofing are **Planitop® X** for concrete substrate repair and **Idrostop B25** waterstop for protecting concrete cold-pour joints and penetrations through the slab and walls.

MAPEI offers one product for negative-side (inside the pit) waterproofing: **Planiseal 88**. This can be used when an already constructed pit has no waterproofing or when other moisture-related problems arise. However, negative-side waterproofing is by no means the correct way to waterproof a pit.

RMNA: Thank you for all of this information, Harold. You've given us a lot. If there are key points to remember for maintaining a dry elevator pit, what are they?

HH: Remember that the elevator code, The American Society of Mechanical Engineers (ASME) A17, requires the elevator pit to be dry and mandates the use of waterproofing. Waterproofing will prevent the passage of water under hydrostatic pressure, and dampproofing will only resist water under normal conditions. Use a waterproofing membrane with accessories to make a complete system and be sure that it is installed by an approved waterproofing contractor.

Always waterproof a pit when it is being built, because you have one shot to do it right and that's the first time. There is an old saying that says it all: "1% of a building's costs are used for waterproofing... and 95% of a building's problems relate to waterproofing!" I think that really says it all!

Mapelastic® AquaDefense

Premium waterproofing and crack-isolation membrane

Mapelastic AquaDefense is a premixed, advanced liquid-rubber, extremely quick-drying waterproofing and crack-isolation membrane for installation under ceramic tile or stone in residential, commercial and industrial environments. Mapelastic AquaDefense's new color provides improved visibility for chalk lines.

Features and Benefits

- Very quick-drying: Install tile after 30 to 50 minutes of drying time
- Time-saving: Flood-test as shower-pan liner after 12 hours of drying time
- Apply with roller or brush – easy to install over flat, curved or irregular surfaces
- Bonds to a wide range of surfaces; convenient, user-friendly and versatile
- No odor; great for confined spaces
- Prevents in-plane floor cracks from transmitting through tile or stone
- New color with improved visibility for chalk lines

Uses

- Residential and commercial interior/exterior floors, walls and ceilings
- Industrial interior floors and walls
- Tub and shower surrounds; bathrooms; kitchens; food prep, dishwashing and cafeteria areas; countertops; and laundry rooms
- Residential and commercial submerged applications: Freshwater pools, fountains and water features (completely covered by ceramic tile)
- Cantilevered balconies and decks over unoccupied space (with some limitations)
- Balconies and decks over occupied space when used in conjunction with a primary waterproofing membrane
- Steam rooms and steam showers (refer to TCNA handbook's sections SR613 and SR614, or TTMAC 319SR and 321SR)

See full product details at www.mapei.com.



Product Performance Properties

Laboratory Tests	Results
pH	9
Viscosity	Approximately 30,000 cps
Density	1.3 g per mL
Weight	10.9 lbs. per U.S. gal. (1.3 kg per L)

Shelf Life and Product Characteristics before mixing

Shelf life (<i>Mapelastic AquaDefense</i>)	2 years when stored in original, unopened packaging at 73°F (23°C)
Physical state	Liquid
Color	Light bluish green when wet; light green when dry
Shelf life (optional <i>Reinforcing Fabric</i>)	Unlimited when stored in original, unopened packaging at 73°F (23°C)
Storage	Store in a cool, dry place.

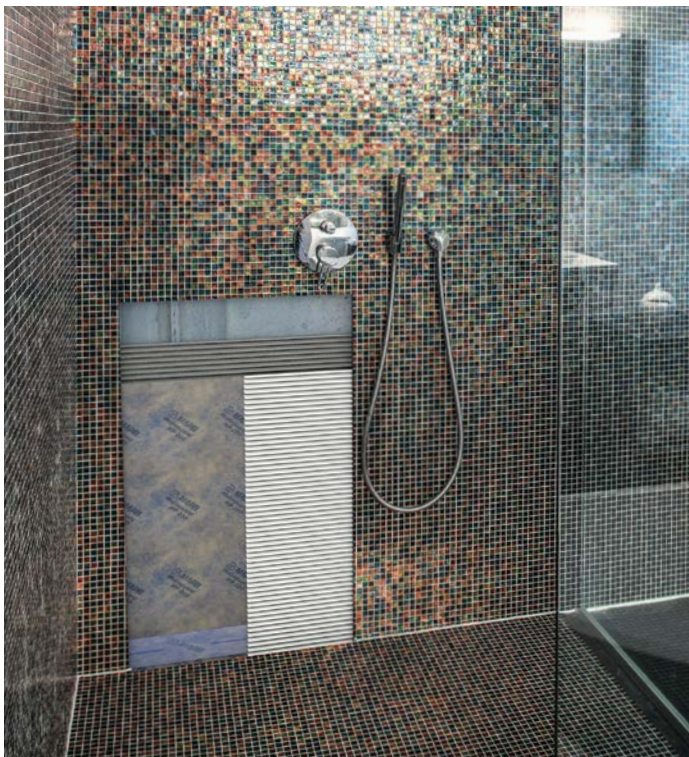
Protect containers from freezing in transit and storage. Provide for heated storage on site and deliver all materials at least 24 hours before work begins.

Application Properties at 73°F (23°C) and 50% relative humidity

Flash point (Seta flash)	Nonflammable
VOCs (Rule #1113 of California's SCAQMD)	0 g per L
VOCs (CDPH Standard Method v1.2-2017, CA 01350)	Passed
Drying time between first and second coats	When light green and dry to the touch
Drying time after second coat (before applying ceramic tile or stone)	About 30 to 50 minutes (when light green and dry to the touch)
Drying time before flood-testing	After 12 hours
Final dry thickness (2 coats)	About 20 mils at minimum (about credit-card thickness)
Freeze/thaw stability (liquid)	Up to 5 cycles at 32°F (0°C)

DON'T GET SOAKED

Waterproofing showers, steam rooms and decks



Ceramic tiles have been used in wet installations all throughout history, from the Roman baths to today's commercial kitchens. There are many demanding wet tile installations, including pools, spas, commercial kitchens, balconies, exterior walls and water features. However, this article will focus on three of the most common: Showers, steam rooms and exterior commercial decks. It is important to note that if they are designed and executed correctly, most wet tile installations can last the life of the structure.

Managing the water

The key to a wet tile installation is proper water management. The degree and type of waterproofing are dependent on the type of installation. An excellent example of good water management principles is found in the traditional mortar bed shower pan. The pre-slope mortar bed creates the needed slope to the drain at a slope of 1/4" per foot. Next, the waterproofing is installed; most often in this installation, a Chloraloy or PVC shower pan liner is installed over the pre-slope and up the walls and over the curb, a minimum of 3" above the finished curb as specified or required by code. Since the shower pan liner is not typically bondable, a wire-reinforced mortar bed is installed over the shower pan and floated just below the thickness of the tile being installed below the drain. This mortar bed makes an excellent bondable substrate for tile.

At the walls, the shower pan is covered with an appropriate backer board, such as cement board or a mortar bed. Fasteners for the cement board, or lath for a mortar bed, should be limited to the top 1" of the pan material that is covered up the wall.

The traditional mud (mortar bed) walls will be installed over building paper or a vapor retarder membrane, and then lath and a scratch and brown mortar bed will be installed. For proper wall-to-floor waterproof transitions: The backer unit, with or without the vapor barrier depending on the type of backer board, overlaps the shower pan, so any water or moisture that gets through the tile installation is drained down the backer board or vapor barrier into the shower pan. The water hits the sloped waterproofing and goes into the drain weeps, and on into the drain. Traditionally, excellent water management principles follow this approach: The water passes from the shower head, down shiplapped membranes and slope to evacuate through the drain. Today's innovative trench, integral and traditional drains allow for many alternatives to this traditional method, but when installed correctly, they all perform extremely well. It is all about managing the water.

Getting steamy but staying waterproofed

A similar but very different installation occurs in a steam room or steam shower. Steam rooms must manage the water just like mortar bed showers, but proper steam room design involves different construction principles, including slip joints in corners, sloped ceilings and seating. Ceilings should be sloped a minimum 2" per foot to avoid condensate dripping onto occupants. Sloping the ceiling from the center can also minimize the amount of rundown on walls.

A few years ago, the TCNA Handbook committee made some very important changes to the waterproof membrane application requirements in the TCNA Handbook's Steam Room Methods: SR613 and SR614. Steam rooms or steam showers designed for continuous use applications should specify a low-perm waterproof membrane (a waterproof membrane meeting ANSI A118.10 and with a water vapor permeance rating of 0.5 perms or less when tested per ASTM E96 Procedure E, tested at 90% relative humidity



and 100°F). When a waterproof membrane with a water vapor permeance rating greater than 0.5 perms is specified, the use of a vapor retarder behind the wall assembly is required. And, the vapor retarder must have a water vapor permeance rating of 0.1 perm or less when tested per ASTM E96 Procedure A, tested at 50% relative humidity. This ensures that the waterproof membrane can perform in the type of conditions to which it will be exposed in a steam room or steam shower. If it can't pass E96 Procedure E, a vapor barrier must be added to the assembly. When installing commercial steam rooms, consult your setting material and backer board manufacturers, so you understand the proper assembly needed for your successful steam room or steam shower project.

Exposed to the elements

A large exterior tiled deck may sound very different than a shower pan, but the principles are same: It's all about the water management. It is about removing the water from the deck's surface as quickly as possible to reduce freeze/thaw and possible slip issues.

Both of the exterior deck methods in the TCNA Handbook's F103 and F103B are very similar, and if executed correctly, both give the best water management assembly for an exterior installation of a tile deck. Both start with a properly sloped substrate. In the case of commercial construction, that substrate is typically concrete. The concrete is sloped to a drain or to allow the water to run off of the exterior deck at 1/4" per foot. Then, a primary roof membrane is installed, sloped to drain either into the drain or off the deck. All exterior installations must also be waterproofed behind the finish material on the wall. In the case of stucco, brick or wall siding, the deck's primary waterproofing should cove up the wall and terminate 4" to 6" up behind the wall building paper, weather-resistive barrier or similar drainage plane in the wall assembly. Next, on top of the horizontal primary membrane a 1" drainage layer of crushed stone with filter fabric on top, or a drainage mat with filter fabric already applied, is installed. This drainage on top of a primary membrane is an important and frequently overlooked step. It is critical, especially for best performance in freeze/thaw areas. Water will always take the path of least resistance. It wants to go to air. So, when properly sloped, the drainage layer helps move the water efficiently to the drain.

Next, a wire-reinforced unbonded mortar bed is installed, followed by an optional secondary ANSI A118.10 waterproof membrane, a bond coat and then the tile. The optional secondary ANSI A118.10 waterproof membrane may be specified to prevent moisture intrusion into the mortar bed. Some contractors prefer keeping moisture close to the tile surface, so it can evaporate away, rather than allow water into the mortar bed. Without the secondary waterproof membrane, this large exterior deck performs the same function as the tile shower pan or steam room pan. Water or moisture, such as rain, wets out the tile and setting material, goes into the mortar bed, soaks down to the waterproof membrane and drains into the drain.



All three of these tile installation types require properly installed TCNA method EJ171 movement joints. It is essential in wet areas to install tile movement joints in showers, steam rooms and exterior decks. While ceramic tile are not affected by moisture or water, they do have some absorption. Tile is as small as it will ever be when it comes out of the kiln. We must allow for movement due to changes in the assembly due to tile absorption, moisture and thermal fluctuations in all installations of tile, but this allowance is particularly critical in wet areas.

Installing tile in demanding installations such as showers, steam rooms and exterior decks is not difficult, but it is challenging. A failed installation in a wet area can result in very costly repairs not only to the installed area, but also to adjoining areas and the building. Installers should really get more recognition for well-executed waterproofing in tile installations in wet areas. These projects require an understanding of water management, proper product selection, planning, experience, quality installation skills, and a clear understanding of industry guidelines and standards. If you attempt one of these installs with anything less than attention to these details, you risk getting soaked.



About the author:

Jim Whitfield

Jim is the Director of MAPEI Corporation's Technical Services and has been active in many industry committees over the years. Currently serving as President of the Materials & Methods Standards Association and selected for the National

Tile Contractors Association (NTCA) Technical Committee, he also participates as a voting member on the ANSI A108 Committee and the Tile Council of North America's Handbook Committee. In 2001, he was honored with Fellowship by the Construction Specifications Institute, thanks to his contributions to education in the construction industry and his exemplary service to CSI.



4 MAPEI LVT

High performance and style...
even in **damp environments**

SYSTEMS FOR INSTALLING LVT IN DAMP SURROUNDINGS

With MAPEI's *Planiprep™ 4 LVT*, *Ultrabond ECO® MS 4 LVT*, *Ultrabond ECO MS 4 LVT Wall* and *Mapecoat™ 4 LVT*, you can install luxury vinyl tile (LVT) to renovate walls, floors and environments that frequently come into contact with water. The **Shower System 4 LVT** systems guarantee superior waterproofing to satisfy installation needs all over the world.

For more details, visit www.mapei.com.



MILE HIGH

MAPEI brings airport project in for a safe landing



Overview: Working at Denver International Airport (DIA) presents distinct challenges. And, in addition to the usual safety concerns, a project to expand Concourse B brought training issues to the fore. The jobsite presented a unique situation, rife with unusual challenges – and then COVID-19 hit...

Rising like a series of white tents in an echo of the Native American teepees that once dotted the area, Denver International Airport (DIA) sits on the edge of the Great Plains and at the foothills of the Rocky Mountains. According to flydenver.com, DIA served a total of 69 million passengers in 2019, making it the fifth largest airport in the United States.

Although DIA officially opened in 1995, by 2018 it was clear that an expansion was in order. To meet increased demand, three new concourses – A, B and C – were designed. A wide variety of MAPEI setting materials were specified for use throughout the extensive

Concourse B-West expansion. The contract for installing the tile and stone went to Denver-based contractor Brekhus Tile and Stone, Inc.

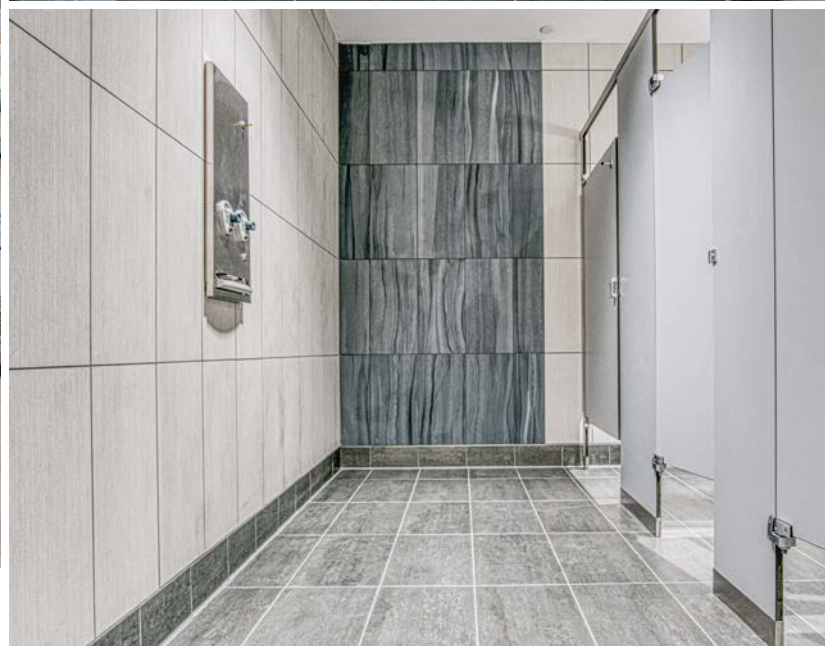
A strict jobsite

The expansion specification called for the installation of porcelain floor and wall tile, as well as large-format gauged porcelain tile. The areas to be tiled included three sets of restrooms for airport employees and airline crews, concourse-level public restrooms, a pet-relief area and other areas throughout the interior of the public concourse.

The floor-and-wall-tile work in the employee restrooms took place on a level of the airport referred to as the “apron,” also known as the tarmac level. (On an aviation side note, the term “apron” is thought to derive from the theatrical term “stage apron,” as this is the level where planes are “staged” for departure.) In total, the DIA tile specification landed at 12,507 square feet (1 162 m²).



Denver International Airport, Concourse B-West expansion — Denver, CO, USA



While the travelers flying in and out of DIA may have thought that they were on adventures, the real adventure was waiting for the Brekhuis crew members. They faced real challenges every day just getting to the jobsite.

Because the jobsite was located on the grounds of an airport, each member of the Brekhuis team had to undergo extensive background checks before he/she could even be assigned to the DIA crew. These checks included federal background checks, drug testing and specific safety training, as well as an orientation program that was required by the general contractor, Turner-Flatiron, Joint Venture.

To drive onto the airport grounds, Brekhuis crew members also had to pass driving tests and be issued special permits and badges. In addition, every company vehicle needed airport-issued markings to pass onto the grounds. Airport security remained high and, with so many tradespeople coming in and out of the construction zone, the background check and training processes were strict.

Once the crew members made it onto the jobsite, the strict training procedures and processes continued.

“Installation of the large porcelain panels required factory-advanced, comprehensive training by the large-format-tile manufacturer, StonePeak Ceramics,” said Krystian Banach, Brekhuis’ Junior Project Manager. “The tiles were specially manufactured for DIA at StonePeak’s plant in Sassuolo, Italy. Special cutting and setting equipment were needed to complete the installation, which also required its own training.”

The Brekhuis crew used modular, connectable worktables for cutting and processing the large-format tiles. Made to be mobile on jobsites, these worktables allowed crew members to lay the large-format tile and cut using a cutting system.

“The cutting system has suction cups and a rail guide that allowed for a precision score and snap of the material. The handling and setting equipment included a sturdy crossbar frame with attached

electronic suction cups,” Banach continued. “We also used a special vibrating tool designed to vibrate the surface of the large-format tiles and help any air pocket escape from underneath the material to ensure a full bond to the setting material and prevent potential cracking.”

MAPEI products on the jobsite

ECO Prim Grip primer was used to prepare the substrates before installation began. Other products used throughout the jobsite included *Mapelastix AquaDefense* membrane, *Kerapoxy CQ* grout and mortar, *Ultraflex LFT* mortar, *Mapesil T* sealant, *Reinforcing Fabric*, *Ultracolor Plus FA* grout, *MAPEI Ultralite Mortar Pro* mortar, *MAPEI Ultralite S2* mortar and *Ultrabond ECO GPT* adhesive.

Banach explained that *Ultrabond ECO GPT* proved to be key to completing the job, especially given the aggressive scheduling that had to be maintained in the face of what would become a global pandemic.

“All of the large-format tile was installed using MAPEI’s *Ultrabond ECO GPT*. This was a great product for this project. The product was ready to use, which saved a lot of time and made the installation very efficient,” Banach said. “In addition, this product eliminated the pre-mixing that was required with the *MAPEI Ultralite S2*. This helped in the reduction of working area, water was not needed, and there was significantly less cleanup and no silica exposure.”

Saving time and reducing the size of the working area became a big issue during the job when COVID-19 struck. In addition to all the regular challenges that Brekhuis crew members faced getting to this unusual jobsite, they had to face the challenges of a jobsite during a deadly pandemic — right in the middle of the project.

In addition to their normal personal protective equipment (PPE), all workers always had to wear face masks. Their temperatures were checked throughout the day. Tools had to be disinfected after every shift. And, there were limits placed on the number of workers that could enter a given space at any given time, with everyone having to follow strict social-distancing requirements. Placing large-format tiles to strict standards under those rules proved to be a new type of adventure.

But, thanks in no small part to *Ultrabond ECO GPT* and its time-saving properties, the Brekhuis crew finished on schedule, meeting the aggressive timeframe in spite of all the usual – and unusual – challenges with which they were met. As a result, DIA’s new 11-gate Concourse B-West opened on time. Now, when you fly into Denver on United Airlines, there is a good chance that you will pass through Concourse B-West. When you do, look around, admire the work and think about the challenges that were surpassed by the Brekhuis crew and MAPEI.



TECHNICAL DATA

Denver International Airport, Concourse B-West expansion – Denver, CO, USA

Project category: Transportation

Year of construction: 2020

Year of MAPEI involvement: 2020

Where MAPEI products were used: *ECO Prim Grip* for priming concrete masonry unit (CMU) walls throughout the project; *Mapelastix AquaDefense* and *Reinforcing Fabric* for waterproofing; *MAPEI Ultralite Mortar Pro* and *MAPEI Ultralite S2* for floating the walls’ tile backer boards to meet strict TCNA tolerances; *Ultraflex LFT* for installation of tiles throughout; *Ultrabond ECO GPT* for installation of large and heavy tiles on walls throughout; *Kerapoxy CQ* and *Ultracolor Plus FA* for grouting walls and floors throughout; and *Mapesil T* for sealing joints throughout.

MAPEI coordinator: Bart Wilde

Project owner: Denver International Airport

Architect: HNTB

General contractor: Turner-Flatiron, Joint Venture

Installer: Brekhuis Tile & Stone, Inc.

Photographer: Walkerized Photography

Project size: 12,507 square feet (1 162 m²)

Challenges: Working in an airport requires extensive security clearances, including background checks and training. The installation of imported tiles required special training from the contractor. The advent of the pandemic created a new set of safety precautions for the already safety-conscious and time-crunched job. Hours and crew size were reduced due to COVID-19 regulations.

MAPEI Products

- *ECO Prim Grip*[™]
- *Kerapoxy*[®] *CQ*
- *MAPEI Ultralite*[™] *Mortar Pro*
- *MAPEI Ultralite S2*
- *Mapelastix*[®] *AquaDefense*
- *Mapesil*[®] *T*
- *Reinforcing Fabric*
- *Ultrabond ECO*[®] *GPT*
- *Ultracolor*[®] *Plus FA*
- *Ultraflex*[®] *LFT*[™]

Empire State Building Observation Deck
(102nd floor) — New York City, NY, USA



RENOVATING AN ICON

MAPEI helps enhance
breathtaking view from
world-famous building

Overview: The sleek art deco silhouette of the Empire State Building is unmistakable in New York City's internationally recognized skyline. At the time of its completion in 1931, the Empire State Building was the world's tallest skyscraper reaching 102 stories and 1,454 feet (443 m), which includes the spire and the antenna. Among the building's most striking features are the observatories on the 86th and 102nd floors. It is from the 102nd floor that visitors have access to a newly renovated, floor-to-ceiling observation deck that provides a 360-degree view of Manhattan, New Jersey, Connecticut, Massachusetts and beyond. MAPEI's waterproofing products, grouts, mortars and sealant helped complete the deck renovation.





MAPEI on the job

The biggest challenge that the contractor's crew faced on the project was establishing a method for transporting all the necessary materials to the 102nd floor from the first floor. There is no direct elevator from the ground to the 102nd floor because there are five distinct levels within the building; therefore, the crews had to rely on a different strategy to stage the jobsite. A relay system – consisting of multiple crews riding separate elevators in order to bring the materials to the 102nd floor – was eventually used.

Because the observation deck is a high-traffic area, a suitable tile and stone installation was specified to provide a durable, long-lasting floor.

Modified Mortar Bed was chosen for its exceptional bond strength as well as for the fact that it is pre-blended, which meant no jobsite blending of powders or any additional additives to worry about mixing. **Ultraflex LFT** mortar was used for the large-and-heavy-tile installation.

To grout the intricate compass-design tile, **Ultracolor Plus FA** was used for its rapid-setting ability and the added benefit of color consistency, stain resistance and nonshrinking characteristics. **Mapesil T** 100%-silicone sealant was then used to complete the flooring installation.

For several months, crews worked in a suspended “cocoon” – a circular scaffolding structure – in order to complete the work without impacting guests visiting the 86th-floor observation deck. That's right. Although the very top of the building was closed, visitors were still able to look out at the world-famous view – just from a slightly lower vantage point. After all, this is New York City, the “City That Never Sleeps,” and there is no sleeping on this view.

The 102nd-floor renovation, however, is now completed. The observation deck is open to the public, and safety measures are in place due to COVID-19 restrictions. MAPEI is proud to have been a part of this project at one of the world's most renowned and distinguished buildings. The next time you visit the Empire State Building, don't forget to look down at the floor while you are looking out. We happen to think that both views are pretty spectacular.

New York City's Empire State Building attracts more than 4 million visitors a year. It is currently the 4th tallest building in New York City, the 6th tallest in the United States and the 43rd tallest in the world. However, it may well be one of the most, if not the most, famous building in the world. Featured in movies, books, songs – the skyscraper has become emblematic of New York City – joining the Statue of Liberty and a “Big Apple” as an instant identifier of place. And, it is no wonder because from the building's 102nd-floor observation deck, the city spreads out below in a vast scene of bustle and opportunity. It is a breathtaking panorama unlike any other.

To reach this uppermost deck, visitors journey to the top by way of custom-made, state-of-the-art glass elevators with stops along the way. Each distinctive stop features lobbies full of immersive and historic experiences, including a museum gallery documenting the history of the building and its use in films such as “King Kong,” “Sleepless in Seattle,” “Spiderman” and many others. You travel through time and history as you travel upwards. Millions of visitors have been drawn to the Empire State Building through the years. And, all of those guests had taken a toll. A bit world-weary and worn, the icon needed a refresher.

The job of bringing the landmark 102nd-floor observation deck into the 21st century was awarded to a leading New York City-based construction company, Navillus. Experts in renovation, Navillus had been using another setting material for years, but by 2019 had converted to using MAPEI products for its superstructure projects.

TECHNICAL DATA

Empire State Building Observation Deck

(102nd floor) – New York City, NY, USA

Year of renovation construction: 2019

Year of MAPEI involvement: 2019

MAPEI coordinator: Darin Shocker

Project owner: Empire State Realty Trust

General contractor: Navillus

Installer: Navillus

Project manager: Kate Clancy

Photographer: Virtual360NY

Challenges: Crews had to bring materials up to the 102nd floor in elevators, stopping on five floors along the way on each trip. Although the 102nd floor was closed off, the building itself and the elevators remained open to the public during the renovation.

Where MAPEI products were used: Premixed and tenaciously strong, *Modified Mortar Bed* was used throughout to install tiles. *Ultraflex LFT* mortar was used for large and heavy tiles. *Ultracolor Plus FA* grout was chosen, especially for use on an intricate compass design, due to its nonshrinking, color-consistent and rapid-setting characteristics. *Mapesil T* was used to seal the joints on the entire floor.

MAPEI Products

- *Mapesil® T*
- *Modified Mortar Bed*
- *Ultracolor® Plus FA*
- *Ultraflex® LFT™*

ALL ABOARD

MAPEI helps deliver mass transit for all seasons



VivaNext mass-transit terminal construction – Toronto, ON, Canada

Overview: Faced with a tight schedule and challenging weather conditions, the Belluz Group turned to MAPEI for the range of high-end products and support they needed to complete this new-build terminal project in the heart of Canada's biggest city.

VivaNext is a major bus transit expansion project stretching across the north of Canada's largest metropolitan area, and into Toronto's downtown core at the shore of Lake Ontario. With dedicated bus lanes and large attractive passenger terminals, it is meant to entice more use of public transit, thus reducing reliance on automobiles.

Building external infrastructure in this geographical area always poses a unique challenge, as the region experiences one of the larger seasonal temperature differentials to be found anywhere – from its lowest winter temperature of -27°F (-33°C) to its highest summertime high of 105°F (40.6°C). The contractor, Belluz Group,

was tasked with finding a proven solution that would withstand installation through the freeze/thaw cycles of the different seasons, while providing durability and waterproofing assurance.

Further, covering the Highway 7 line and Yonge Street, the area to be constructed totaled approximately 75,000 sq. ft. (6 968 m²).

Ultimately, it was delivered three months ahead of schedule. The story of that accomplishment is one of close cooperation between contractor and manufacturer. It is a story of Belluz and MAPEI.

Belluz Group's Paul Belluz was seeking high-performance products that could be applied on a tight schedule, plus meet the specific needs for installation during the winter months. Product choices had to be as flexible as the weather. "We knew we'd need to tarp the site in winter," Paul Belluz noted. "We knew MAPEI quality, and we knew we could rely on MAPEI Technical Services."



MAPEI products on site

The roadside platforms' mortar bed foundations were laid using **Topcem Premix** (accelerated-cure screed) with **Planicrete AC** (acrylic latex admixture for mortar) where site conditions allowed. For specialized conditions, they instead chose **Mapecem 202**, a shrinkage-compensated, polymer-modified, fast-setting cementitious mortar with a corrosion inhibitor. This portion of the work was completed using **Mapecem Quickpatch**, primarily as gap filler, to provide continuous sloping for run-off.

Once surface preparation of the on-ground concrete was done, the exterior specifications called for a good waterproofing barrier and tile shell. Along with MAPEI's **Fiberglass Mesh**, the Belluz Group crew installed **Mapelastc 315** trowel-applied, flexible, fiber-mesh-reinforced waterproofing and crack-isolation membrane, which exceeds ANSI A118.10 requirements, for waterproofing.

Flexibility needs informed the choice of mortar as well. To facilitate installation that wouldn't be hampered by extreme weather conditions, tiling was completed using **MAPEI Ultralite S2** premium, highly deformable, lightweight, gauged-tile mortar with polymer, formulated with Easy Glide Technology™ for ease of application. **MAPEI Ultralite S2** features a long open time and superior transfer properties to enhance back-buttering – all of which made it possible for installation crews to maximize their efficiency despite working in challenging weather conditions.

The need for a quick turnaround influenced the choice for grouting. MAPEI's **Ultracolor Plus FA** was selected, where appropriate, for its rapid-setting properties and for its DropEffect™ technology, which reduces surface absorption and helps repel water, dirt and grime from penetrating grout joints.

For portions calling for cast-iron tiles, they used **Planigrout 712** non-shrinking, non-metallic grout with corrosion inhibitor and silica fume, which provides superior resistance to water penetration, freeze/thaw cycles and de-icing salts. It also provides exceptional placing and performance characteristics, and here was coupled with **Planibond EBA** as its nonshrink, moisture-tolerant epoxy bonding agent.

The completed work on this site is just one piece of a major infrastructure build for VivaNext. With over 40 platforms, it is designed to tie into the Metrolinx Light Rail Transit (LRT) network, with 25 terminals planned across Eglinton Avenue. This will all help move traffic seamlessly throughout Toronto. Aided by the scope of reliable MAPEI products, all formulated to meet the specific needs of any construction job in any season, the future of Toronto's mass transit should be on track and on time.



TECHNICAL DATA

VivaNext mass-transit terminal construction – Toronto, ON, Canada

Year of construction: 2019

Years of MAPEI involvement: 2019-2020

MAPEI coordinator: Jeff McCoppen

Project owner: York Region Rapid Transit Corporation

Contractor: Belluz Group

Project size: 75,000 sq. ft. (6 968 m²)

Challenges: Tight project schedule and extreme weather conditions

Where MAPEI products were used:

- *Fiberglass Mesh* used on the platforms' surface-prepped concrete in conjunction with *Mapelastc 315* to create a waterproofing and crack-isolation membrane
- *Mapecem 202* installed, with *Topcem Premix* in the platforms' mortar beds where corrosion inhibition was necessary
- *Mapecem Quickpatch* used as a gap filler and for sloping on platforms' mortar beds
- *MAPEI Ultralite S2* used as mortar for tiling installation
- *Planigrout 712* used to install cast-iron tiles, coupled with *Planibond EBA* nonshrink, moisture-tolerant bonding agent
- *Topcem Premix* accelerated-cure screed used in the platforms' mortar foundations in conjunction with *Planicrete AC*
- *Ultracolor Plus FA* used to grout ceramic tiles throughout the terminal

MAPEI Products

- *Fiberglass Mesh*
- *Mapecem*® 202
- *Mapecem Quickpatch*
- *MAPEI Ultralite*® S2
- *Mapelastc*® 315
- *Planibond*® EBA
- *Planicrete*® AC
- *Planigrout*® 712
- *Topcem*™ Premix
- *Ultracolor*® Plus FA

BRIDGING THE GAP

After a viaduct's collapse, renowned architect Renzo Piano worked with MAPEI on a bridge solution

This article is reprinted from *Realtà MAPEI International* magazine, Issue #82.

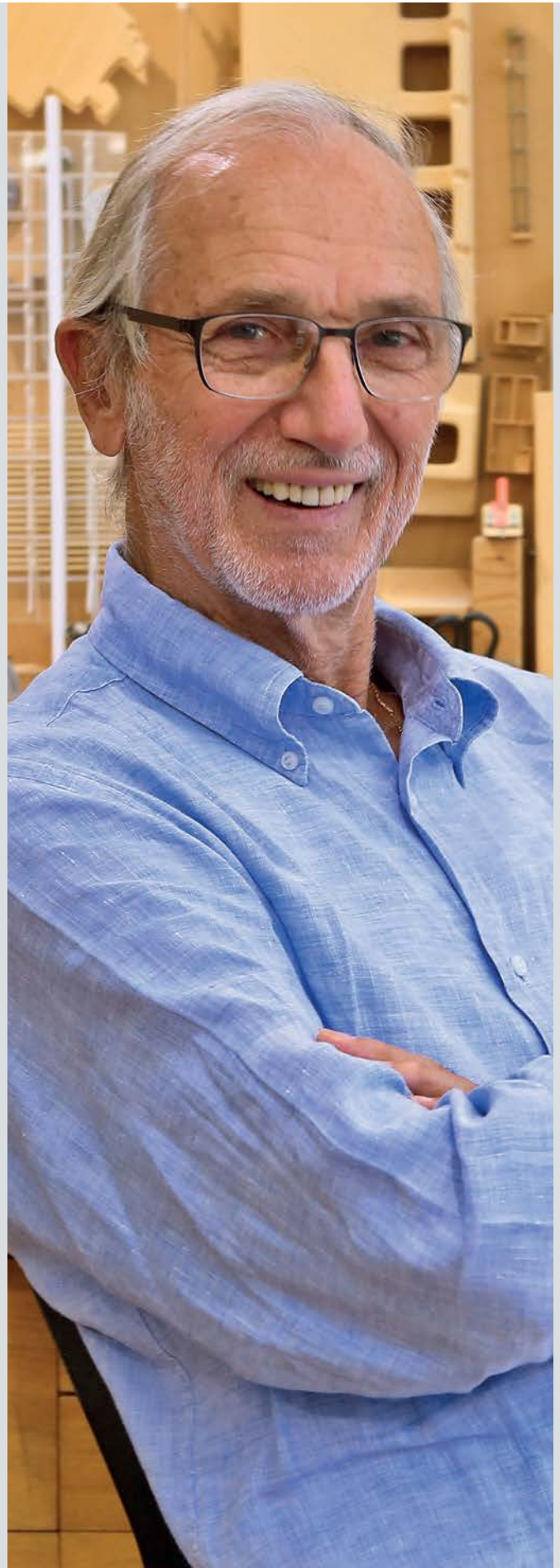
Born in Genoa, Italy, in 1937, after receiving his high school diploma, Renzo Piano went on to graduate from Milan Polytechnic in 1964. He then opened a design studio in London with Richard Rogers where they designed the Pompidou National Art and Cultural Centre in Paris, also known as the Beaubourg. In 1981 he inaugurated the Renzo Piano Building Workshop (RPBW), which has offices in Genoa, Paris and New York, and in 1989 he was awarded the prestigious Pritzker Architecture Prize.

His project portfolio includes the Kansai International Airport in Osaka, the Jean-Marie Tjibaou Cultural Centre in New Caledonia, the head offices of the New York Times in New York and of the Italian newspaper Il Sole24 Ore in Milan, the Auditorium Parco della Musica in Rome, the Muse Science Museum in Trento (Northern Italy), the Stavros Niarchos Foundation Cultural Center in Athens and the Paris Court of Law. In 2013 he was nominated Senator for Life by the Italian President at the time, Giorgio Napolitano.

RFI: Thank you for answering a few questions about the construction of the new bridge in Genoa, in which MAPEI has also taken part.

RP: Before we start, I would like to say something. I know MAPEI perfectly well and I have worked with them on many projects, including the hospital that we are building for Emergency (UN-recognized international non-governmental organization) in Uganda (see *Realtà Mapei International*, No. 63), which unfortunately has had its official opening ceremony pushed back to probably the end of the year. Together with MAPEI we have carried out some great work in Uganda, where we have worked directly on the clay being used to build it, gone down to Lake Victoria to collect samples, taken them to the laboratory, tested them and worked on them together. I followed the design and the construction of the hospital from up close with the late Gino Strada, the founder of Emergency. Now, because of the lockdown, work has been forced to slow down.

I find it really interesting to talk about the hospital and the work that has been carried out on the materials. And I would like to point out that, right from the very start of this project, Giorgio Squinzi (former CEO of MAPEI Group) and the MAPEI staff focused their efforts on the work carried out in the laboratory. Every time I meet someone from MAPEI, we end up talking about research into materials, which is something I really like discussing. It's a great way to work.



RFI: What went through your mind when the Mayor of Genoa, Marco Bucci, asked you to intervene in the hours immediately following the collapse of the Polcevera Viaduct?

RP: At times like that, it isn't easy to think straight: I was really saddened by what had happened. On the 14th of August I was following a project in Switzerland and I was absolutely stunned. The next day I spoke with the Mayor and this sense of suffering hung over us, and then this feeling was something that seemed to be always hanging over the site. This tragedy has always been on our minds and has never been forgotten, but all the helpers – and I use this word in its widest sense to include everybody, from designers to chemical engineers to general laborers – have a certain characteristic, and that is, they know how to react. And without ever forgetting that this project was born out of tragedy and suffering, we have all tried our best to imagine what could be done. What is more, a bridge that collapses is a terrible thing, and in this particular case it was the cause of 43 deaths, 500 people were forced to abandon their homes and a city was split into two. When a bridge collapses, it can also make people feel as if their own world is falling apart, because a bridge should never collapse.

When the Mayor called me that day, my first thought wasn't to come up with a project or a design; it was to try and lend a hand and see what could be done straight away, taking into consideration that the viaduct was 50 meters above ground level, which by itself is something to be taken really seriously. We then slowly worked towards the idea of finding a solution that could be achieved quickly, which is why we immediately thought about how to divide the entire site into two large but separate sites. One of the sites would take care of logistics, that is, the builders and demolition teams which started working straight away, to create the new foundations and the 50-meter-high piles. Working in parallel would be the site where the shipbuilders were operating. And while all this was going on, the Magistrates had to carry out their investigation.

So, as you can see, it was a very, very complex operation, but I have to say that, thanks to the effort and will of everybody, everybody, everybody [*Renzo Piano repeated the word three times with so much conviction – Ed.*], we managed to do it. And from the first to the last person on site, from the Commissioners to the general laborers, everybody worked in chorus, something which often happens when working on site. This was a site where it was clear, right from the very start, that you were participating – with enormous pride – in a grand feat of engineering, in every sense. And with this spirit, where people came together around a project involving so many different skill sets, including the expertise in chemistry of MAPEI technicians, it really was a magnificent effort. I want to emphasize in the strongest terms that this wasn't a miracle. In Italy we have the ability and capacity to carry out such feats of engineering through companies that export their skill and expertise all around the world. But, all too often, these skills only seem to emerge during an emergency, and I find this very sad.

RFI: Did you ever consider, even at the beginning of the operation, to try and conserve at least part of the bridge?

RP: Absolutely, this was also one of the hypotheses we looked at, but it was put to one side. Firstly, the magistrates would have had to put a stop to everything for one or two years, or even more, which is exactly what happened. Then again, the magistrates have to do everything in their own time and the bridge had to be left as it was so they could carry out their investigation into what was truly a disaster. Then another problem arose: It was difficult to establish

how much of the structure left standing was safe. We thought about it and talked about it for ages, but to hook up to the old structure was technically impossible. I really loved that bridge; it was a part of the period of optimism and, as a young architect, I always looked at it with great respect. But mistakes may have been made when it was constructed; we really couldn't tell at that moment.

When we thought about the possibility of mending the bridge – something I like to picture in my mind – well, it wasn't absolutely impossible. A number of years ago, along with MAPEI, we carried out a study on the Flaminio Stadium in Rome, designed by the Pier Luigi Nervi design studio, using only thin layers of concrete and only a minimum amount of concrete cover around the rebar. In that specific case it was more like a restoration job, like mending the stadium, by intervening only on the structures to consolidate them and protect the rebar. In the case of the Morandi bridge, however, something tragic had occurred, which from a justice standpoint still hasn't been resolved. So, as far as the approach was concerned, we were right to have at least thought about it. The route of the new bridge has also been modified slightly, in order to be able to make new foundations without interfering with the old ones.

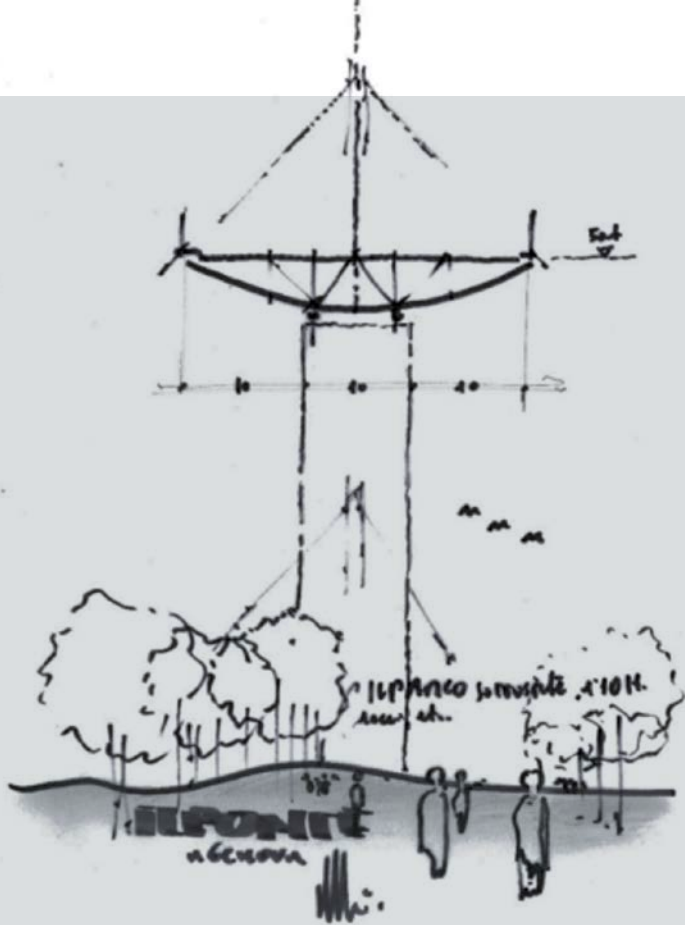
RFI: There has always been a constant dialogue with the city as your designs gradually develop. Did you follow the same pattern with the new bridge? And what idea of the city were you confronted with?

RP: What we have designed and built is an urban bridge that is almost asking for the city's permission to pass through it. An urban bridge that has planted its supports every 50 meters, where it can, in a densely populated part of the city. This is also because a span of 50 meters is an intelligent span when it comes to constructing the steel deck. This span of 50 meters for the new bridge was adopted 15 times and then, when it reaches the Polcevera area and the area around the station, the span is doubled, and the length becomes 100 meters. An urban bridge that doesn't cross a valley with untamed vegetation, but one that passes through a valley where people live, that is inhabited, and brimming with activity. Like a large white ship sailing across a valley, with its curved form, seen from below, that seems to be playing with the light. At first glance it seems very thin, a lot thinner than it really is, because a good 18,000 tons of steel were used for the bridge.

There is, however, a relationship with its surroundings. This is a motorway bridge which should one day become an urban bridge from a legal standpoint because, if the Gronda motorway is constructed, it will be declassified and become an urban structure. The bridge also has lighting, something motorway bridges don't have.

I would like to stress that I am a designer and I have made my contribution, but here there was the contribution of thousands of specialists and there was a very intelligent approach from a logistics and organizational point of view, which is why it took only one year to build a bridge. Something not to be taken for granted. I built another bridge in Ushibuka in the south of Japan. A bridge one kilometer long, just like this one, and it took us three years. A bridge is a long, complex structure and it usually takes around three to four years to build. So, to build a bridge in one year required a highly sophisticated logistics organization and building site and highly organized teamwork.

RFI: Can you give us a brief overview of the construction phases of the bridge, starting from the work carried out on



The partnership between MAPEI and Renzo Piano



MAPEI has been involved in a successful working partnership with Renzo Piano for several years now that has led to the creation of such important projects as Emergency's hospital in Entebbe, Uganda, which is currently being completed (see *Realtà Mapei International*, No. 63 and 70).

This facility has been constructed using the traditional rammed-earth technique: A mixture of soil, sand, gravel and water packed in wooden formworks. MAPEI products helped to make the construction, stable, safe and built to last. It is also worth mentioning that Botín Cultural Centre in Santander, Spain, (see *Realtà Mapei International*, No. 71) as well as Braço de Prata Housing Complex in Lisbon, Portugal, were both designed by the architect Renzo Piano with MAPEI supplying numerous products.

site which never stopped, in spite of the difficulties you had to overcome because of such a complex situation?

RP: That is a very good point. During the lockdown, work on site, which was considered to be of primary importance, never stopped. At a certain point a member of the team became COVID-19 infected. He was immediately identified, along with the people he had come into contact with, and they were placed in quarantine. And the site carried on working.

From an organizational point of view, it was a very delicate job, like fitting together all the pieces of a jigsaw puzzle: Basically, we had to demolish the old bridge to get ready for the new one. Then, we had to start laying the foundations for the new bridge while the old bridge was still standing! So, all the logistics sides had to be prepared and also all the piling for the new foundations that wouldn't go on the old foundations because they had a completely different span, and there is even a slight difference in the route it takes around the bend to the west along the right-hand bank. So, all these operations had to be organized and, in the meantime, work started on the steelwork for the bridge in two large Fincantieri sites, using steel brought in from Taranto (Southern Italy) at just the right thickness. It was like a jigsaw puzzle: If all the work had been carried out in sequence, a project of this type would have taken three to five years. Here, on the other hand, everything was arranged and fitted together at the same time thanks to an incredible team effort!

The word I prefer using for the new bridge is "rapidity." The bridge was built very rapidly, but not hastily, because, as they say, haste makes waste. I was particularly struck by the way the work was coordinated, and also by everybody's enthusiasm and their pride

in doing something together with a common interest. During my visits to the site, which is something I always enjoy, I was always particularly struck by the team spirit.

RMI: An entire section of the urban fabric of Genoa will also be getting a new look, thanks to the redevelopment of an area of 80 hectares which has been tendered out to a group comprising Stefano Boeri, Metrogramma Milano and Inside Outside founded by Petra Blaisse. Were you also hoping for a solution of this type?

RP: I am often in touch with Stefano Boeri; a tender was issued, and it is a group effort involving architects, landscape architects and botanists. It's a lovely project, we call it a "park" in an urbanistic sense, but in reality, it will be a space that will be lived in and inhabited by people. The bridge is 50 meters above the level of the river and has this curved form which allows the light to filter down; it is not a bridge that remains in the dark underneath where nothing manages to grow.

RMI: On June 30 of this year, you received an award in honor of your career, "for the professional and civil commitment that has distinguished and continues to distinguish your architectural output."

RP: If an architect never asked himself why he does what he does, it would be very worrying. Architecture is the art of constructing spaces for people, so it has a clear social and collective function. And then let's not forget that "politics" comes from the Greek word *polis*, which is the art of administering cities. Which means architecture is the art of constructing cities.



The Wildwood groundbreaking ceremony was attended by civic leaders and MAPEI dignitaries, including (3rd and 4th from left) Luigi di Geso, President and CEO, and Carlo Mandelli, Director of Operations.

MAPEI Corporation grows powder production and distribution

MAPEI Corporation announced the expansion of its existing Wildwood, FL, facility with the groundbreaking ceremony for the addition of a new 260,000-square-foot (24 155-m²) powder production and distribution facility.

“The existing facility has proven to be such a tremendous asset as a distribution center that the construction of additional distribution space, along with four powder production lines, will greatly increase our ability to meet our customers’ demands,” said Luigi Di Geso, President and CEO of MAPEI North America. “Now we will be even better able to bring product and services to our customers in the surrounding states, as well as throughout North America, with the increased powder production.”

MAPEI has contracted with Geis Construction – one of the nation’s leading technical design builders that is focused on highly complex, fast-track, sustainable industrial and commercial projects – for the expansion.

Not only will the expanded powder-line facility increase production, it will also increase MAPEI’s need for various roles and positions from the local area. Currently, there are 14 full-time MAPEI employees working at the existing facility. However, “when the expansion is complete and the four powder lines are up and running, we anticipate the need for 160 full-time employees. This is not counting the truck drivers and other staff who also service the facility,” Di Geso explained.

This growth is recognized by the City of Wildwood. Mayor Ed Wolf stated, “The City of Wildwood is excited to have MAPEI located within its community and is looking forward to their expansion.

MAPEI will provide valuable employment opportunities to residents in the years to come and provides crucial economic diversity necessary for a healthy local economy.”

Frank Calascione, Director, Economic Development, Board of Sumter County Commissioners, agreed. “MAPEI is an industry-leading multinational company and Sumter County was delighted when they chose Wildwood, FL, for their distribution operation in 2018,” Calascione said. “As they move forward with their facility expansion and will begin manufacturing locally, we welcome them as another valuable addition to our county’s diverse manufacturing community.”

That community was represented at the groundbreaking event as members of the County and City Boards joined with MAPEI staff to mark the special day. After remarks by Di Geso, Sumter County Administrator Bradley Arnold, Wolf and Geis Construction President Jeffrey Martin, it was time for the ceremonial “turning of the soil.” The men were joined by MAPEI’s Director of Operations, Carlo Mandelli, and MAPEI’s Corporate Engineer and Maintenance Manager, Leonardo Verniani. However, given Geis’ aggressive construction schedule, their efforts were indeed ceremonial as the site has already been cleared for construction.

“This has been a fast-tracked project from the beginning,” Di Geso said. “In spite of any challenges from the pandemic, everyone from the design team at C4 Architecture, to the county and the city, to the project team at Geis Construction, to the project team here at MAPEI in Wildwood, everyone has pulled together to meet deadlines and source materials. I am looking forward to the grand opening of this facility later this year.”

First large in-person convention since COVID-19 held in Las Vegas

World of Concrete 2021 was held as a physical convention in Las Vegas, NV, from June 8-10. According to reports, the show's organizers were expecting 50 to 60 percent of the usual attendance to participate at this conference¹ and, for those who were attending with a booth, booth sizes were expected to decrease. This was in part due to concerns surrounding the pandemic, but also given the busy summer timing.

MAPEI Corporation recognizes the need to participate in industry functions as well as to show our support, which is why we were proud to exhibit, albeit in a reduced capacity. The well-known MAPEI demo stage may have been missing, but our famous technology was still on display, including the debut of our new **Ultratop**[®] decorative topping systems. We also highlighted our extensive line of repair mortars and our high-performance industrial coatings.

When the World of Concrete returns in 2022, so will MAPEI with our usual two-story booth, large demo stage and introductions of new innovations for the concrete-construction industry.

¹https://www.fox5vegas.com/news/all-eyes-on-world-of-concrete-2021-why-stakes-are-so-high-for-the-upcoming/article_643164a8-bdbc-11eb-ba4b-43cec9ce8d38.html

Update from the road (tour)

We often get inquiries about our **Keraflex**[™] family of mortars, which is understandable considering the successful road tours of these products in the United States and Canada. But no response we could give would equal the recent response of Joe Reddington, COO of Swift-Train Company, who writes, "The **Keraflex** line offers versatility, smooth and creamy spread, while still offering excellent sag and slump resistance. Our contractors love the ease of application and extended coverage, and they like the reduced fatigue from troweling. It is available in a rapid set for when the jobsite requires immediate installation. With the recent frigid weather in Texas, having a product that is freeze-thaw stable is a big benefit. With extended open time and amazing transfer, the **Keraflex** line of products will transfer into more profit dollars for tile contractors."

Reddington continued, "For a distributor, Swift-Train Company is always looking for SKU rationalization. The **Keraflex** line of products allows us to consolidate our SKUs, improve our turns, and invest our inventory dollars in premium products that provide better solutions for our customers and the end user. Our mortar business is growing thanks to continued innovations from MAPEI."

We sincerely thank Reddington for his comments and his trust. We invite you to try **Keraflex** for yourself. Contact your local MAPEI representative or call 1-800-42-MAPEI for more information.



MAPEI UTT at RETC

From June 13-16, MAPEI's Underground Technology Team (UTT) group joined the tunneling industry at Caesars Palace in Las Vegas, NV, for the Rapid Excavation and Tunneling Conference (RETC). Held every two years, this show captures the attention of the international underground and tunneling construction industry, with typically larger-than-average turnouts.

In our streamlined and "touch-free" booth, which included a variety of videos and interactive (scannable) features, MAPEI's UTT group enjoyed the in-person meetings, connecting with key industry decision-makers. The team featured a wide variety of system solutions, including products for tunnel-boring machines and chemical injection, which are now made in the United States and can be manufactured on demand with faster distribution to match the specific needs of individual jobsites.



HELPING BUILD HEALTHY BUILDINGS



MAPEI develops products with low VOC content to promote healthy indoor air quality



People spend most of their time indoors at home, at work, in transportation, and in many other public and private places. The quality of these indoor environments impacts human health and well-being.

For buildings, sustainability has been driven mainly by green building standards and certification programs. These programs use a similar approach: A performance evaluation of a building that is based mostly on design parameters such as energy and water consumption, materials and resources, and indoor environmental quality.

As green building elements that promote energy and water efficiency have become the norm, we have seen a shift in the market toward designing, constructing and operating “healthy” buildings.

Indoor air quality (IAQ) is a foundational element of a healthy building. IAQ refers to the air quality within and around buildings and structures, especially as it relates to the health and comfort of building occupants.¹ IAQ is influenced by several sources, including building materials (e.g., volatile organic compounds, or VOCs).

VOCs are chemicals that are emitted as gases and may over time evaporate from a building product into the air where humans can breathe them in. VOCs can be emitted into indoor air from a variety of sources such as flooring, adhesives, sealants, paints and other building products. Indoor air quality can be improved by reducing the sources of VOC emissions.

MAPEI is committed to human health and well-being. We understand our products’ impact and strive to make improvements to reduce our impact. In response to health concerns from building materials, MAPEI has developed products with low VOC content as well as low-emitting alternatives. MAPEI has developed low-VOC content and low-emitting alternatives.

To help project teams make informed decisions about which products to choose, MAPEI has had all applicable products third-party tested and third-party certified to meet California Department of Public Health (CDPH) Standard Method v1.2-2017, which is the most stringent testing that is available in the

¹Source: <https://www.epa.gov/indoor-air-quality-iaq/introduction-indoor-air-quality>

United States at this time. Testing our products to this high level demonstrates our commitment to the health and well-being of our installers and end users, as well as to the environment.

As a result, over 375 products have achieved Indoor Advantage Gold certification from SCS Global Services, and Green Label Plus certification from The Carpet and Rug Institute. These VOC-emissions certifications also contribute to green building standards and certification programs, including LEED, the WELL Building Standard and the Living Building Challenge.

The use of low-VOC-emitting building products and materials can contribute to the goal of improving indoor air quality and human health and well-being. To learn more about MAPEI's products with low-VOC-emissions certifications, contact us at sustainability_USA@mapei.com (USA) or sustainability-durabilite@mapei.com

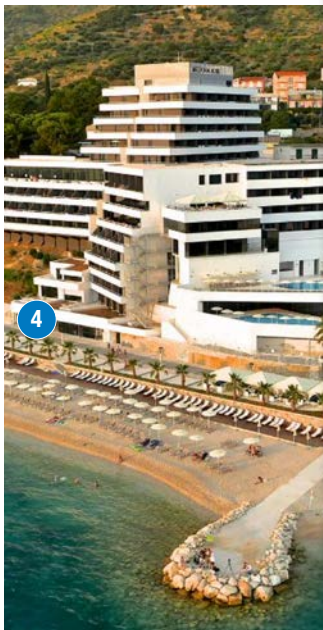
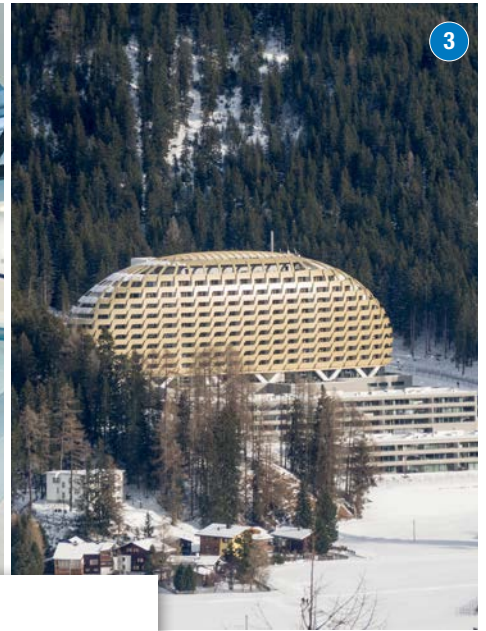
(Canada). To learn more about the SCS Indoor Advantage Gold program, visit <https://www.scsglobalservices.com/services/indoor-air-quality-certification>. To learn more about the CRI Green Label Plus program, visit <https://carpet-rug.org/testing/green-label-plus/>.



About the author:
Brittany Storm



Brittany is the Sustainability Manager for MAPEI Corporation. Her background as a sustainable building consultant and background in construction allow her to speak to audiences about both the big picture and technical aspects of a project. Brittany is a LEED Accredited Professional (AP) with BD+C and ID+C specialties as well as a WELL AP and Fitwel Ambassador. In addition, she is active on many sustainability committees.

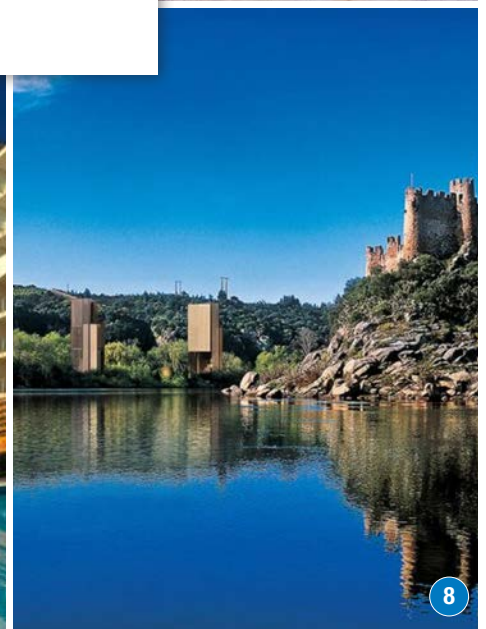
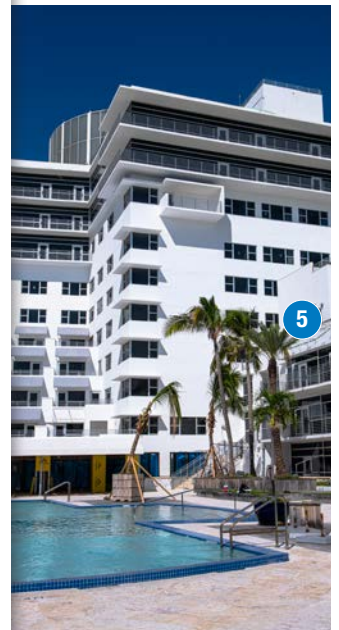


HOTELS AROUND THE WORLD

Travel in 2021, post-pandemic, looks very different than it did in 2019. We are once again venturing out. The world is restarting, and for many of us that brings with it the promise of travel, of seeing family and friends, of vacationing – with some healthy precautions in place, of course.

We have some suggestions for sites to visit and places to stay for when you take to the road again. Located in some of the most beautiful or popular destinations in the world, these hotels all feature MAPEI products. Safe travels and, if you stay in any of these hotels, sweet dreams... with MAPEI.

- 1 Kartrite Resort & Indoor Waterpark – Monticello, NY
- 2 Delta Hotels indoor pool – Ottawa, ON, Canada
- 3 InterContinental Hotel – Davos, Switzerland
- 4 Medora Auri Hotel – Podgora, Croatia
- 5 Ritz-Carlton South Beach – Miami, FL
- 6 Stella Island Luxury Resort and Spa – Crete, Greece
- 7 Aurelia Hotel – Milan, Italy
- 8 TTT (Transportable Tourist Towers) – Portugal





The MAPEI Technical Institute (MTI) provides the highest-quality, basic product knowledge with online trainings (including weekly Webinars and MTI-TV Tech Tips) as well as demonstrations and socially distanced hands-on education to architects, contractors, installers and distributors in 9 locations: Deerfield Beach (FL), San Bernardino (CA), Garland (TX), Dalton (GA), West Chicago (IL) and Swedesboro (NJ), all in the USA; and Laval (Quebec), Brampton (Ontario) and Delta (British Columbia), all in Canada.

Types of training events



PRODUCT KNOWLEDGE



CUSTOMER LOCATIONS



LUNCH & LEARN



CONFERENCES



MTI back in the classroom

Now that the world is opening back up, MAPEI Technical Institute's (MTI's) classroom training events are beginning to take place in person again – albeit with health precautions, including limited numbers of attendees. The month of June was bookended by these events.

The first event, which occurred at the beginning of June, was a combined National Tile Contractors Association (NTCA)/MTI training on substrate preparation for large-format tile. We thank Dalene Flooring for hosting the class.

We closed the month with the return of our first official in-person MTI training, which was hosted at MAPEI's corporate headquarters in Deerfield Beach, Florida.

Of course, our virtual training continues as well. Our MAPEI Online series of Webinars covers all our product lines. These Webinars are housed on our Website at www.mapei.com/us/webinars.

For more information, to schedule a training or to attend a Webinar, please contact us at MapeiDigital@mapei.com. To see the full calendar of upcoming Webinars, please visit online at www.mapei.com/us/webinars.

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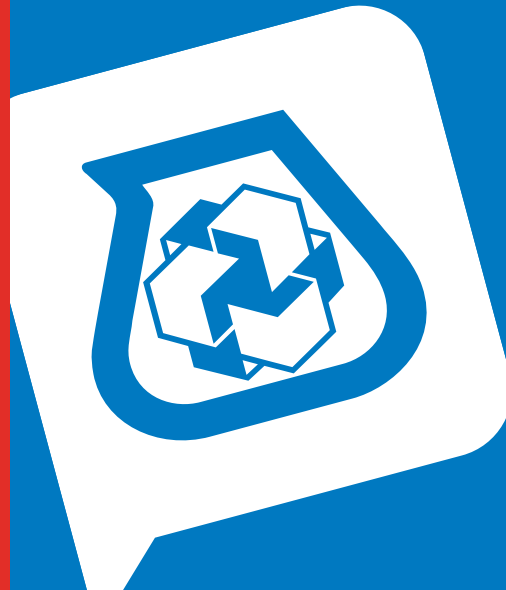
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Building a SUSTAINABLE future together



Sustainability is part of **everything** we do. **MAPEI** has always been **fundamentally committed** to sustaining the **environment** for today and tomorrow. We invest in R&D to ensure that our products are **safe, reliable, durable** and have the **lowest impact possible on human health and the environment**.

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