

# Lignano Sabbiadoro (Italy)

## THE NEW TRIESTE WATERFRONT

LANDSCAPE+FUNCTIONALITY  
+DURABILITY FOR THIS  
REDEVELOPMENT AND  
REFURBISHMENT PROJECT



Landscape-functionality-durability: these were the three guiding themes for the redevelopment and refurbishment project of the waterfront in Lignano Sabbiadoro and, of course, the reason why there was such a beautiful result, handed back to the town after two years of work, to mark the inauguration of the 2019 tourist season, the very year that has been dedicated to the Slow Tourism movement.

Eight kilometres of beaches with fine golden sand, caressed by a habitat of rare beauty with its natural sand dunes, have been attracting visitors for over a century. It all started in 1903 with the opening of the first beach resort. The 1920's witnessed the development of new infrastructures to promote tourism and then, in the 1930's, to gain the maximum amount of publicity, the slogan "Lignano dalla sabbia d'oro", or "Lignano Golden Sands" was coined, which since then has become one and the same thing with the name of the town. Hemingway spent a lot of time there in the 1950's and affectionately called it "the Florida of Italy".

Lignano is still a highly popular tourist spot with an extensive range of experiences and services on offer to tourists. So, intervening in a context like Lignano Sabbiadoro means integrating and harmonising a whole series of particular characteristics and needs, but at the same time needs which are a common feature of many Italian waterfronts, including tourism, accessibility, history, services, environmental, social and economic sustainability, nature and landscape.

### PROJECT OVERVIEW

The aim of the project was to create a virtuous blend of greenery, landscape and architecture and to redefine its functions, mobility and parking, technological facilities and utilities.

Which is why, when talking about the project, the designers specified that, "The project for the waterfront in Lignano Sabbiadoro envisages a new landscape, where both the existing vegetation and the new vegetation introduced by the project play a key role".

The client, in this case Lignano Sabbiadoro town council, specified that the intervention had to guarantee maximum functionality, accessibility and durability so as to reduce maintenance work and costs to a minimum.

The Local Heritage Body, for their part, specified that the rhomboid pattern and layout of the existing concrete paving had to be maintained.

The project, therefore, was conceived in such a way that the paving along the waterfront was to be the main framework of



Along the Trieste waterfront in Lignano stone paving was installed with the MAPESTONE system while the exposed aggregate concrete paving was built using the MAPEI COLOR PAVING® system.

the entire intervention, a sort of link between the sea and the town, and the central theme around which all the activities could be programmed: pavements, cycle lanes, carparks and the road. The paving was created as if it were an urban carpet, a pattern to give it more meaning, to embrace and design all the functional requirements of the place, using mainly two types of material: architectural concrete and natural stone. Apart from a complete remodelling of the vegetation, conservation of the historic double row of trees along the waterfront was the element that became the other key feature of the project. A team of landscape designers, agronomists and skilled technicians worked together to measure the conditions of the local environment, evaluate the most innovative systems to preserve the existing trees and identify the most suitable trees to be introduced. The landscape designers and design engineers working on the project found themselves facing the same environmental challenges due to the high levels of salt in the area and the severe weather conditions during the winter. This is why, during the executive phase, the Works Direction decided to opt for a durable installation system that would stand up to the freeze-thaw cycles, de-icing salts and sea water and found that the MAPESTONE and MAPEI COLOR PAVING® systems suited their needs perfectly.

## **MAPEI SOLUTIONS FOR THE PAVING ALONG THE WATERFRONT**

The paving is made up of areas of grey and light-coloured stone to create an irregular chessboard pattern along the pavements on the north side and all the piazzas included in the project, to become the focal points of the flows of traffic and pedestrians, while the cycle lane and the pavements on the south side are made from architectural concrete with an exposed aggregate finish. Both types of paving are open to vehicle traffic and sit on a reinforced concrete, load-bearing substrate.

The stone paving for the piazzas and the pavements on the north side are made from two types of material, Yellow Istrian stone with a bush-hammer finish and Piasentina stone with a bush-hammer or flamed surface finish. Mapei engineers proposed using the MAPESTONE system, specifically developed for installing stone paving in urban settings at a lower cost but with a host of advantages. In fact, the MAPESTONE system includes products from exposure class XF4 and complies with the requirements of UNI 11714-1:2018 and EN 206-1 standards, thereby guaranteeing the durability of the paving. Stone road surfaces installed using this system are resistant to freeze-thaw cycles, de-icing salts and rain, while the





mortars are durable and they maintain their properties over the years, which means it takes a number of years before the paving requires any maintenance work. They also have the capacity to withstand mechanical stresses caused by the passage of vehicles, including heavy goods vehicles, and dangerous hollows caused by structural failure do not occur on the surface.

In the case of the Trieste waterfront, to install the paving stones, which on average were around 5 cm thick, the product used was MAPESTONE TFB CUBE pre-mixed mortar, while the joints (5 mm wide on average) were grouted with MAPESTONE PFS2, a pre-mixed mortar for grouting architectural paved surfaces made from small blocks/setts, smaller bricks, cobblestones, slabs or blocks.

For the pavements along the south side and the cycle track with an exposed aggregate finish, Mapei engineers proposed using MAPEI COLOR PAVING®, a system that allows you to design and create bespoke concrete paving according to expected loads and stresses. In the case of the Trieste waterfront in Lignano, using this system meant that the mix and aggregates used to create the surface finish could be personalised: for the pavement along the south side the colour chosen was sand, to create the desired effect of imitating the sandy beach, while grey and red were chosen for the cycle lane and all the other areas. Also, the particle sizes of the exposed aggregates and the mix of colours of the aggregates were varied slightly in different areas, which highlighted the exposed areas and the areas of paving with different functions even more.

**PHOTO 1.** Applying the bonding slurry prepared with PLANICRETE on the rear side of a stone slab.

**PHOTO 2.** The stone slab is ready to be installed with MAPESTONE TFB CUBE.

**PHOTO 3 and 4.** Applying MAPESTONE PFS 2 for grouting joints with a rubber rake.

**PHOTO 5.** A detail view of the concrete paving after completion of the works. The exposed aggregate finish was intended to imitate the colour of the sandy beach.



**TECHNICAL DATA**

**Trieste waterfront,** Lignano Sabbiadoro (Italy)

**Period of construction:** early 1950's

**Year of the intervention:** 2017-2020

**Intervention by Mapei:** supplying products for building architectural stone and exposed aggregate concrete paving

**Client:** Lignano Sabbiadoro town council

**Design:** R.T.P. Proger SpA,

Archest Srl, Seste Engineering Srl, Michielizanatta, archt. Gaetano De Napoli, Geomok Srl

**Contractors:** A.T.I (Associazione Temporanea Impresa) Lungomare Lignano S.C.A R.L., Impresa Polese SpA, Adriacos Srl

**Architectural concrete flooring contractor:** Lithos Pav di Leone Savino

**Stone paving contractors:** Posatori Porfido Meta Sas, Posa Porfidi 3000 Srl,

Friulpose Snc  
**Works direction:** Lucio Asquini, Samuele Gialuz, Massimiliano Travagini, Tommaso Michiele, Cristian Zanatta; Flavio Trinca, Alessandro Ricetto, Moira Picotti

**Mapei coordinators:** Ivan Carlon, Marcello Deganutti, Giuseppe David, Claudio Azzena and Luca Nordio, Mapei SpA (Italy)

**MAPEI PRODUCTS**

Installing and grouting stone paving:

Mapestone TFB Cube, Mapestone PFS 2

Building exposed aggregate concrete floors: Mapei Color Paving®

For further information on products see [www.mapei.com](http://www.mapei.com)



## IN THE SPOTLIGHT

### MAPESTONE TFB CUBE

Mapestone TFB Cube is a premixed ready-to-use mortar for the installation of natural stone units for external paving and road finishes. Thanks to its special composition, MAPESTONE TFB Cube is particularly recommended for making beddings for architectural road surfaces in stone cubes, pebbles, setts, slabs and precast units. It is easy to use: it only needs to be mixed with water and may be prepared in either a plastic or “no-slump” consistency, depending on the type of paving units to be laid.



Interview with Samuele Gialuz, Works Supervisor for the building work

## “ ENHANCING THE LINK BETWEEN THE TOWN AND THE BEACH

### What constraints and requirements were imposed by the client for the redevelopment and refurbishment project of Trieste waterfront in Lignano?

The client asked the design team to use materials that offered the maximum durability coupled with low non-scheduled maintenance requirements.

### What challenge or challenges did you have to face during this project?

To maintain the existing trees and create an aeration system for the roots of the marine pines to improve their stability. Also, it was extremely complicated to rebuild the rhomboid-shaped reinforced concrete paving using stone and metal mesh (as specified by the Local Heritage Body) and to identify the most suitable mix of exposed aggregate concrete that could simulate the effect of sand being blown onto the road (another requirement of the project).

### Why did the designers opt for stone and exposed aggregate concrete for the paving?

The main aim of the urban strategy for the waterfront was to close the gap, which was in part an inherent feature which had become accentuated over the years, between the beach and the town, to give them back their role as the measure and stimulus for the development of this seaside town. The intention was for the waterfront to become a meeting point between these two realities and to encourage their osmosis, not just a simple point of passage or a border.

The reason for choosing these materials was to create attractive paving that was also highly durable, to enhance the intersection system between the town and the beach. Stone paving was chosen to connect the town to the main services offered by the beach by having a pedestrian route on the northern side of the waterfront marked out entirely in stone, while the paving on the south side in yellow exposed aggregate ties it in with the sand of the beach. For the road, on the other hand, in agreement with the Local Heritage Body, it was decided to use concrete with exposed aggregate to recall the paving from the past installed in 1936 as a landing strip for military aircraft.

### What is the most original or distinctive feature of this project?

Undoubtedly it is the way we have managed to maintain all the existing trees and improve their conditions, with an innovative aeration system for their roots, which makes the trees more stable by anchoring the roots more firmly. In all we treated 405 trees, 29 of which had to be replaced because they had been fallen or been damaged by storms or disease; at the start of the project it was estimated that 40 of them would have to be replaced. By choosing this innovative aeration system not only did we improve the living conditions of the trees, it was also possible to have the stone and exposed aggregate concrete paving right next to each other and considerably reduce the physiological problem of the roots of the trees protruding and damaging the surface which, without such a system, are the cause of the typical and dangerous lifting of paving.