SHAPING THE PORTS OF THE FUTURE

Few structures on Earth face harsher conditions than seaports. For decades, Sika has supplied specialized materials and expertise that help marine infrastructure withstand constant mechanical stress, saltwater exposure, wave impact, and corrosion.

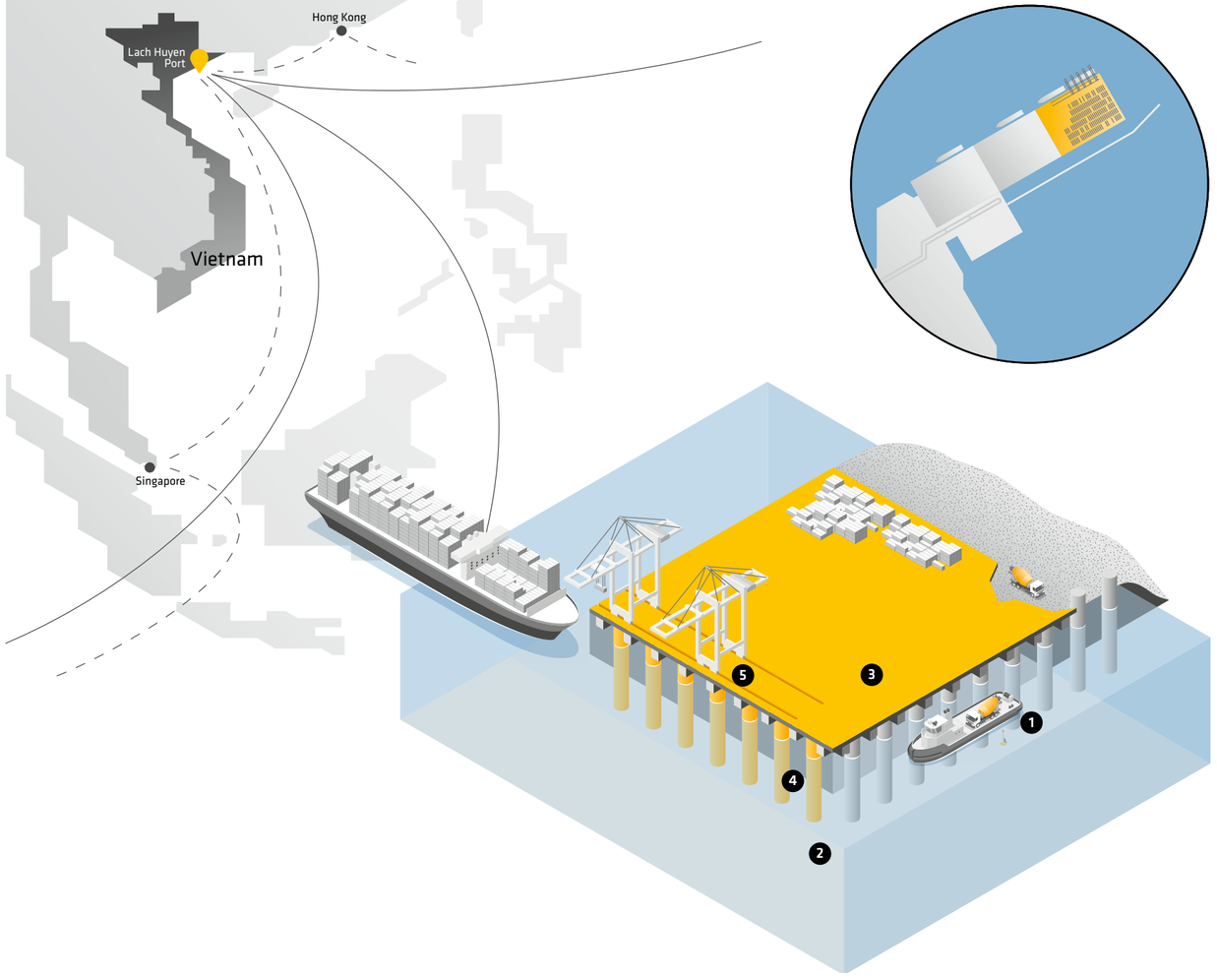
Built for scale: Next-generation seaports are vast, complex under-takings, equipped with advanced technology to meet the rising global demand for sea transport.

Sea transport, then and now: A historic port building in Vietnam underscores the contrast between legacy port infrastructure and modern expansion.

204 CHF million investment in the terminal 5–6 expansion of Lach Huyen Seaport

730 thousand-square-meter construction area

50+ year service life, designed to withstand harsh coastal conditions



Today, Sika's marine construction solutions, from high-performance concrete admixtures and waterproofing sys ems to advanced grouts and corrosion-protection coatings, have been used in more than 2,000 offshore and marine structures worldwide, including deep-water quays, breakwaters, wharfs, and jetties. And with global investment in port infrastructure accelerating, Sika is at the center of a rapidly growing sector.

Ports under pressure

Seaports operate around the clock to keep goods moving and economies connected. According to the World Bank, over 80% of all goods traded worldwide – from oil and grain to electronics and textiles – travel by sea, making ports essential links in the world economy.

Yet much of today's infrastructure is aging just as vessels are becoming larger, regulations stricter, and climate pressures are more intense. Geopolitical shifts are reshaping shipping routes and exposing vulnerabilities in global supply chains. Meanwhile, demand for maritime transport is set to grow dramatically: a 2025 J.P. Morgan report projects that global maritime trade will double by 2050.

These pressures have triggered a global race to modernize and expand port capacity. According to GlobalData, more than CHF 400 billion in port construction projects are currently under way or in planning worldwide. If they proceed as planned, annual spending across this pipeline is set to grow by more than 15% over the next three years.

Beneath the surface: the making of a seaport

The scale of these investments reflects the omplexity of building a modern seaport – a feat of engineering that combines large-scale construction works with an intricate logistics puzzle, all while battling against the elements. From initial sketches to the arrival of the fi st ship, it can take more than five ears, and cost anything from tens of millions to several billion Swiss francs.

Construction starts with the seabed, which must be surveyed, reinforced, and stabilized to hold enormous loads. This often requires dredging to remove layers of silt, sand, or clay until stable ground is reached.

Foundations below the waterline

Once the seabed is ready, the foundations are installed. Depending on the conditions, engineers use steel piles driven deep into the seabed or large prefabricated concrete elements that are lowered and aligned with millimeter precision to form a stable base.

When the underwater structure is complete, the port starts to emerge above the waterline. Quays and jetties are cast on site using marine-grade concrete or assembled from large, prefabricated sections lifted by cranes. Offshore, breakwaters are built to calm waves and create a sheltered harbor.

With these core structures in place, ship-to-shore cranes are installed, container yards are laid out, and connections to road and rail are completed. At this stage, the site transforms from a construction zone into an active seaport.

Challenges

1. Deep underwater works had to be performed 16–18 meters below sea level to stabilize foundations and structural elements
2. The soft, unstable seabed required extensive ground improvement before construction could begin

Sika Solutions

3. **Resistance to the harsh environment**
   Sika admixtures were used for slabs, girders, and the container yard, resulting in improved durability, and resistance to the harsh seawater environment

   Environmental benefi
   Sika admixtures enable the partial replacement of cement with industrial by-products like slag and fly ash, reducing the concrete's environmental footprint
4. **High durability**
   High-durability precast concrete piles were produced with the help of Sika® ViscoCrete® admixtures to resist seawater exposure and protect steel reinforcement, ensuring long-term performance in marine environments
5. **High-strength grout**
   Sikadur® high-strength epoxy grouts provide reliable load transfer from crane wheels to the supporting structure. It resists dynamic loads, vibration, and harsh marine conditions, helping maintain long-term alignment and durability of crane rails

Modern seaports are designed for efficie y and round-the-clock operation, with gantry cranes and terminal vehicles keeping goods moving day and night.

“The structures had to withstand enormous loads and constant exposure to saltwater. That meant every aspect – from the concrete and admixture mix design to on-site execution – focused on ensuring a service life of at least fif y years.”

Dinh Quang Hung, Project Leader for the Lach Huyen terminal 5 and 6 expansion

Vietnam’s new gateway to the world

Vietnam is among the countries investing most heavily in new maritime infrastructure. One example is the major deep seaport under development on the northern coast near Hai Phong, around 120 kilometers east of Hanoi, which is reshaping the country’s access to international shipping routes.

Lach Huyen Port is the fi st deep seaport in northern Vietnam, built for vessels up to 18,000 TEU (one TEU equals a standard six-meter container). Located in the Cát Hai Special District and connected to the mainland by a bridge and access roads, the port gives northern Vietnam direct maritime access to Europe and other global markets, reducing reliance on transshipment through Singapore or Hong Kong, and lowering transport costs for manufacturers.

Sika supported the construction of terminals 5 and 6, a 73-hectare development with a 900-meter berth and a large container yard. Construction ran from mid-2022 to spring 2025, with Hateco Group investing around CHF 204 million in the expansion.

Engineering for harsh coastal conditions

“This project required solutions with high durability performance,” says Dinh Quang Hung, Sika Vietnam’s Project Leader for the Lach Huyen terminal 5 and 6 expansion. “The structures had to withstand enormous loads and constant exposure to saltwater. That meant every aspect – from the concrete and admixture mix design to on-site execution – focused on ensuring a service life of at least fif y years.”

The terminals required major ground improvement. To address this, Sika developed admixture solutions for a high-density, low-permeability concrete mix for contractor Phú Xuân Construction to increase mechanical strength and protect steel reinforcement from chlorides and sulfates.

Sika solutions were used to secure major structural parts of the port and ensure all components were securely bonded and fit ed.

High-performance Sika grouts were used to bond concrete sections, seal small cracks, and protect exposed areas from moisture. These applications play a critical role in keeping a port resilient against structural movement, corrosion, and environmental stress over many decades.

Sika supported the contractor at every stage, from testing and technical advice to ensuring quality from start to finish

Up and running – and ready for further expansion

Completed two months ahead of schedule, the new terminals are now fully operational and run entirely on electric-powered equipment – a fi st in Vietnam. Within six months of opening, they were already handling the equivalent of about 400,000 standard shipping containers. And development continues.

According to Hung, Lach Huyen is Sika’s largest seaport contract to date in northern Vietnam – one that has strengthened the company’s profile in the ountry’s fast-growing marine infrastructure sector.

With more terminals and coastal projects on the horizon in Vietnam and beyond, the experience gained in Lach Huyen positions Sika strongly for future opportunities.

The enormous scale visible above the waterline is made possible by the engineering, supported by Sika specialized materials and expertise built into the structure below it.