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In this newsletter:

The contours are becoming visible!
Civil-engineering works for the coming period
“Not a Berlin Wall, but a ‘Berlinerwand’!”
Reinforced soil: smart solutions for limited space
Smart and sustainable: cooling concrete for a future-proof infrastructure
Recruitment-proof together: BAM and Port Authority follow container training on the Maasvlakte
Zero-emission equipment thanks to our own charging station

The contours are becoming visible!

A lot has happened in and around the Princes Alexiaviaduct project area over the past quarter. If you drive past it now, you’ll see with your own eyes how the contours of the viaduct are beginning to take shape above ground. This is a significant milestone for the project.
This newsletter runs you through a number of specific works that have contributed to this. From the smart placement of a ‘Berlinerwand’ soldier-pile retaining wall close to the railway track, to the careful construction of reinforced soil layers and the active cooling of concrete to prevent cracking – each and every one of these techniques contributes to the safe, sustainable, and efficient execution of the project.

Civil-engineering works for the coming period

Over the next six weeks, BAM will continue working on laying the concrete for the construction of the footings and pillars, the reinforced soil for the slip-roads and the installation of the fire-fighting pipes in the central reservation so that the fire department can extinguish fires in the event of emergencies on the Maasvlakteweg. Additionally, BAM is installing the sewer system for rainwater drainage and carrying out minor roadworks.

Pouring the footings for the viaducts

“Not a Berlin Wall, but a ‘Berlinerwand’!”

There is a lot going on underground during construction of the Alexiaviaduct. One of the smart solutions we are using is the solider-pile retaining wall, known here as a ‘Berlinerwand’ – a temporary earth-retaining wall that owes its name to the city of Berlin, but has nothing to do with geopolitics.

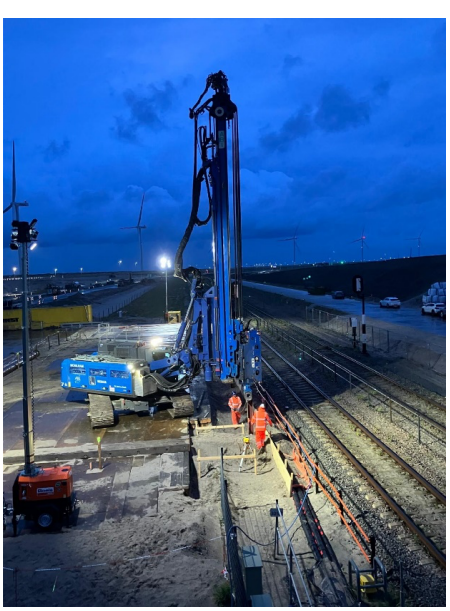
The name ‘Berlinerwand’ comes from the construction technique used in Berlin in the 1930s during construction of the subway. There, steel profiles with wooden or steel partitions were used to create earth-retaining structures during the excavation of the construction pits.

For the Alexiaviaduct, we have to dig deep in certain places for foundations and underpasses. The ‘Berlinerwand’ ensures that we are able to work safely and in a controlled manner, without

the construction site becoming unstable. It's a temporary but crucial measure that enables construction in complex circumstances.

The 'Berlinerwand' was installed close to the tracks during the train-free period (known as TVP) on 8 June. This was done deliberately so that excavation could be carried out safely after the TVP for the foundation of a footing (supporting concrete base), without undermining the track bed. The wall therefore not only provides stability, but also protects the existing infrastructure.

Once the foundation has been completed, the 'Berlinerwand' will be removed. We will coordinate the exact timing based on the progress of the works.



Reinforced soil: smart solutions for limited space

When constructing the Maasvlakteweg slip-roads, there is little space available between the road and the pipeline corridors. This makes it impossible to use traditional embankments. Instead, nearly vertical walls are needed to make efficient use of the space.

Such walls can be constructed using concrete or steel structures, but we have opted for a more sustainable and efficient alternative: sand, a material that is readily available on the Maasvlakte. Because sand cannot form a vertical wall on its own, we are applying the *reinforced-soil* technique.

Reinforced soil is a structural solution in which soil layers are reinforced with special ('geosynthetic') materials to improve the stability of embankments and soil structures. In our project, this technique is applied in layers 60 cm thick, which are carefully built up against (climbing) formwork. This formwork makes it possible to work vertically with precision, which is essential for the accuracy and safety of the construction.

Structure per layer

Each layer of reinforced soil consists of a combination of geogrid and anti-erosion fabric. Geogrid is a strong, flexible grid that provides horizontal reinforcement and distributes forces in the soil. Anti-erosion fabric protects against washout and contributes to the durability of the structure. After applying each layer, both the geogrid and the anti-erosion fabric are ‘folded back’ so that they fit snugly against the next layer and form a continuous reinforcement.

Hydraulic mixed granulate in the heads

On the outside of the structure, in the so-called heads, a filling of ‘hydraulic mixed granulate’ is applied. This material, consisting of a mixture of recycled crushed brickwork and concrete rubble, offers extra strength because it hardens over time, making the outer edges of the reinforced soil structure extra robust.

In the final situation, the reinforced soil will be given a high-quality finish with attractive concrete facing walls on the side of Maasvlakteweg. These walls are curved in design and blend seamlessly with the appearance of previously constructed dune viaducts, such as the Princes

Maximaviaduct and the Princes Amaliaviaduct. This not only ensures structural quality, but also creates an aesthetic whole that fits in with the existing infrastructure.

Image from ZJA, Architects & Engineers

Smart and sustainable: cooling concrete for a future-proof infrastructure

Building large concrete structures, such as viaducts, involves more than just pouring concrete. One of the challenges is controlling temperature development during the concrete-curing process. During this process, heat is released, causing the concrete structure to warm up and expand. Some time later, the concrete structure cools down again and wants to ‘shrink’. If these deformations are limited – for example, by pouring concrete against an existing structure – this leads to stresses in the fresh concrete. As temperatures in the concrete rise, these stresses also increase and can eventually lead to cracks in the new concrete.

We are applying an innovative technique on the Alexiaviaduct: active concrete cooling. We are installing approximately 18 kilometres of metal cooling pipes with a diameter of 28 mm in the walls, beams, and decks of the viaduct. We pump cooled water through these pipes, allowing us to control the temperature of the concrete during the curing process. This limits expansion and contraction and prevents cracking.

Depending on the size of the landfill and the number of cooling circuits, we deploy cooling units. We closely monitor the progress of the curing process and temperature development using a curing computer, which provides insight into the optimal timing and quality of the hardening process.

This saves us the materials, time, and CO_2 emissions involved in repairing concrete and extends its service life because the concrete is more durable.

A fine example of how technology and monitoring come together in modern concrete construction.

Recruitment-proof together: BAM and Port Authority follow container training on the Maasvlakte

In June, employees of contractor BAM and the Port of Rotterdam Authority project team jointly attended the recruitment-proof container training course organized by Deltalinqs Training & Services. In June, employees of contractor BAM and the Port of Rotterdam Authority project team jointly attended the recruitment-proof container training course organised by Deltalinqs Training & Services.

Why an additional training?

The port of Rotterdam is a crucial logistics hub, but also an environment where vulnerabilities can arise. Employees in operational roles may be approached, whether they're aware of it or not, by recruiters seeking information, access, or cooperation. The recruitment-proof training course has been developed to ensure these risks are open to discussion and to make employees resilient to undesirable influence.

What will you learn during recruitment-proof?

The training is interactive and practical. Our employees learned what recruitment actually entails and why it occurs. How do these recruiters operate and how do you recognise their methods? How do you respond safely and effectively when approached?

Realistic situations were simulated using 360° videos, VR headsets, role-playing games, and dilemma discussions. A training actor facilitated the sessions, which also provided an opportunity for participants to share their own experiences.

Want to find out more?
Want more information about the training or how your organisation can participate? Please contact the project team or services@deltalingstraining.nl.

Zero-emission equipment thanks to our own charging station

BAM Infra Nederland is deploying large-scale zero-emission equipment for the construction of the Princes Alexiaviaduct on Maasvlakte 2 on behalf of the Port of Rotterdam Authority. To make this possible, a special charging station has been set up on the construction site, powered by one of Stedin's own power mains. See below for a film about the construction of the charging station.

The electrical equipment includes trucks, asphalters, excavators and a mobile crane. Personnel may also charge electric vehicles there. Equipment without batteries runs on HVO 100, a renewable fuel. BAM combines this with sustainable materials such as environmentally friendly concrete and asphalt.

This approach demonstrates how smart planning, sustainable choices and cooperation with grid operators all contribute to a future-proof infrastructure in the port.

Read the full press release here: Private charging station for electric equipment during construction of the Princess Alexia Viaduct on Maasvlakte 2 | Port of Rotterdam