2024

Leca®
SAINT-GOBAIN

BUILD

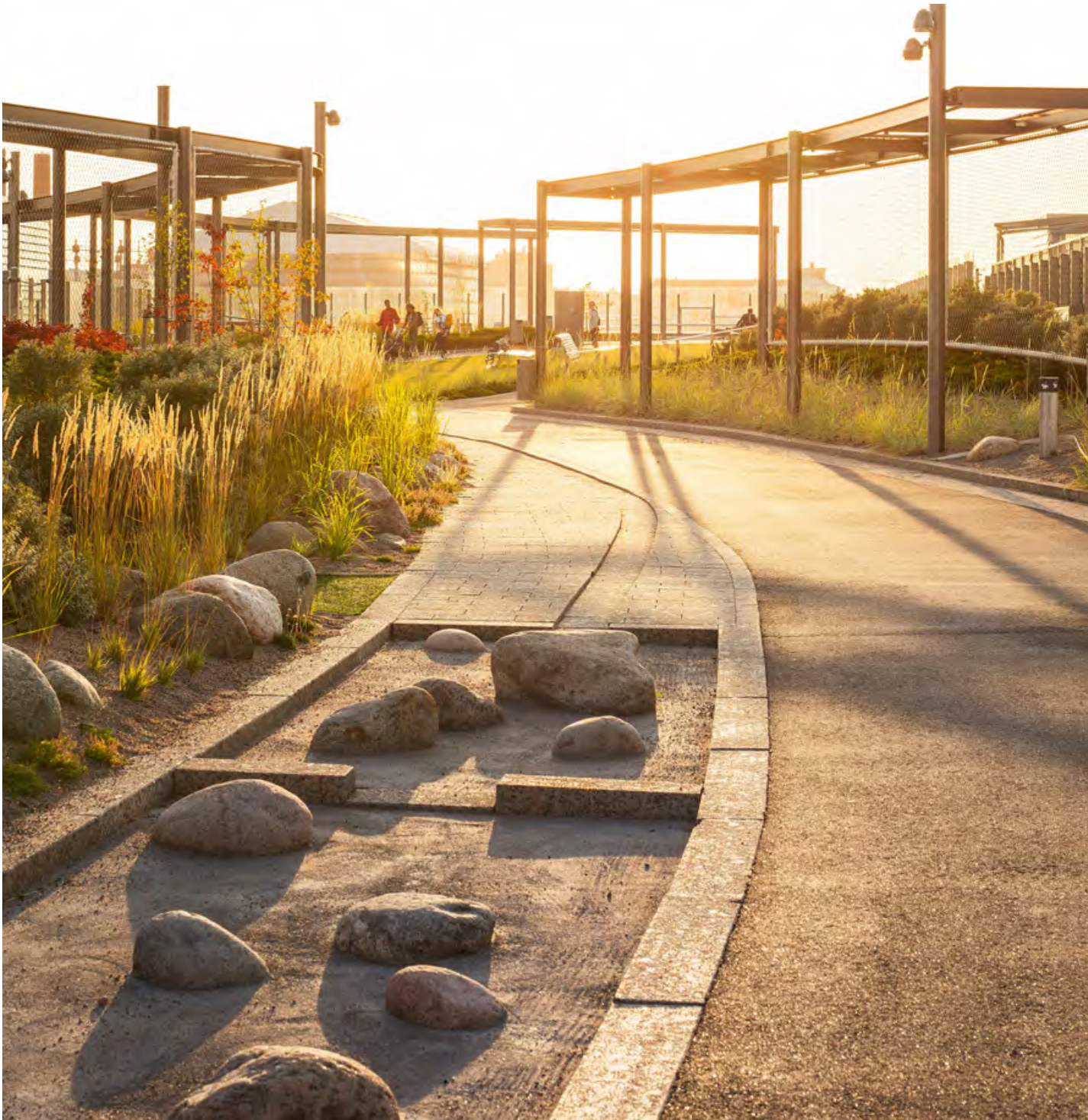
A MAGAZINE FROM LECA

Water Management

Housing

Infrastructure

1-2024



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BUILD is a magazine published by Leca International
Cover: Bryga green roof, Finland

Flash Facts

114 METERS

Leca Finland delivered Leca® lightweight aggregate (LWA) to the roof of the 33-story Atlas tower, under construction in Helsinki's Vuosaari, with two 5m³ lifting boxes. The height of the building measured from the ground is 114 meters. The adjacent 24-story Hyperion also has a ventilated Leca LWA roof. In high-rise construction, the importance of expertise, safety, and logistics is emphasized. Upon completion, Atlas and Hyperion will offer over 500 apartments above the rooftops of Helsinki.

10.000

Models can be found in the BIM library on the leca.pl website. Leca BIM is a comprehensive, free database of ready-made partition models useful for designing in Revit. The library has solutions for walls as well as insulation for under floor and green roofs..

2 HOUR INSTALLATION

Leca UK recently delivered Leca® Insulation Fill (50L Bags) to a property development in Nottingham for a new underfloor system. Two layers of Leca® Insulation Fill raised the floor by 300mm over a 50m² area. The underfloor installation took only 2 hours to complete and eliminated the need for wheel barrows and traditional hardcore entering the property – saving time and reducing the environmental damage to the surrounding area.

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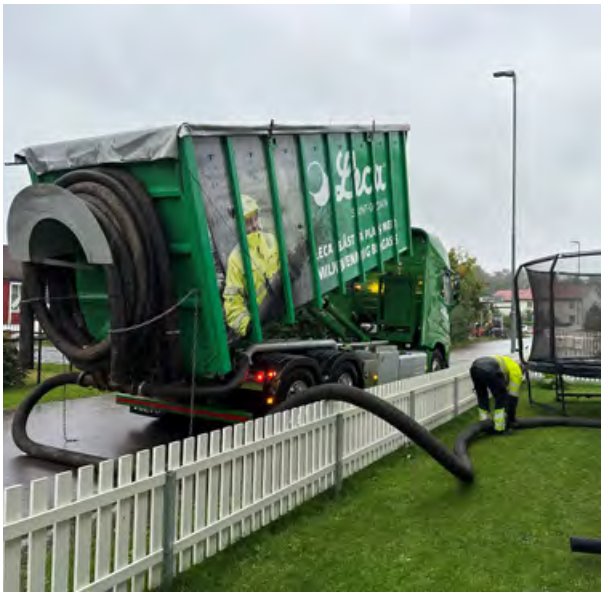
NORWAY USING A GAS-POWERED TRUCK THAT RUNS ON LIQUEFIED BIOGAS

Leca Norway makes it easy to get the Leca® lightweight aggregate (LWA) delivered when there is now more and more investment in emission-free construction sites.

Together with Unneberg Transport AS, they can deliver the Leca LWA using a Gas-powered truck that runs on liquefied biogas (bio-LNG) This sustainable delivery method enables us to dramatically reduce CO_2 emissions compared to a conventional diesel truck - up to 80-100% reduction.

By adopting greener delivery solutions, we reduce our environmental impact and take a Next Step towards a more sustainable future.

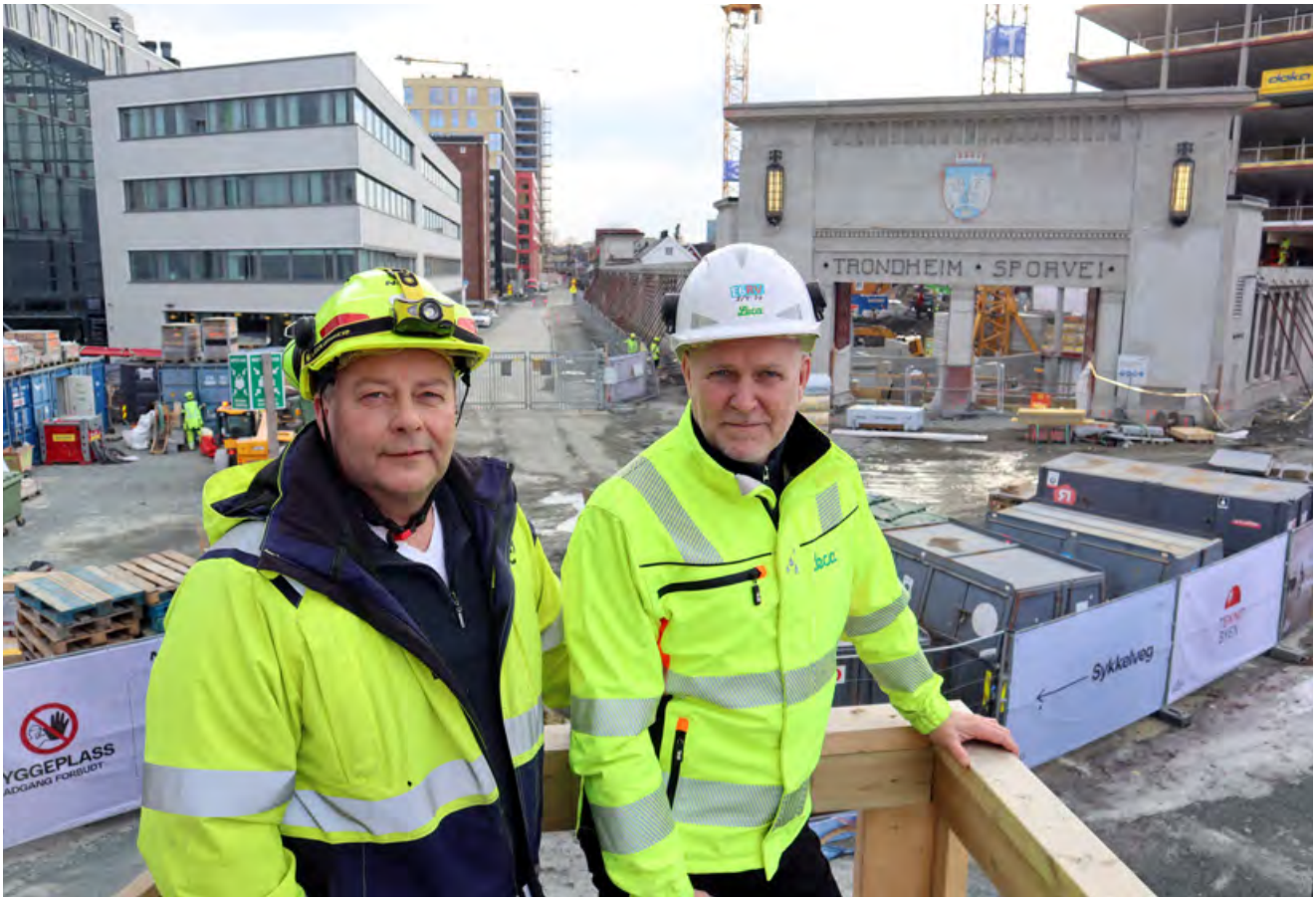


LECA UK + RESAPOL

Leca UK has started an exclusive distribution partnership with Resapol for the launch of Leca® Uno, which forms part of the Leca® Underfloor Insulation solutions.

Last week our team were educating and demonstrating Leca® Uno with retail branches along the south of England. Leca® Uno (25L) bags weigh only 15-17kg and generates a rapid, unique and innovative solution for filling and levelling floors in a single layer - increasing thermal and acoustic improvement of floors and much more.

We are excited to begin this partnership with Resapol.



Text and photo: Jan Vestre

Construction manager Matthias Lepkowski of NCC (left) and sales manager Frank Nornberg of Leca Norway in front of what will be Trondheim's largest office workplace in Trondheim

LECA NORWAY SECURES HISTORIC BUILDING IN TRONDHEIM

When integrating a 100-year-old tram shed (Trikkestallen) into a modern office building, the choice of filling material becomes crucial. "Leca LWA is a popular product in today's ROT (Rehabilitation, Rebuilding, and Backfilling) market," says Frank Nornberg from Leca Norway.

With 2,500 employees and 115,000 square meters across five modern office buildings, "Technobyen" stands as one of Trondheim's key commercial hubs. The expansion of Teknobyen includes the construction of a new 48,400m^2 building, "Teknostallen," by KLP Eiendom, with NCC as the general contractor. This ambitious project is estimated to cost over EUR 90 million."Teknostallen" aims to house the office spaces of the future, alongside a fitness centre, shops, restaurants, and a 3,000m^2 glazed year-round garden open to the public. A pivotal part of Trondheim's new technology and innovation hub is the old tram hall from 1923, designed by architect Hagbarth Schytte Berg, known for his Art Nouveau works in Trondheim.

Cramped conditions on the construction site are no obstacle when the filler can be blown into place with long hoses (Photo: Jan Vestre)

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PRESERVING A HISTORIC BUILDING

"Trikkestallen at Dalsenget stands as one of four preserved tram halls, a significant architectural and cultural monument, and a vital reminder of Trondheim's transport history," says City Antiquarian Mette Bye. She notes the rarity of such a transformation for a cultural monument, made possible by the building's previous fire damage, minimal internal historical elements, and careful planning to avoid high construction within the courtyard.

Bye emphasizes the importance of high architectural quality in new additions, making "Teknostallen" a central feature in the new downtown area along Elgeseter gate, where the tramway stable will serve as a historical landmark. Lasse Volden of KLP Eiendom Trondheim highlights the project's intention to preserve a piece of the city's history while building a future-oriented workplace that integrates work, exercise, shopping, and socializing. However, integrating the tramway's history with modern amenities added approximately EUR 1,7 million to the budget, invested in careful restoration to maintain the building's unique character.

The old tram stables at Dalsenget in Trondhjeim were built in 1923. In 1956, large parts of the building burned down along with most of the rolling stock of what was then Trondheim Sporvei (Photo: Trondheim city archive, photographer unknown)

In addition to being Trondheim's largest office workplace, "Teknostallen" will also contain a fitness center, shops, restaurants and a 3,000 m² glassed-in year-round garden, eateries and a 3000 m² glassed-in year-round garden (Illustration: KLP Eiendom)

PROJECT INFORMATION

Project: Teknostallen

Client: NCC AS

Main contractor: NCC

Location: Trondheim, Norway

Leca product: 1,000m³ Leca LWA 8/20

GEOTECHNICAL CHALLENGES IN DEVELOPMENT

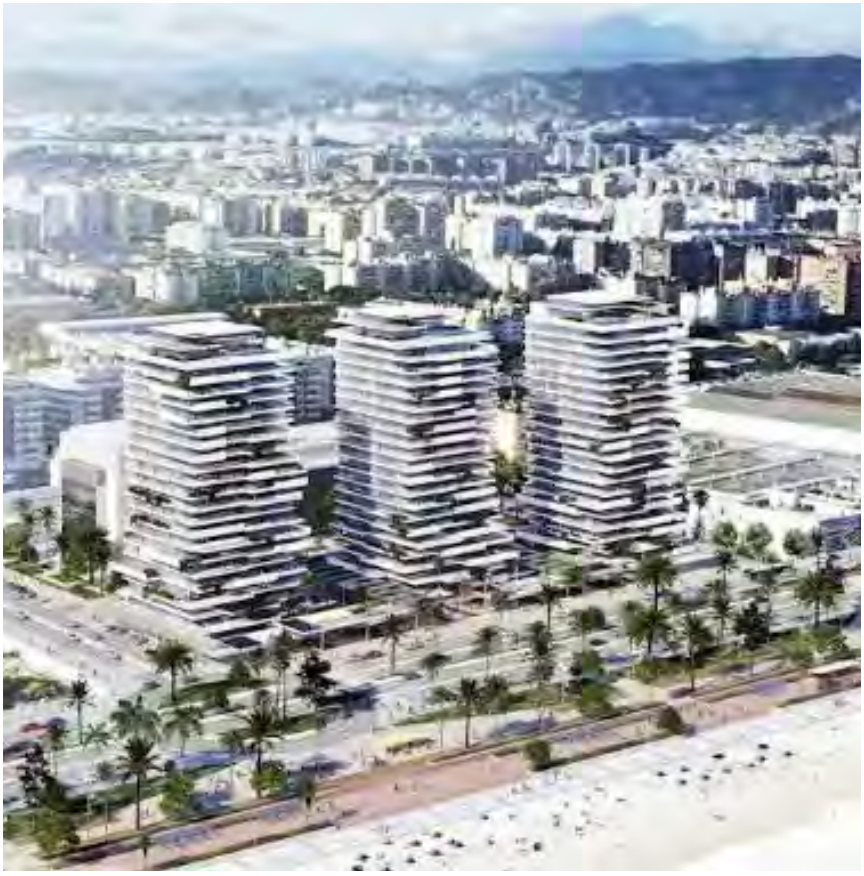
Matthias Lepkowski, NCC's construction manager for the project, discusses the challenges of incorporating the historic tram stable into a new, modern structure, highlighting the protection of existing structures amidst construction activities as a significant concern.

Inga Krattebøl, engineering manager at NCC, played a key role in the interdisciplinary coordination for the facade of the old tram hall. The construction of a 3550m² parking basement under the old tram stable posed numerous challenges, addressed by refunding the entire facade with jet piles, which served as both reimbursement and construction pit protection. The inclined jet piles primarily support the vertical pressure from the existing facade, with Leca lightweight aggregate chosen for its insulating properties and space efficiency in the constrained construction area.

LECA® LIGHTWEIGHT AGGREGATE (LWA) TACKLES ENGINEERING CHALLENGES

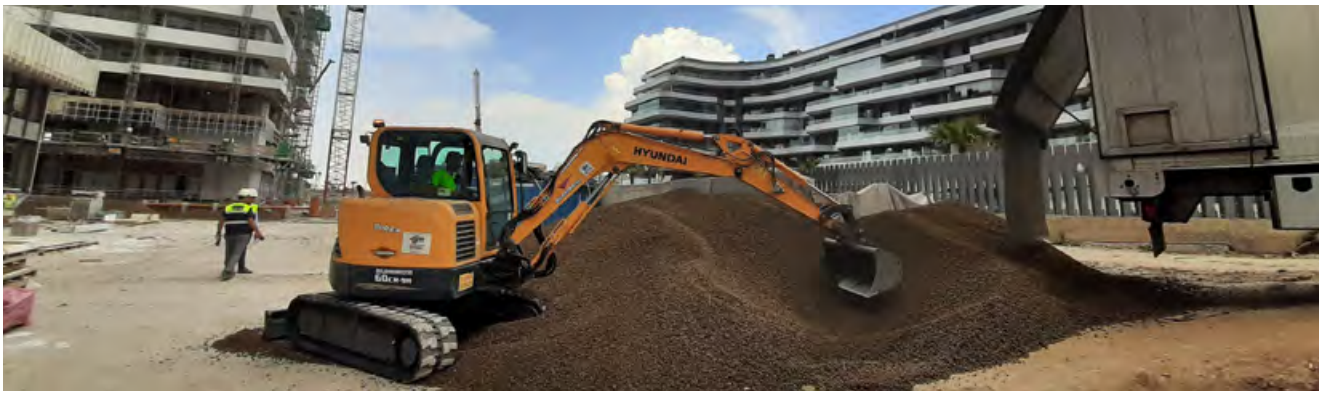
Leca Norway supplied 1,000m³ of Leca LWA for "Teknostallen." Frank Nornberg points out the logistical advantages of Leca LWA in city centre construction, emphasizing the efficient, non-invasive delivery method and the material's insulating properties, making it ideal for meeting Teknostallen's U-Value requirements and replacing other insulation materials. Nornberg highlights the importance of the ROT (Rehabilitation, Rebuilding, and Backfilling) market for Leca Norway and the company's efforts in developing efficient, cost-saving solutions for Leca LWA delivery, working closely with municipalities and consultants. "Teknostallen" is scheduled for completion in September 2025.

MALAGA TOWERS - A GATEWAY TO THE MEDITERRANEAN



The project, located in the city of Málaga, comprises three towers unified by a singular aesthetic. It prioritizes sea views and sunlight, aiming to become Málaga's finest residential project and transform the area into the city's golden mile. The selection of materials has been guided by quality and sustainability criteria.

Málaga, one of Spain's most beautiful cities, has been undergoing rapid transformation. This project is set to become a new benchmark for high-quality living - with apartments priced up to EUR 3.5 million. Estudio Lamela Arquitectos is committed to providing a high-quality product, emphasizing sustainability and environmental respect.



Arlita reduced the number of trucks needed - lowering the CO_2 footprint

MEETING THE NEEDS FOR QUALITY AND SUSTAINABILITY

The construction includes materials from Saint-Gobain, such as Placo, Isover, and Weber. A challenge was to achieve the necessary urbanisation level without overburdening the parking slab. Upon completion, the urbanised area will be handed over to Málaga City Council, requiring adherence to quality, durability, lightweight, and sustainability standards. The landfill also accommodates services for the towers, such as electricity, water, and wastewater. Arlita was selected for its lightness and strength, offering easy installation without special equipment.

Arlita is familiar to Málaga City Council and the engineering company EDP, having been used in various city projects.

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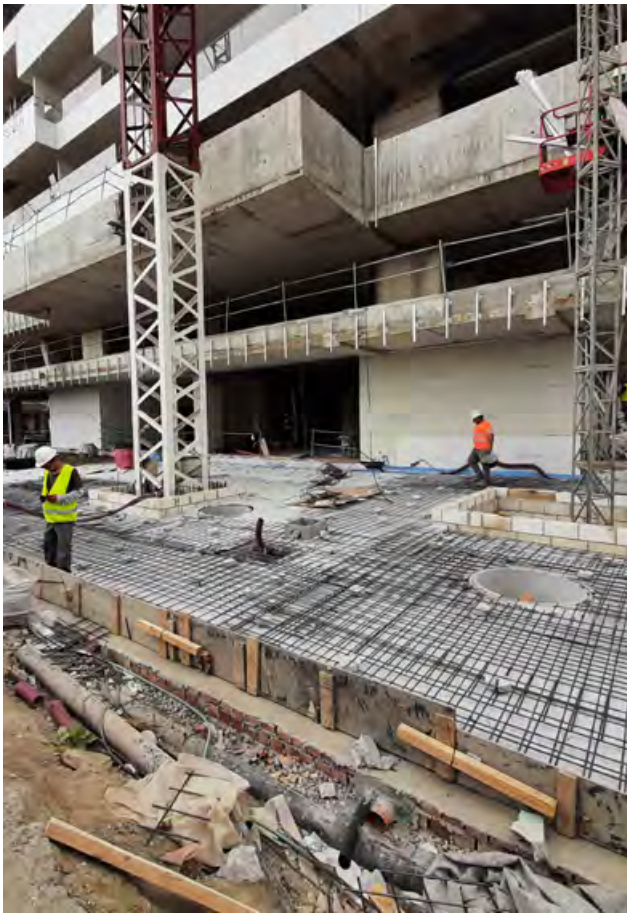
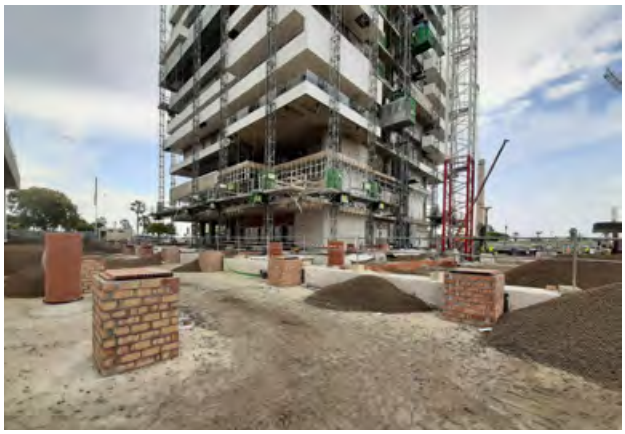
WATER MANAGEMENT WITH SIMPLICITY

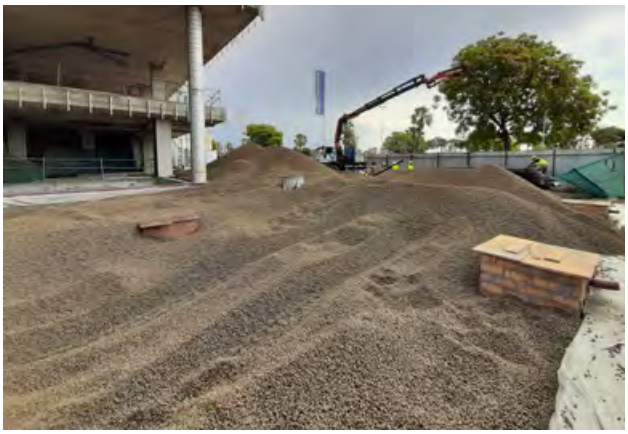
The lightweight fill, with thicknesses ranging from 0.8 to 1.5 m, was secured by double waterproofing. The first layer, beneath the Arlita, seals the parking slab, while the second, atop the concrete slab, ensures drainage and leak protection. Arlita's core contains drainage pipes to prevent water accumulation and potential overloads on the parking slab.



Arlita's core contains drainage pipes to prevent water accumulation and potential overloads



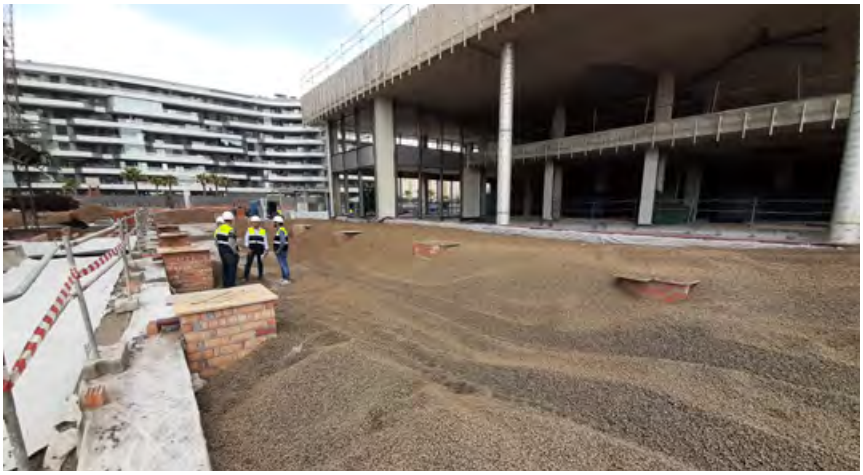
The landfill accommodates services, such as electricity, water, and wastewater



The lightweight fill, with thicknesses ranging from 0.8 to 1.5 m

REDUCING CARBON FOOTPRINT THROUGH REDUCED DELIVERY REQUIREMENTS

SACYR Construcción S.A. undertook the construction, requiring a daily fill of 600-700 m^3, significantly reducing the number of trucks needed and thus lowering the CO_2 footprint and improving air quality. The compaction process involved one-meter layers compacted by small 6T tracked equipment, achieving the project's required performance with a single piece of equipment.



Arlita's core contains drainage pipes to prevent water accumulation and potential overloads

PROJECT INFORMATION

Project: Malaga Towers

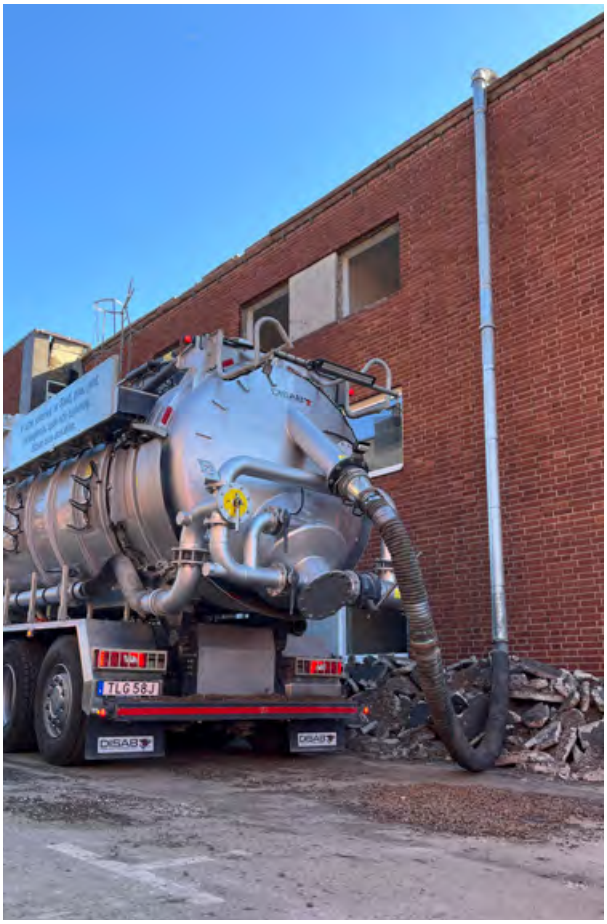
Location: Malaga, Spain

Developer: Metrovacesa

Architects: Lamela Arquitectos EDP Engineering

Main contractor: SACYR Construcción S.A.

Leca Product: Leca® LWA (Arlita) 5,700 m^3



The truck was easily set up right next to the building.

INNOVATIVE REUSE OF LECA® LWA FOR NEW HOUSING

Willhem is building 165 new rental units on Malcusgatan in Halmstad. The project has a strong focus on sustainability, and as a result, Willhem and Peab have chosen to preserve the existing Leca LWA during demolition, with the aim to reuse it later in the new construction. For us at Leca Sweden, this procedure is considered a central part of building sustainably for the future and is something we encourage.

LECA LWA FROM THE '60S IN THE ROOF

Willhem aims for the least possible environmental impact throughout the process. This involves resource-efficient methods, as well as the reuse and recycling of existing materials. The new buildings contain a total of 165 apartments, and the project will be environmentally certified according to Miljöbyggnad Silver.

The project includes the demolition of two building bodies where the existing basement is preserved since it contains both a shelter and a new geothermal heating system. There is also a utility tunnel between the buildings. It turned out that Leca LWA was already in place at Malcusgatan in a roofing solution that was installed there in the 1960s, which benefited the project.

Beatrice Fredriksson is the project manager at PEAB, which is the main contractor for the project with the new property. Regarding the basement construction, PEAB had a performance contract in which they, among other things, perform reinforcement work and install new drainage around the basement.

"We received the assignment in March 2023 and immediately started working on the basement and demolition. The project is planned to be completed in May 2025, Beatrice says and continues:

We found Leca LWA in the existing roof, which was a concrete construction. For the lightweight aggregate, we saw opportunities to be able to reuse the material for the new building to ensure that the load on the ground was not too high."

LECA® TUR - RETUR

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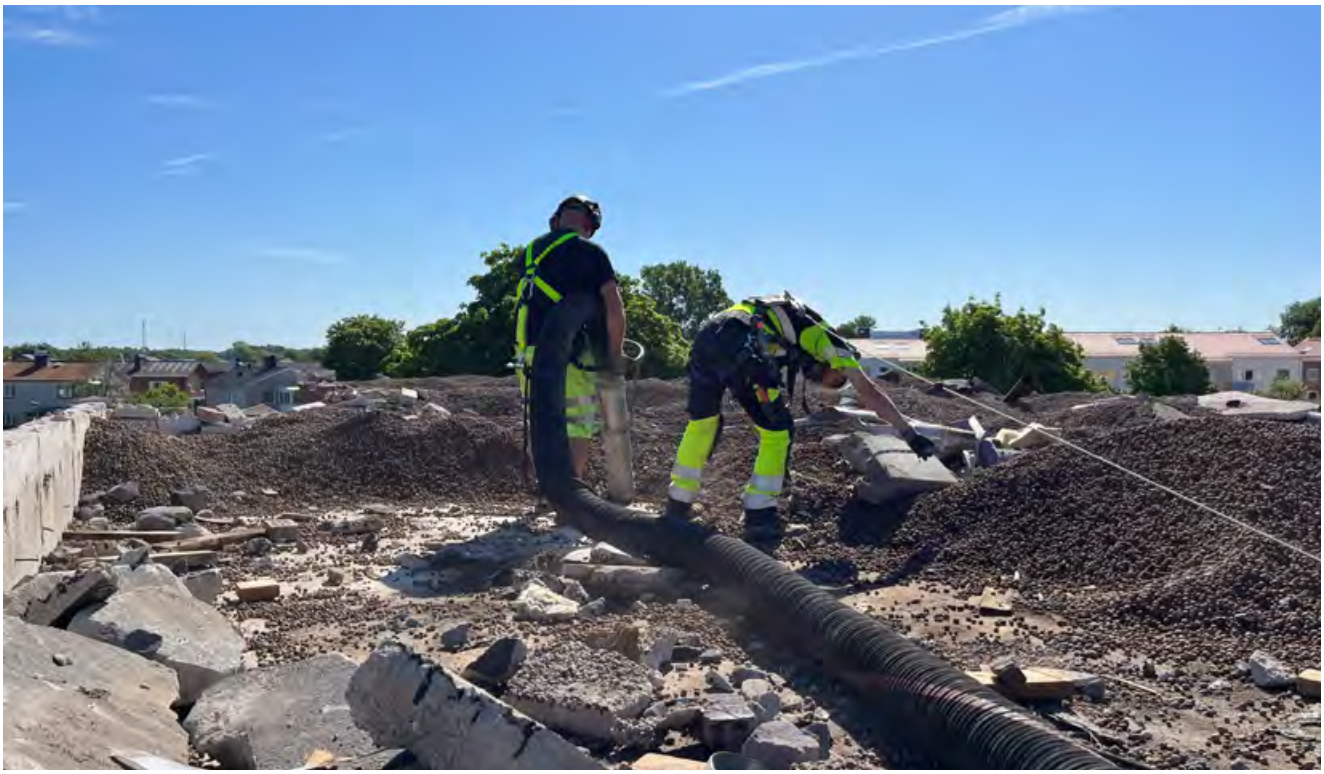


The lightweight aggregate in the roof from the 60's was analyzed and could be reused.

REUSE MADE SIMPLE

After material samples from the Leca LWA had been analyzed, the logistics could be planned. The solution for PEAB turned out to be vacuuming the existing materialfrom the roof. Only two people were needed on the roof, one to hold the hose and another to clear away the large pieces of concrete that were not to be vacuumed up.

"Instead of transporting material away, we could save costs by storing the material on-site. We found a solution using molds that are normally used for casting walls, and with these, we were able to create a storage bin. The work proceeded smoothly without any significant challeng" says Beatrice.

When the vacuum truck was full, the driver could simply move a few meters away and dump the vacuumed Leca LWA. In total, about 500 cubic meters of Leca lightweight aggregate were repurposed for reuse. Beyond the reuse of Leca LWA, bricks from the old buildings will also be reused, and solar panels are to be installed on the roofs.

One person operated the suction hose and one person removed concrete pieces that were not to be vacuumed up.

PROJECT INFORMATION

Project: Multi-family housing, 165 apartments

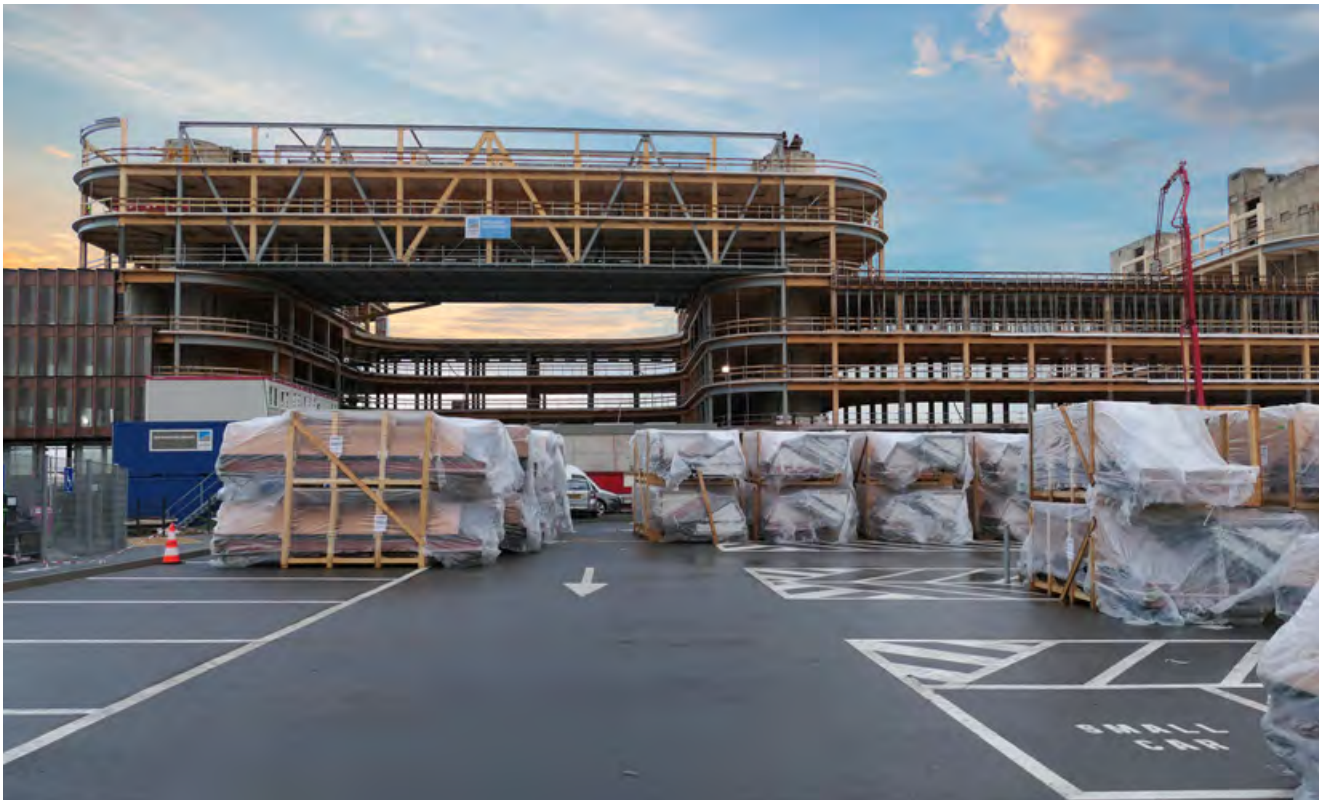
Location: Halmstad, Sweden

Client: Willhem

Contractor: PEAB

Project duration: 2023–2025

Leca product: Recycled Leca® LWA / LECA® TUR-RETUR



The Skypark Business Centre at Luxembourg's Aitport is currently the largest timber construction in Europe

INNOVATIVE LIGHTWEIGHT CONCRETE FOR SUSTAINABILITY AND STABILITY

The Skypark Business Centre at Luxembourg Airport is a remarkable building project that sets new standards for sustainable and environmentally conscious construction thanks to its high focus on energy efficiency and sustainability. The skilful combination of modern timber-framed construction and unique architectural features makes this project unrivalled. It serves as a compelling example of how innovation and environmental protection can be harmonised to create impressive buildings.

This building, which is currently the largest timber construction in Europe, houses four parking levels on the five lower floors with direct access to public transport. On the upper floors, with an area of around 100,000 square metres, there is a wide range of amenities; these include, among others, catering facilities, retail shops, fitness facilities, a first-class hotel, modern office space and even a day care centre for children.

In close cooperation with Mörtel Mich S.à r.l. and the concrete technologist from Fibo ExClay, Jörg Kleinschmidt, a highly specialised lightweight aggregate concrete with open structure was developed, which is being installed in this outstanding project as a special screed with an extremely low bulk density by the company Günter Schlag S.à r.l. This special screed complies with all required standards in terms of fire protection, sound insulation and the strength required for further construction. It is worth mentioning that this special screed was mixed and pumped directly on the construction site in a suitably equipped, fully automatic screed machine.

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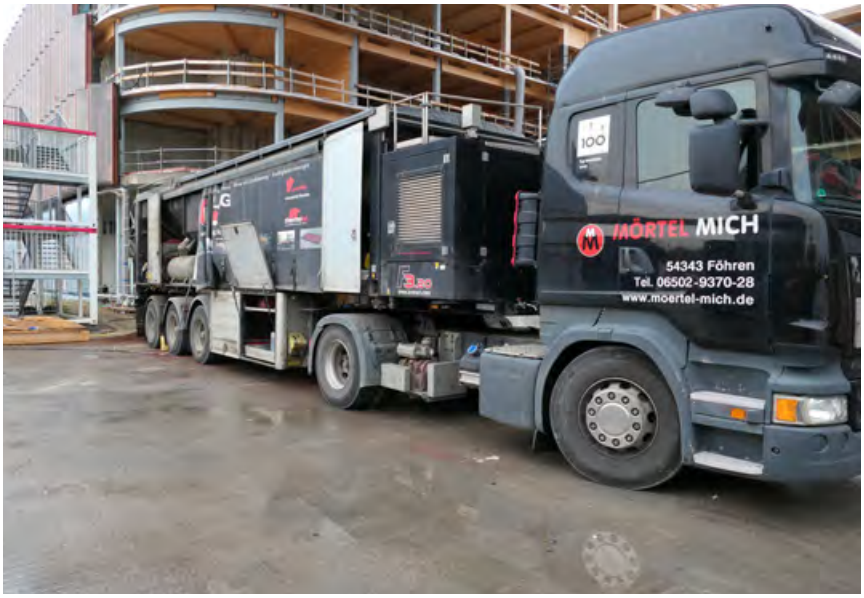
A LOOK AT THE TECHNICAL DETAILS REVEALS THE FOLLOWING:

- Fibo ExClay lightweight concrete LAC 4 D 1,0
- Density: 1000 kg/m³
- Strengths of 6-10 N/mm² for absorbing point loads
- Pumpable (screed pump with a hose length of up to 200 metres in vertical and horizontal direction)
- Non-combustible (A1)
- Installation thickness of 40 mm
- Lightweight aggregate of type FIBOBAU 0/5, round design
- Special admixtures and additives to achieve the desired properties



PROJECT INFORMATION

Project:: Skypark Busines Center, Luxembourg Airport

Client: Lux-Airport

Project management: Beissel & Ruppert

Architect: BIG (Bjarke Ingels Group Copenhagen, Denmark) in partnership with metaform architects & Jim Clemes Associates, Luxembourg

Engineering office: Au²

Contractor: Steffen Holzbau S.A.

Production & processing Special screed: Mörtel Mich S.à r.l. & Günter Schlag S.à r.l.

Product: 1.350 m³ FIBOBAU 0-5 mm

SPECIAL PROPERTIES OF FIBO EXPANDED CLAY ARE KEY TO THIS PROJECT

Undoubtedly, this special lightweight concrete, designed with expanded clay as a lightweight aggregate, plays a central role in realising the sustainable building concept. As a lightweight aggregate for lightweight aggregate concrete with open structure, expanded clay offers a wealth of benefits that excel in various aspects, from sustainability to material quality.

As an environmentally friendly aggregate obtained from natural raw materials, expanded clay is recyclable and can therefore be used several times. Lightweight aggregate concrete with open structure, using expanded clay as a lightweight aggregate, is particularly characterised by its pumpability, which considerably simplifies and speeds up handling and installation in construction projects.

As a natural material, expanded clay contains no harmful chemical additives, helping to protect both health and the environment. Due to its excellent fire protection properties, it can significantly increase the fire resistance of construction projects.

The combination of low weight and high compressive strength makes this special lightweight concrete the ideal choice for the construction of lightweight, yet highly robust structures. Furthermore, the addition of expanded clay makes it resistant to frost and retains its shape and strength in extreme temperatures.

All in all, expanded clay is an excellent choice as a lightweight aggregate for lightweight aggregate concrete with open structure, which not only offers environmental benefits, but also significantly improves the quality and performance of construction projects in many ways.

Text: Dakota Lavento

RESPONSIBLE ACTIONS MAKE A DIFFERENCE

Landscape architecture firm Maanlumo chooses Leca® lightweight aggregate (LWA) for growing media. The product has good water retention.

In all its activities, Maanlumo strives not only to act responsibly but even to be ahead of its time. Environmental, economic, and social responsibility are key criteria in the planning.

"In the tough world of construction, we also consider factors that have no direct monetary value. Accordingly, our work must also benefit urban nature and animals, as well as other urban dwellers who may not be able to make their voices heard. We design with respect for nature and an environment that remains accessible to all. The urban environment should be planned in such a way that it makes life easy and is pleasant and accessible for everyone, at all ages," says landscape architect **Krista Muurinen**.

Responsibility built-in

Greenwashing is a very common problem nowadays, as it's tempting for companies to make inflated environmental claims and promises to improve their image. But responsibility and sustainably ultimately require action, not just words. In Maanlumo's design projects, this is done in a variety of ways.

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"Our mission is to design outdoor environments that last, and we think about the ethical aspects of the work from several perspectives. It is crucial to us that we can fully and proudly stand behind what we do."

Acting responsibly is also important for the company's team spirit. *"We share the same values and act on them. If we feel that these values are not being upheld in a particular project, we can't go ahead with it."*

The designers approach the area they're working on as part of a larger whole. *"We are considering whether internal design solutions can contribute to broader ecological values or environmental solutions."*

Choosing materials wisely

Maanlumo's designers strive to preserve existing natural and cultural environments, structures, and materials as much as possible.

At the planning stage, the designers choose solutions that will not need modifications or repairs for a long time to come. "This is why we prioritise materials that have a long lifecycle and can be reused or recycled later."

Maanlumo favours recycled and recyclable materials, and in general, materials that are as environmentally friendly as possible. However, it is not always easy to assess the eco-friendliness of products, as in many cases not all the relevant information is given or assessed consistently. Weighing up different options can therefore be difficult, or even impossible.

"To keep transport distances as short as possible, we give priority to locally produced products, or at least within Europe. Sourcing locally also supports our economy."

Leca LWA, for example, is a good choice as a highly water-retentive material for growing media in deck planting. *"Leca LWA is easy to recommend to customers: its carbon footprint has been calculated, the production process is transparent, and the company is a responsible operator."*

However, Muurinen would like to know more about the reusability and recyclability of Leca LWA.

"The conversion of reclamation sites into nature reserves in Finland and Denmark is a good example of businesses doing the right thing. These are significant eco-friendly initiatives that a company can be proud of."

The benefits of responsible action

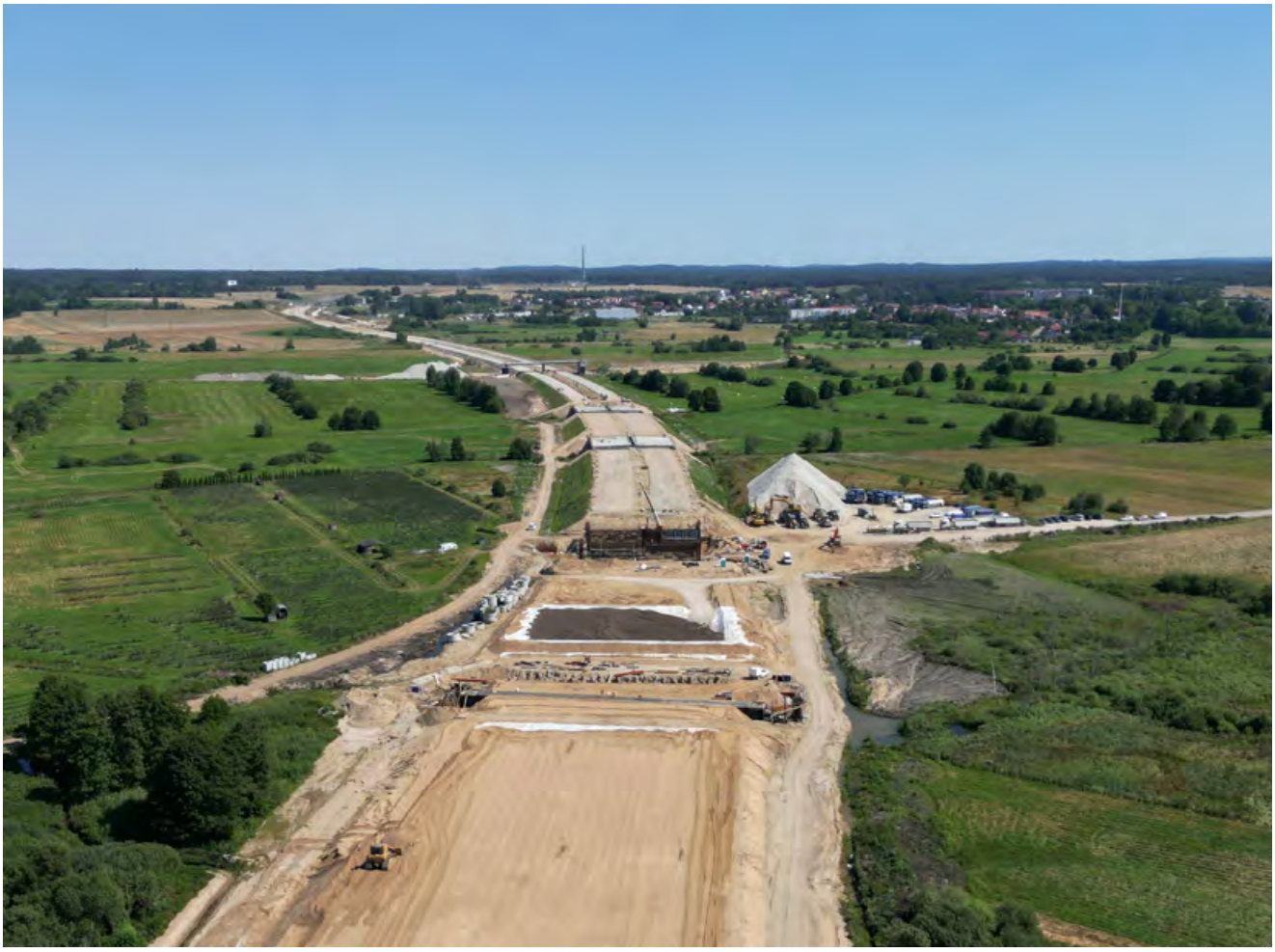
Maanlumo believes that operating ethically also gives a competitive advantage to companies in the environmental construction sector. Respect for nature and soft values such as those that drive the circular economy are also things that end users care about, even if their value cannot be measured in monetary terms.

"Saving five trees or an area of natural rock cannot be measured in money, but it is of great value to users."

Goals for responsible action are not always met in construction projects, however. Although clients may strive for responsible environmental construction in the master planning phase, it often happens that when the time comes to award the contracts the goals related to sustainability and responsible choices are forgotten. In the municipal sector, long-term responsibility and the recyclability of materials are already being considered better than in the private sector, because they remain responsible for the sites long after construction has ended.

"For example, in the environmental construction of Ranta-Tampella in Tampere, sustainability from a circular economy perspective has been very well implemented. Other cities could take a leaf out of Tampere's book in this regard."

Maanlumo is constantly striving for an increasingly sustainable present and future. *"For us at Maanlumo, acting ethically and sustainably is simply a way of life. Maybe it's not possible to do good deeds on a large scale every day, but little ones are always possible, and over time these can add up to something significant."*



The S6 expressway connects Szczecin and Gdańsk in northern Poland

LECA® LIGHTWEIGHT AGGREGATE (LWA) RESOLVES GROUNDWORK ISSUES ON THE S6 EXPRESSWAY

The S6 expressway is a high-speed road in northern Poland that connects Szczecin and Gdańsk. A large section of it runs almost parallel to the Baltic coast and is part of the TEN-T trans-European transport network.

The road primarily aims to improve connectivity by enhancing the efficiency of road transport and reducing travel time between cities, as well as facilitating tourist traffic. This is expected to contribute to the economic development of the regions. The entire S6 route in the West Pomeranian and Pomeranian Voivodeships is scheduled for completion in 2025. The S6 expressway includes, among others, the Koszalin and Sianow bypasses, with a total length of 21.1 km. As of autumn 2019, three sections of this route, totaling 13.2 km, are open to traffic. On the remaining 7.9 km section between the Koszalin Wschód junction and Sianow, geological conditions varied, necessitating changes to the road design. Work to complete the bypass began in August 2021.

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The work, which was originally carried out, was interrupted due to the considerable difficulties encountered due to the complicated hydrogeological conditions

NEW DESIGN

The works could continue after an update to the design documentation (a separate project), which introduced many alternative solutions. On three sections of the main route, mattress layers of Leca LWA were designed and constructed.

PROJECT INFORMATION

Project: S6 - TRANSPROJEKT Gdańsk

Location: S6 - Koszalin and Sianów

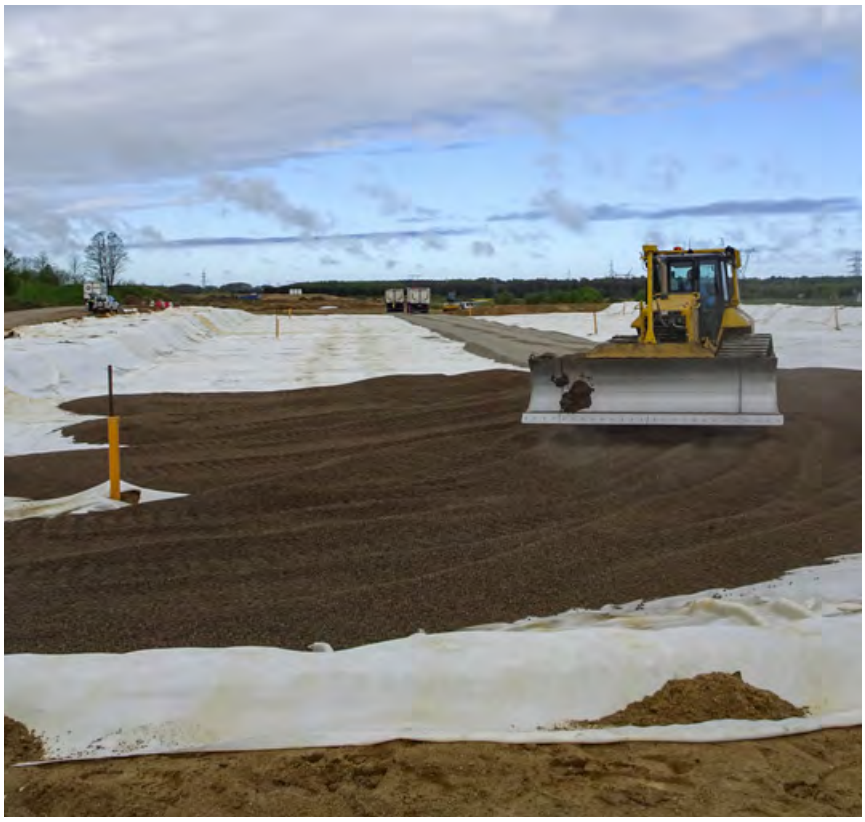
Main contractor: Polbud-Pomorze

Leca product: 52.200 m³ Leca LWA
Leca GEOTECHNICAL 8/10-20 RX

DISRUPTED IMPLEMENTATION

Construction was carried out in two stages. The original work was interrupted due to significant difficulties encountered because of the complicated hydrogeological conditions in the Chełmska Mountain area. This section is characterized by two aquifers: The near-surface water-bearing horizon, associated with a layer of sandy and organic sediments, stabilizes at a depth of up to 1 m and is replenished by precipitation and runoff from Góra Chełmska.

And the second aquifer, located beneath a layer of glacial till of varying thickness, generally occurs at depths of more than 15 - 20 m and is characterized by significant hydrostatic pressure - the water table stabilizes about 2.0 - 5.0 m above ground level (artesian waters).



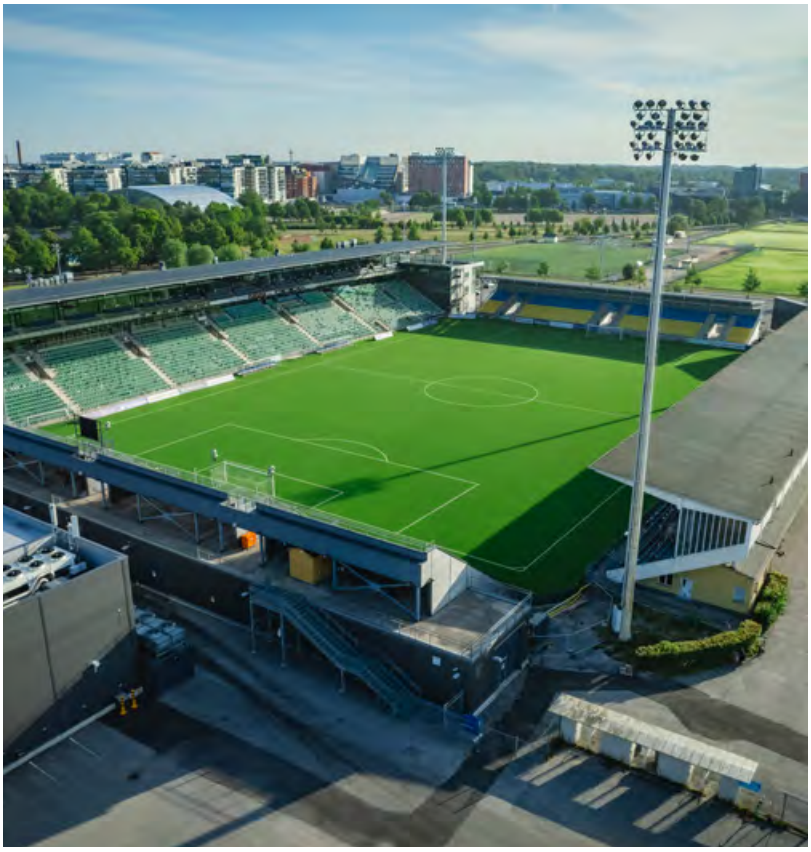
On three sections of the main route, mattress layers of Leca LWA (Leca® GEOTECHNICAL 8/10-20 RX) were designed and constructed

RAISED LEVEL

In one section, where ground reinforcement was carried out using replacement technology and displacement columns in the first stage, the level was raised. Computational analyses indicated that the previously performed subsoil reinforcement was not sufficient to support the increased loads from the raised embankment. The use of Leca LWA layers for the embankment reduced the stresses at the base level to an acceptable level.

LIMITATION OF COLUMN LENGTHS

In the other two sections, the embankment was founded on rigid reinforced concrete columns due to the presence of organic soils of considerable thickness in the subsoil. To minimize the risk of the columns penetrating the cohesive soil layer below, which strains the waters of the second aquifer (artesian waters), their embedment in the bearing soils was kept to a minimum. Incorporating layers of Leca expanded clay in the embankments significantly reduced the loads acting on the rigid columns, thus ensuring proper foundation and stability of the embankment and limiting the amount of settlement.



Veritas Stadion is an international standard football stadium situated in Turku.

EFFICIENT RENOVATION OF A HISTORIC FOOTBALL STADIUM

The old natural grass pitch at Veritas Stadium in Turku was replaced with artificial grass, with a heating system under it. The soil, which had poor load-bearing capacity, was lightened with a durable Leca® lightweight aggregate (LWA).

Located in Turku, the largest city in Southwest Finland, Veritas Stadium is a football stadium of international standard. The stadium is steeped in tradition: the oldest of its three terraces was completed for the 1952 Olympics, while the newest, the main terrace, was completed for the 2009 European Women's Championship.

Veritas Stadium's new heated and environmentally friendly artificial turf pitch meets the highest international criteria and complies with the Quality Pro standards of the International Association Football Federation FIFA.

The renovation project, which was started in 2022, involved the building of a sand-based artificial pitch in place of the natural grass pitch, which was at the end of its lifespan. The second project involved increasing the capacity of the terrace.

Having a heated artificial turf pitch significantly extends the time the pitch can be used each year and will also allow other events to be held in addition to matches.

Maanrakennus Kivelä Oy's owner Ville Kivelä (left) and Leca Finland's Area Sales Manager Marko Jelonen discussing the progress of the project.

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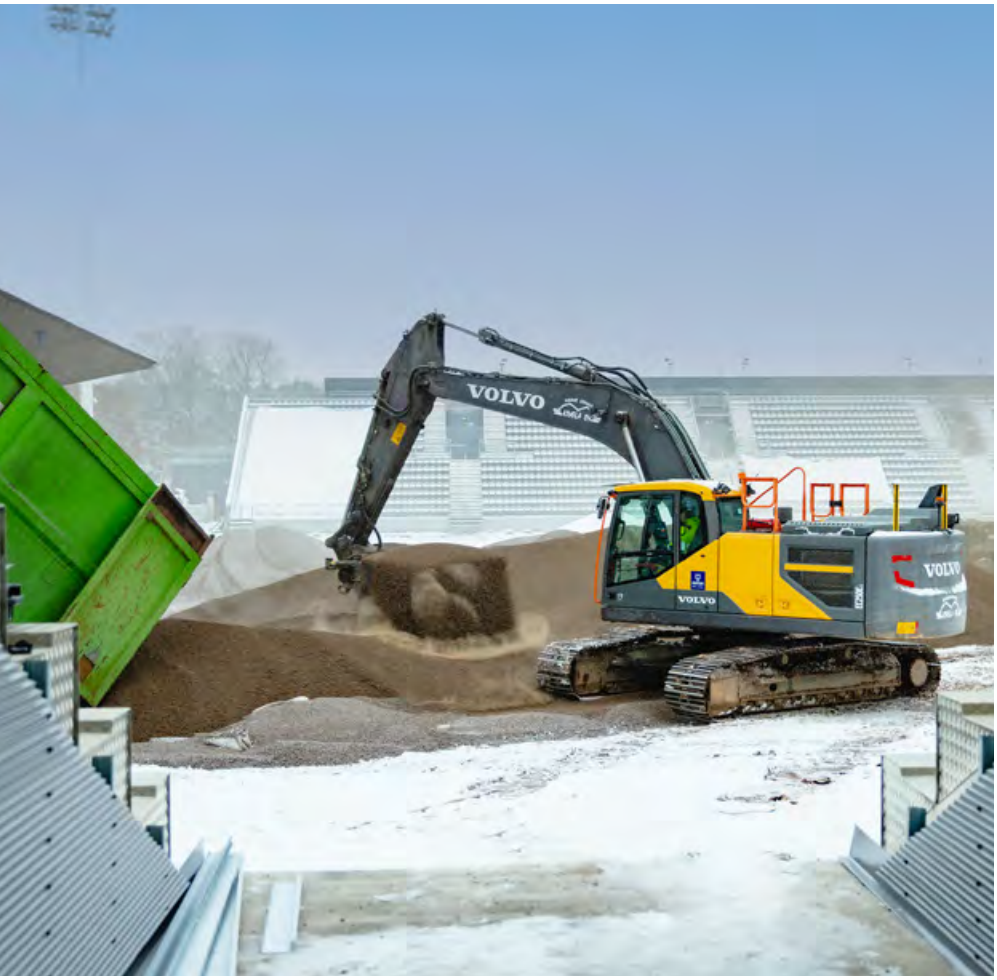


A 10-30 cm layer of Leca LWA was added on top of the old lightweight fill.

PROJECT INFORMATION

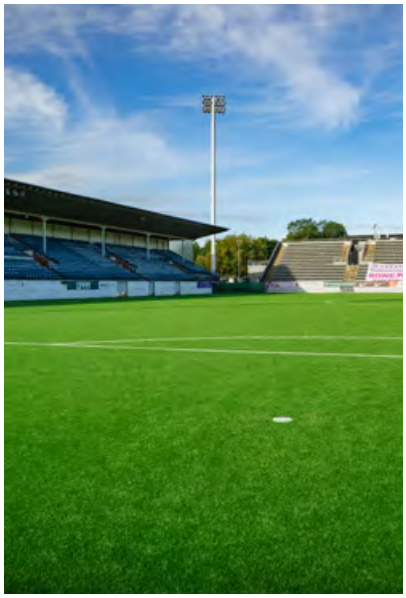
Project: Veritas Stadium load compensation

Location: Turku, Finland

Contractor: Maanrakennus Kivelä Oy

Main contractor: Saltex Oy

Leca product: Leca® LWA 4–32 mm



EASY LIGHTWEIGHT FILL WITH LECA® LWA

The renovation began with earth removal in late October 2022. "We removed a 50-centimetre layer from the surface of the field, amounting to somewhere between five and six thousand cubic metres of soil," says managing director Ville Kivelä of Maarakennus Kivelä, the earthworks subcontractor for the field renovation.

It's necessary to lighten the structures of sports fields built on clay, which has a poor load-bearing capacity. The Veritas Stadium ground had already been lightened with Leca LWA before. After the removal of the old surface structures, the original Leca LWA layer was left in place, as it was practically as good as new.

A levelling layer of Leca LWA of 10 cm to 30 cm thickness was added to the structural layers on top of the old levelling layer. Leca LWA was brought to the field from Leca Finland's Kuusankoski factory by combined transport directly for filling.

COMPLETED ON SCHEDULE

At the end of February, the Leca LWA structure was almost fully in place.

The project also includes drainage, irrigation and heating systems. The drainage system, consisting of drainage pipes, the heating system, consisting of glycol circulation, and the irrigation system were all installed at the same level in the cable ducts and partly in the Leca LWA layer.

A FIFA-approved sand-based artificial turf was spread over the supporting structures in the spring, once the weather had warmed up. Maarakennus Kivelä operates mainly in the Southwest Finland region, and in recent years has been involved in several other sports facility projects as well.

"We've carried out several artificial turf projects over the past few years, but the Veritas Stadium renovation is our largest sports facility construction undertaking so far," Kivelä says. The first match on the new artificial turf was played on 22 May 2023.

LECA® LIGHTWEIGHT AGGREGATE´S ROLE IN OVERCOMING SPALDING'S CHALLENGING GROUND CONDITIONS

Construction of the northern section of the Spalding Western Relief Road began in January 2022, offering a new bypass route around the western perimeter of Spalding. This project aims to significantly reduce travel delays, heavy traffic, and the impact of increased freight, ultimately enhancing the road user experience.

LECA® LWA ENHANCES SAFETY AND EFFICIENCY IN SPALDING'S ROAD CONSTRUCTION

This road connects the A1175 and A16 from the south and east to the B1356 in the north, passing through the B1172 Spalding Common. The construction of the road seeks to alleviate the area's heavy traffic, reduce travel delays, improve road user experience, mitigate the effects of increasing freight traffic, and relieve congestion in Spalding town centre.

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PIONEERING STABILITY FOR SPALDING'S ROADWAYS

For this project, over 28,000m³ of Leca® 10-20mm Lightweight Aggregate (LWA) was transported using Walking Floor vehicles to construct an MSE Wall, in collaboration with the Tensar Grid System. This innovative approach was particularly vital due to the challenging ground conditions near waterways, requiring a reinforced soil embankment with a reliable lightweight fill solution. The combination of LecaLWA and the Tensar Grid System, previously demonstrated in the 2017 FARRRS bridge project, provides a durable and effective method for managing such conditions.

PROJECT INFORMATION

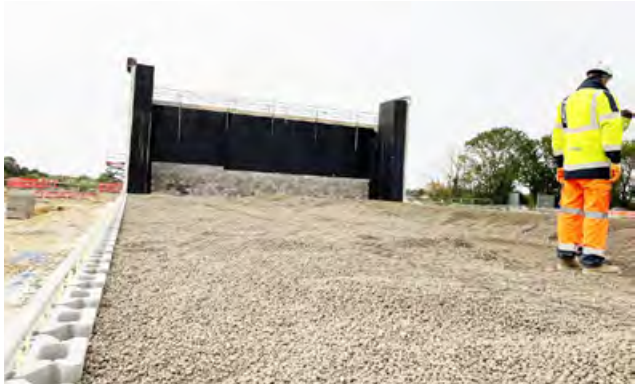
Project: Spalding Western Relief Road

Location: Spalding, England

Main contractor: Eurovia

Leca product: 28.000 m³ Leca® LWA 10-20

Initiated in January 2022, aims to connect major roads and improving traffic flow

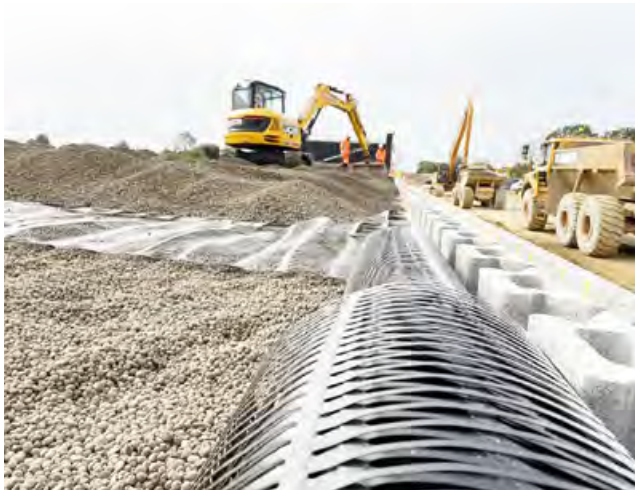


The use of LECA LWA in areas with poor ground conditions near waterways has proven to improve ground stability

LECA® LWA'S CONTRIBUTION TO THE SPALDING WESTERN RELIEF ROAD

The direct transportation of Leca LWA from a site less than 10 miles away reduced the need for extensive trucking, thereby minimizing road mileage.

The project minimized environmental impact by sourcing LECA LWA from a location less than 10 miles away

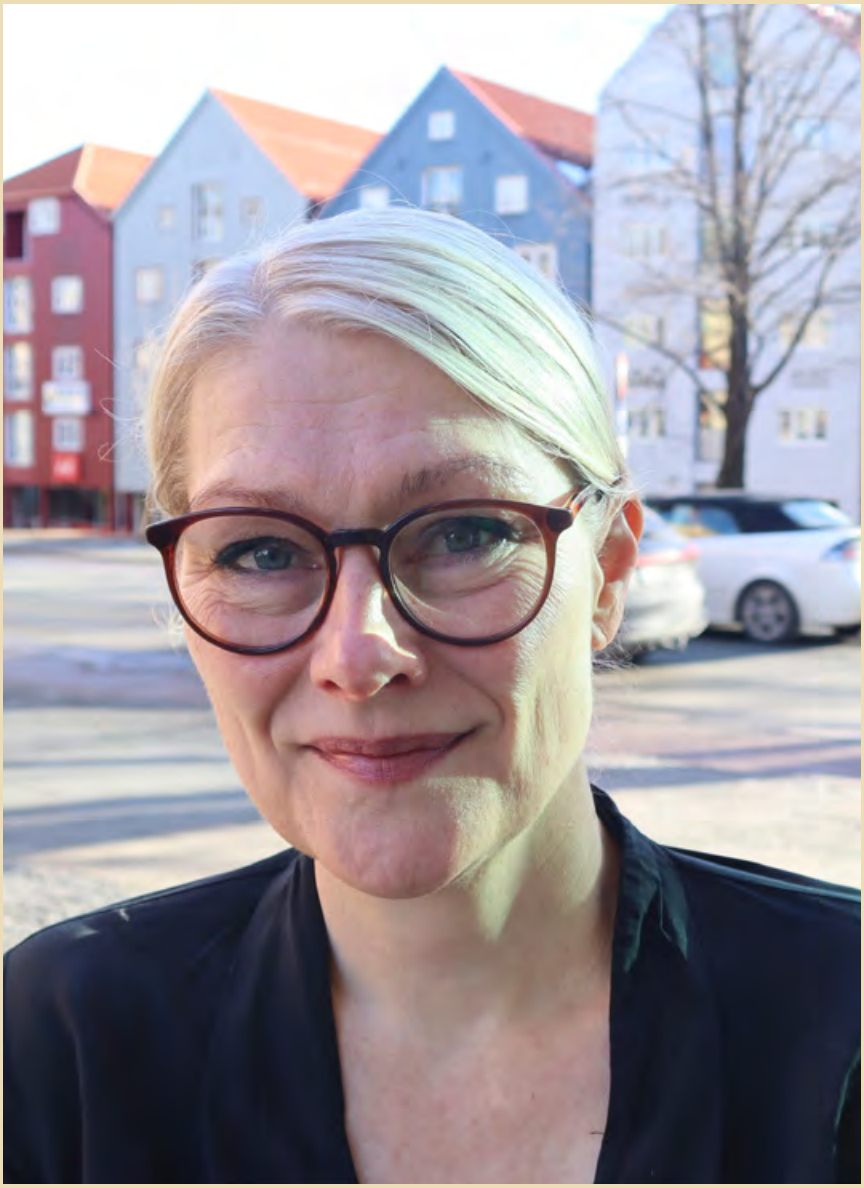


Innovation Meets Infrastructure: The Synergy of LECA LWA and the Tensar Grid System in Spalding

LECA® LWA'S ROLE IN SPALDING'S ROADWAY REVOLUTION

The use of Leca LWA in extensive cut and fill operations and on unstable soils improves ground stability, reduces the risk of landslides and deformation, and offers a solution that exerts lower horizontal earth pressures than traditional backfill materials. This significantly contributes to the stability and safety of road embankments, promoting an efficient and sustainable construction approach.

BUILDING PROTECTION IS SOMETHING THAT IS PROFITABLE FOR CITIES



Mette Bye, City Historian in Trondheim, believes that a city has much to gain by taking care of its historic buildings.

METTE BYE

Mette Bye, City Historian in Trondheim, believes that cities that are perceived as beautiful are more likely to attract new businesses.

Written by Jan Vestre

With 7,000 buildings on the cultural heritage map, Mette Bye, City Antiquities Officer in Trondheim, has more than enough to keep her fingers busy.

"Trondheim is a historic city with a lot of character and a great architectural heritage that is important to preserve. Even though it costs money, studies show that building conservation is often profitable for cities," says Bye, who took over as city heritage officer in 2016.

Bye says that cities that are able to preserve listed buildings do more than just attract tourists.

"The fact that a city is perceived as beautiful can also be decisive in attracting new residents and businesses when other conditions are in place. This is a trend we are seeing across Europe. Taking good care of and refining the old, while the city grows and renews, makes us more robust in the battle for residents, students, business, activity and tourism," she explains.

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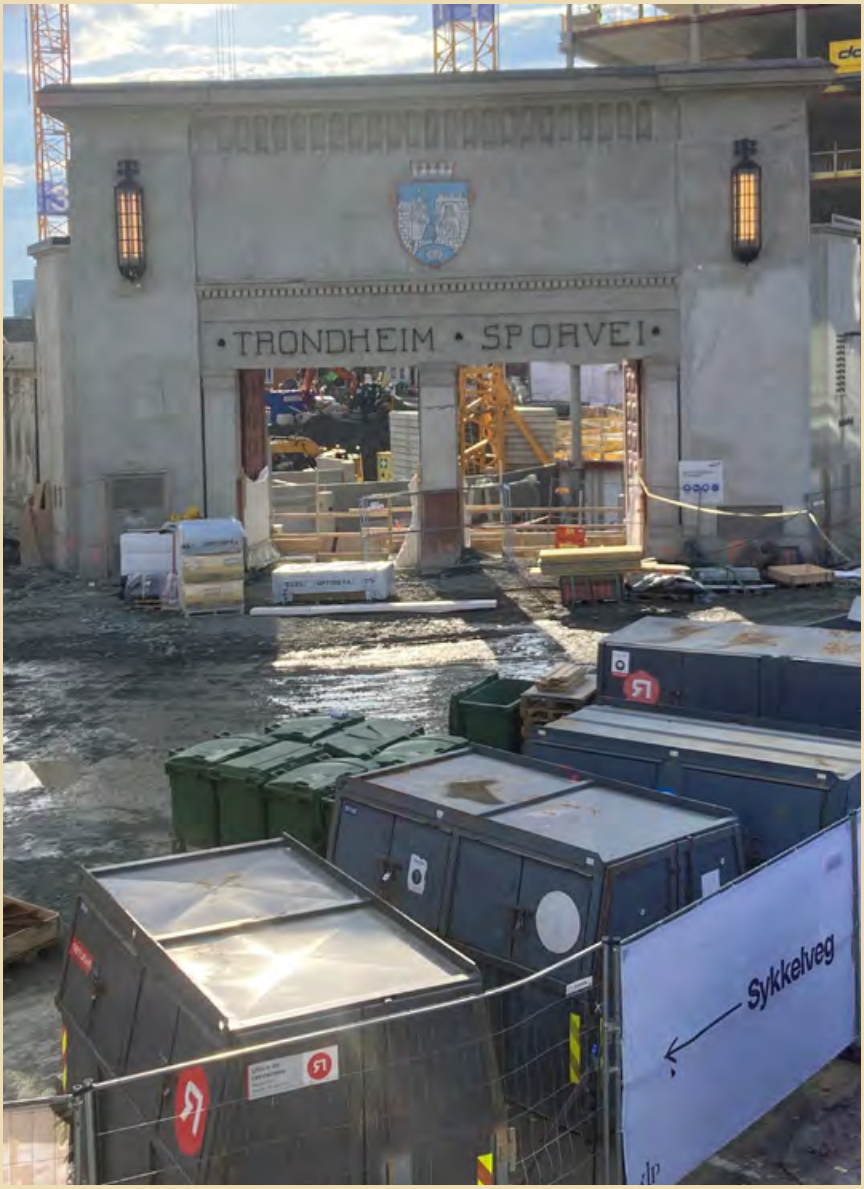


HISTORY AND ARCHITECTURE

According to Bye, there are several things that give Trondheim its distinctive character.

"The Cathedral ofidaros trumps, of course, with its mighty size, age and heavy cultural-historical significance. The piers are also something people tend to associate with Trondheim. The many wooden houses in the city center and at Møllenberg are also part of what makes the city special. Trondheim also has several beautiful Art Nouveau houses from around 1900 scattered throughout the city.

The city heritage officer also highlights the wooden palaces at Torget and Stiftsgården, and the many pleasure gardens.

"The Lade gård, Ringve, Devle, Leangen and Ilsviken pleasure gardens are beautiful testimonies to Trondheim's wealth as a trading city from the 17th and 19th centuries. Otherwise, Cicignon's city plan with its wide and straight streets and axes, which redrew Midtbyen after the fire in 1681, is one of the city's foremost cultural monuments.

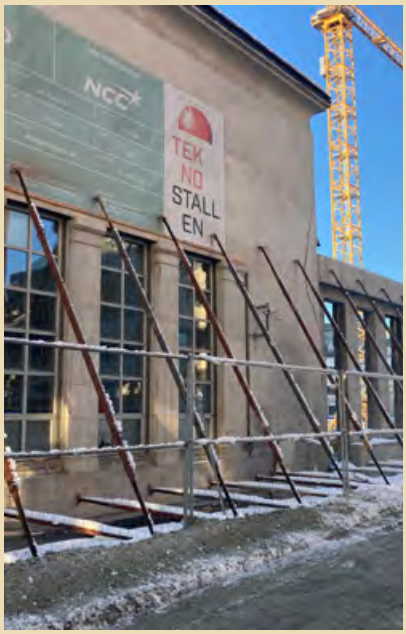
MAJOR PROJECTS

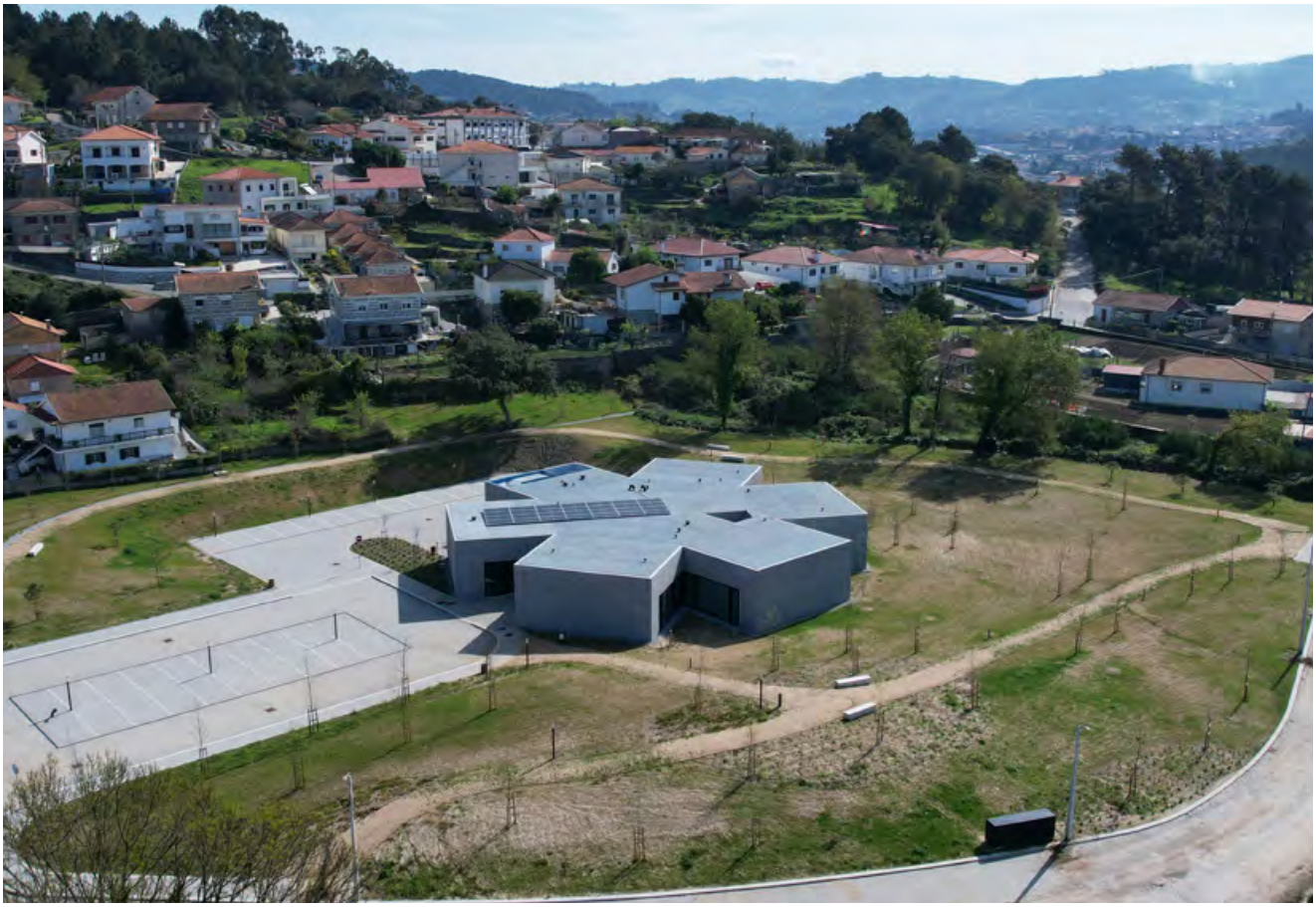
As City Antiquities Officer, Mette Bye has in recent years been involved in several major projects and planning matters.

"The piers in Kjøpmannsgata have been a particular focus where a lot of positive things have happened. Other projects include the collection of the Campus at Gløshaugen, the conversion of the old main post office in Dronningens gate into an art museum, the expansion of Trondheim Cathedral School and the restoration of Lademoen Station.

As the city's antiquities commissioner, Bye is not only concerned with how each building looks in the end, but also that the right materials are used along the way.

"We are very concerned that the right materials with good properties are used in restoration work. This is crucial for quality, durability and appearance. There is a wide range of both the type of buildings we advise on and how they have been treated over time. So the advice we give varies from project to project.





NEW HEALTH CENTRE IN MOREIRA DE CÓNEGOS, GUIMARÃES, STANDS OUT WITH UNIQUE STAR-SHAPED DESIGN

The innovative "Life Star" design of the new Moreira de Cónegos Health Centre in Guimarães, Portugal, makes it a standout project, celebrated for both its symbolic meaning and practical benefits. The structure's rooftop was enhanced with 250 m³ of Leca® lightweight aggregate (LWA) to ensure efficient rainwater drainage.

INNOVATIVE ARCHITECTURE AND PRACTICALITY

The center's star-shaped architecture, inspired by the six-pointed Life Star—a symbol commonly associated with emergency medical services across several nations—was chosen to underscore its healthcare mission and improve the facility's internal layout for easy navigation, according to Ricardo Bastos Areias of StudioCAN, the architectural firm behind the design. The Health Centre is set to feature multiple entrances, separate waiting areas for adults and maternal-child care, numerous offices for nursing and consultations, treatment rooms, a dedicated breastfeeding and nappy changing room, an intern room, and adequate sanitary facilities. It will also boast a blend of pedestrian walkways, vehicular routes, footpaths, parking, and landscaped areas, sprawling across an area exceeding 5,000m².

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EFFECTIVE RAINWATER DISPOSAL SYSTEMY

The center's star-shaped architecture, inspired by the six-pointed Life Star—a symbol commonly associated with emergency medical services across several nations—was chosen to underscore its healthcare mission and improve the facility's internal layout for easy navigation, according to Ricardo Bastos Areias of StudioCAN, the architectural firm behind the design. The Health Centre is set to feature multiple entrances, separate waiting areas for adults and maternal-child care, numerous offices for nursing and consultations, treatment rooms, a dedicated breastfeeding and nappy changing room, an intern room, and adequate sanitary facilities. It will also boast a blend of pedestrian walkways, vehicular routes, footpaths, parking, and landscaped areas, sprawling across an area exceeding 5,000m^2.

PROJECT INFORMATION

Project: Moreira de Cónegos Family Health Unit#

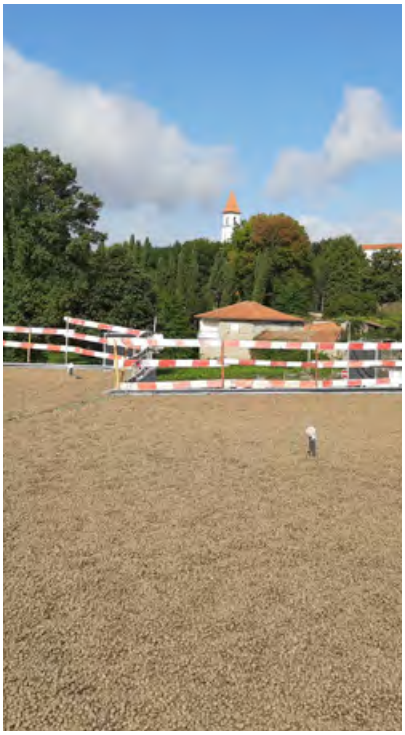
Location: Guimarães

Client: Municipality of Guimarães

Architect: StudioCAN

Main contractor: NVE Engenharias S.A

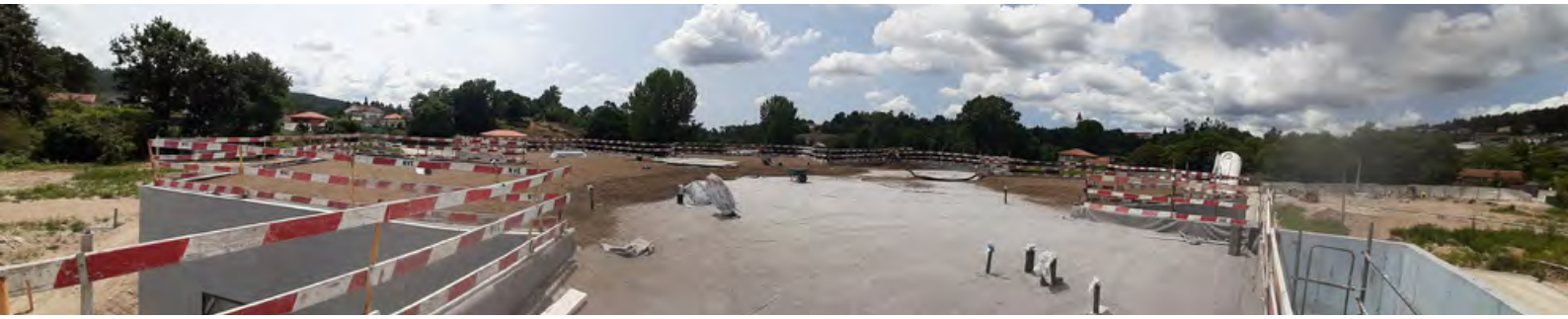
Product: 250 m^3 of Leca® LWA for rainwater drainage



The center's star-shaped architecture, inspired by the six-pointed Life Star,

COLLABORATIVE INVESTMENT AND SOCIETAL BENEFITS

The construction, led by NVE Engenharias, is a collaborative effort between the Northern Regional Health Administration and the Municipality of Guimarães, with additional funding from the Northern Regional Coordination and Development Commission (CCDR-N) under the Northern Portugal Regional Operational Programme 2020. This investment highlights the project's significance not only to Moreira de Cónegos but to the broader Northern Portugal region. The new Health Centre is more than just a building; it is a symbol of the Municipality of Guimarães' dedication to improving healthcare accessibility and enhancing the well-being of its community, marking a pivotal advancement in regional healthcare services.



Approximately 250 m3 were applied to the building's roof through direct pumping.

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BUT MANY CLAY PELLETS CREATE A BETTER FUTURE

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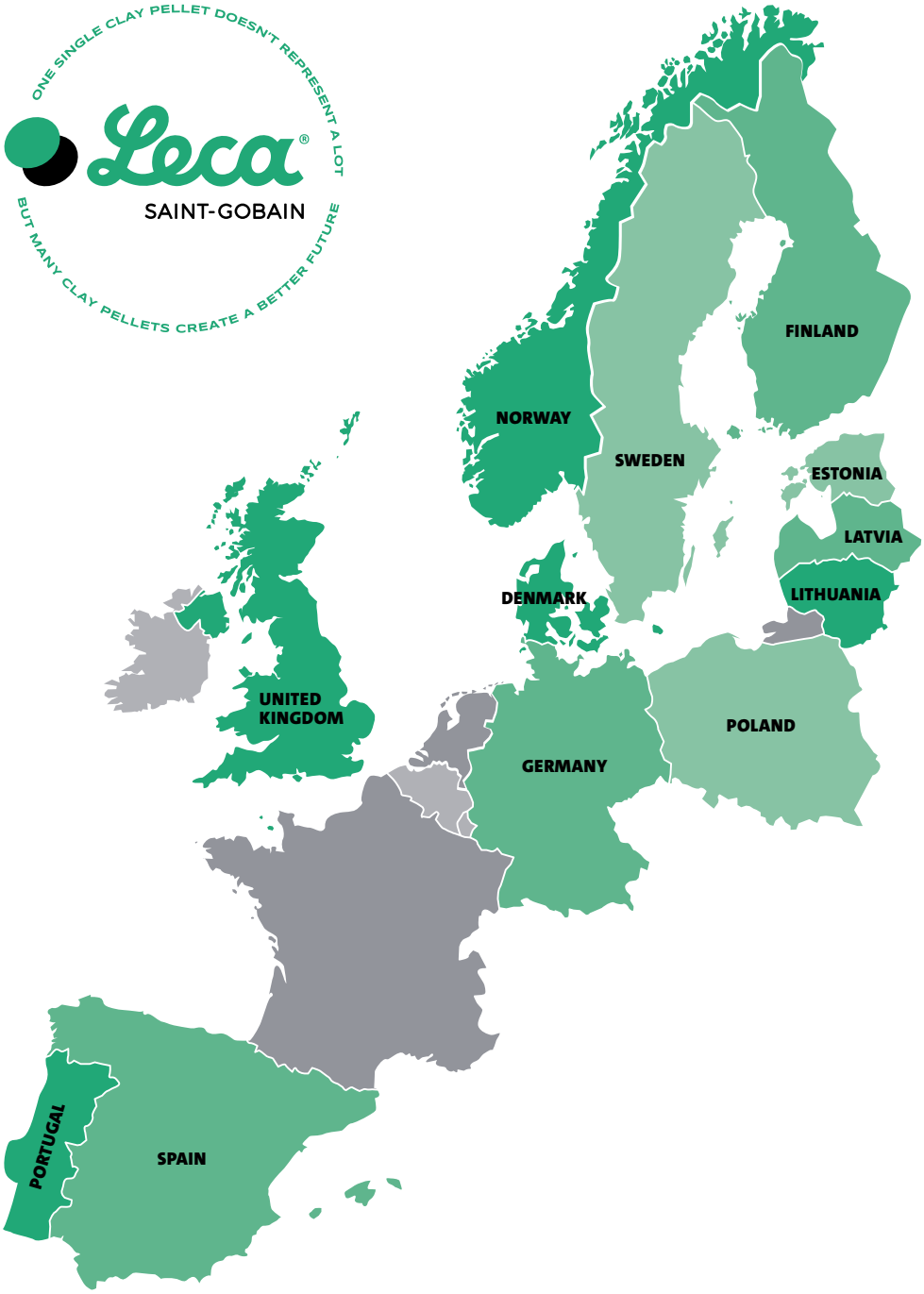

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