

Inspiring surfaces telling stories
Graphic Concrete



1

What is Graphic Concrete?

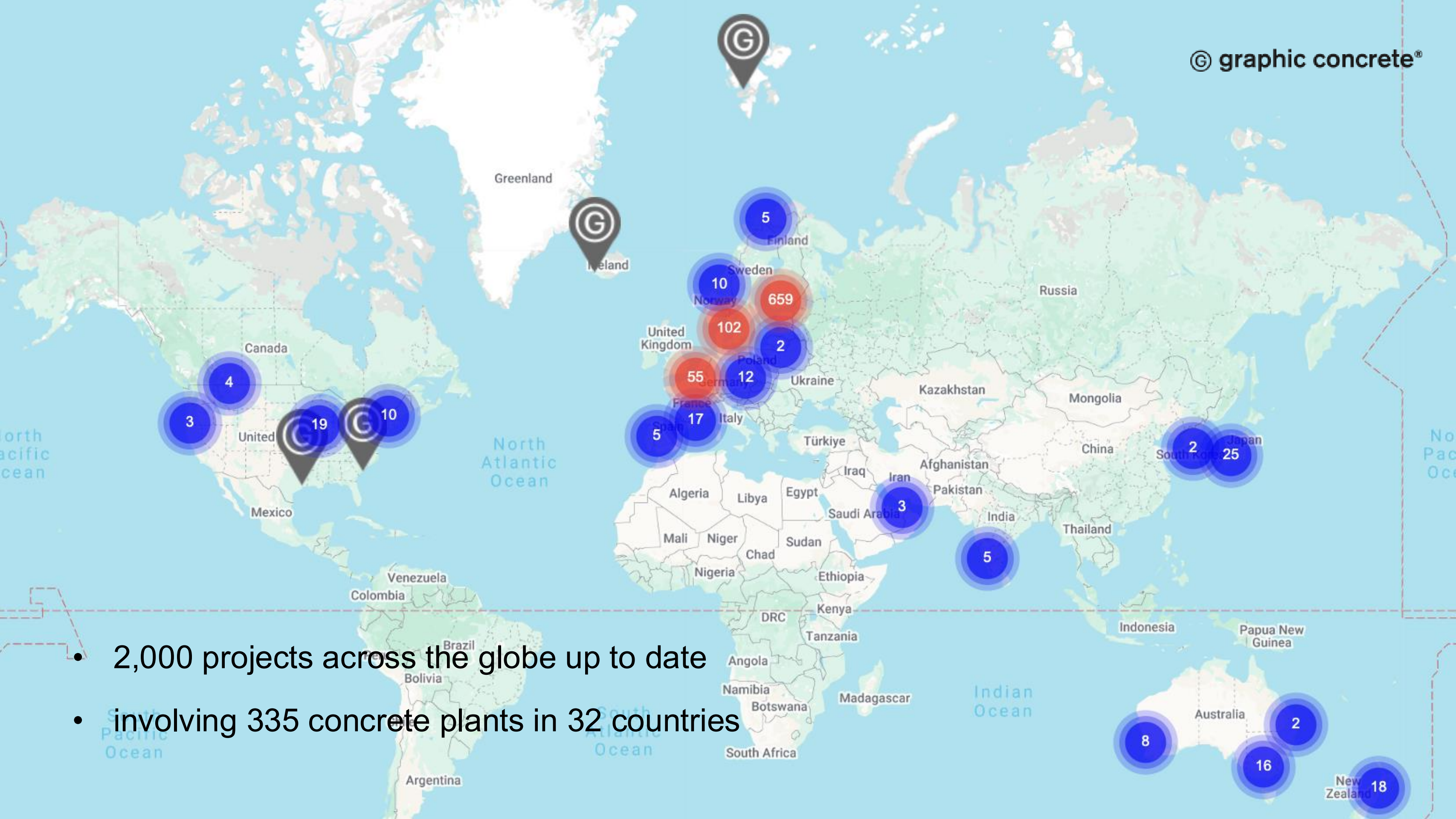
Graphic Concrete – what is it?



Graphic concrete is a Finnish innovation and Finnish company that enables the transfer of patterns and images to concrete element surfaces using special papers, creating precise and durable surfaces.

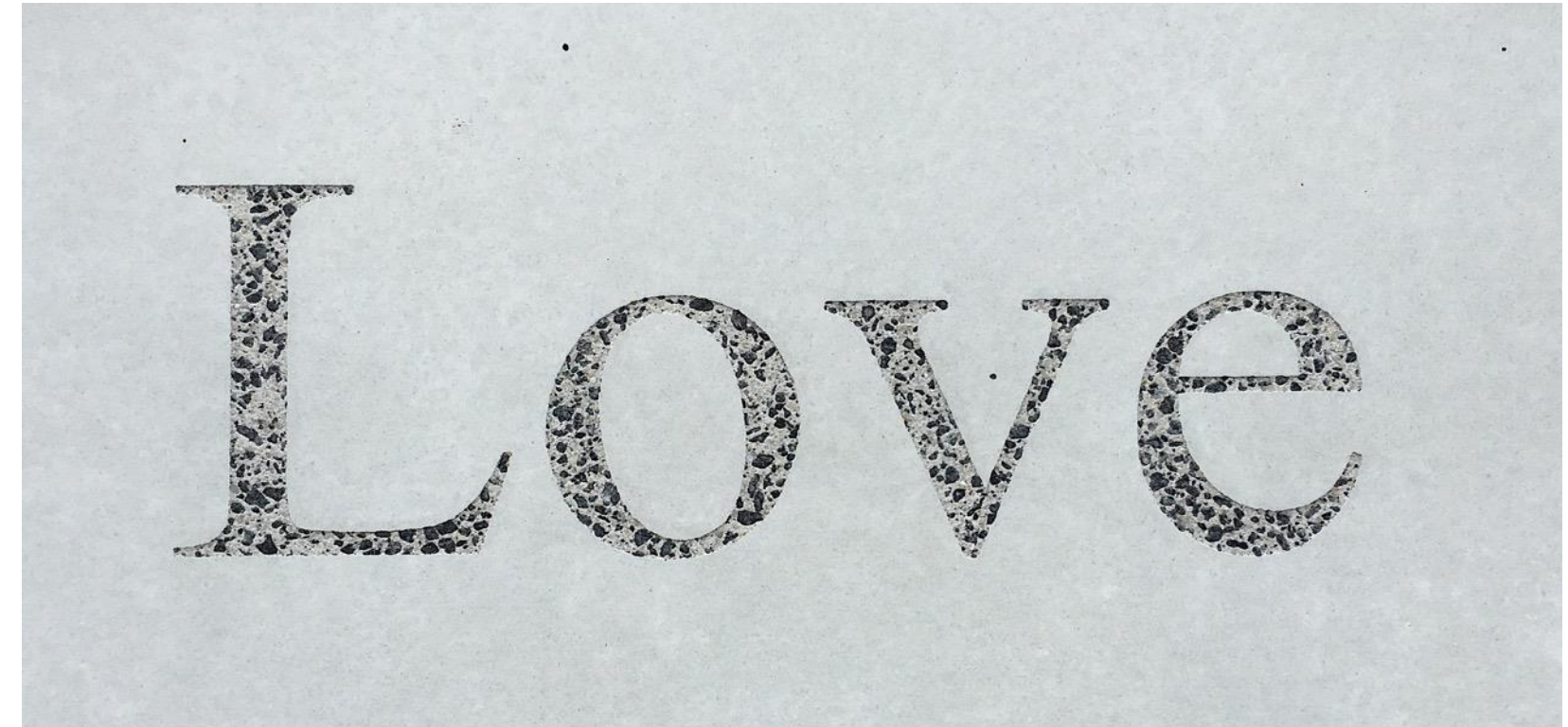
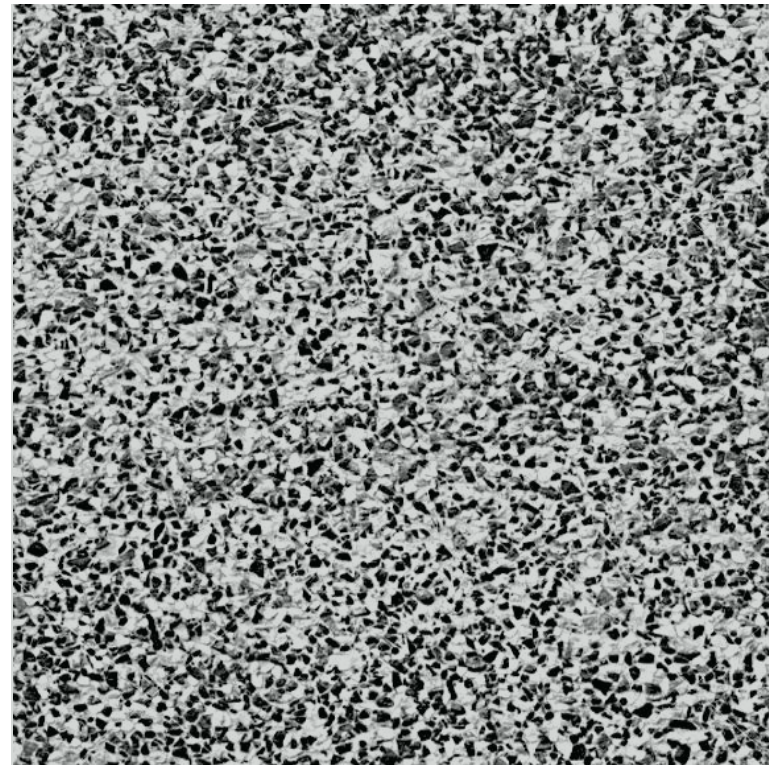
Graphic concrete combines visual appeal with long lifetime and has been used in numerous projects around the world, from facades to interiors, from noise walls to pavements.





- 2,000 projects across the globe up to date
- involving 335 concrete plants in 32 countries

What is concrete?



smooth form
finish

+

exposed-aggregate
finish

=

Graphic Concrete

The main ingredients of concrete



aggregate

+



cement

+



water

Admixtures and pigments can be added



Different aggregates can be used



Graphic Concrete – what is it?

- Allows you to transfer custom or stock patterns to any precast concrete surface
- A technology for the precast industry

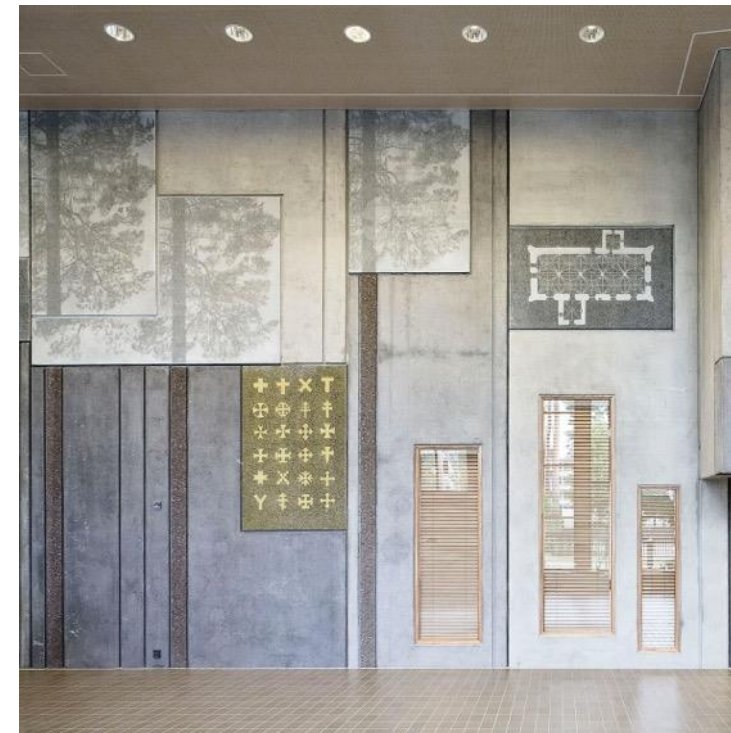




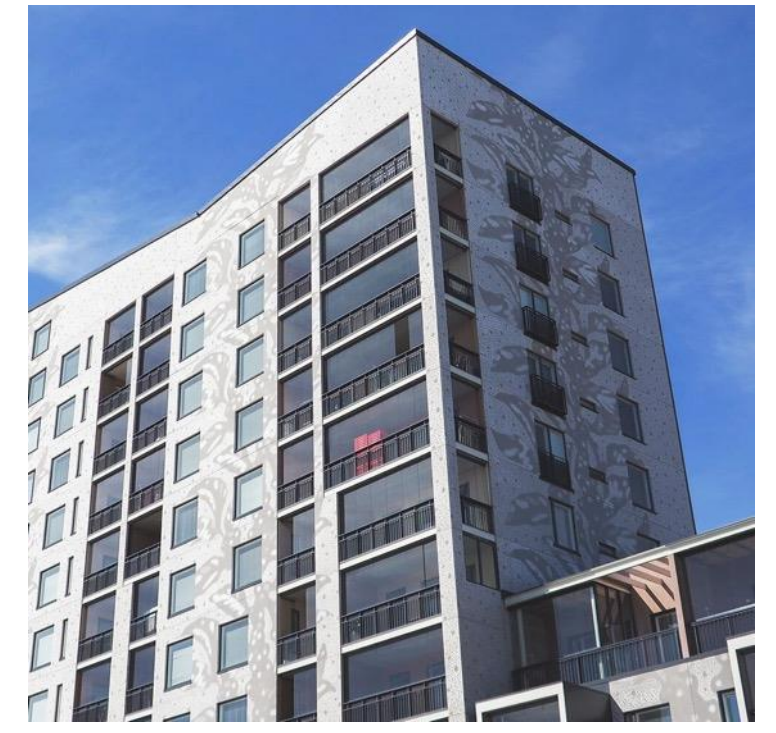
Commercial



Educational



Religious



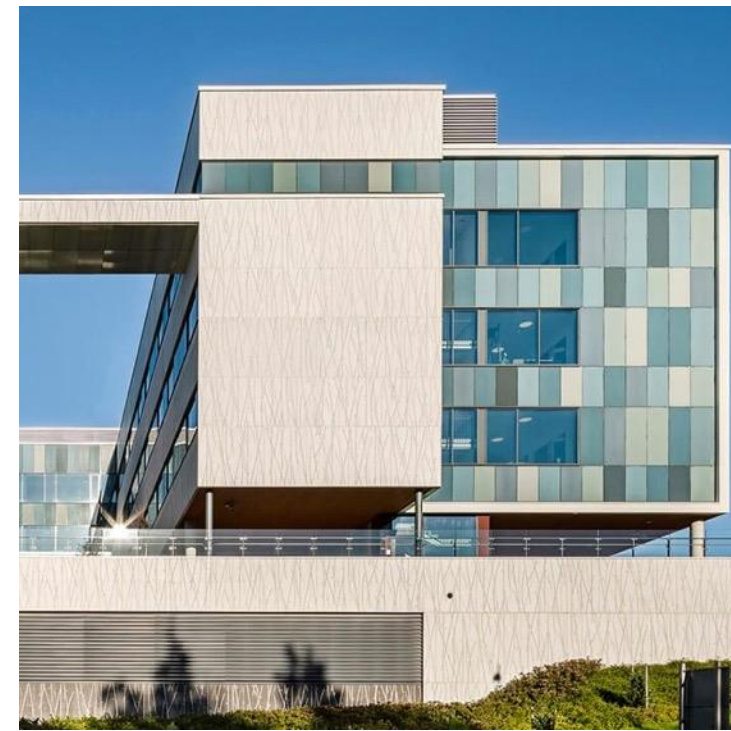
Residential



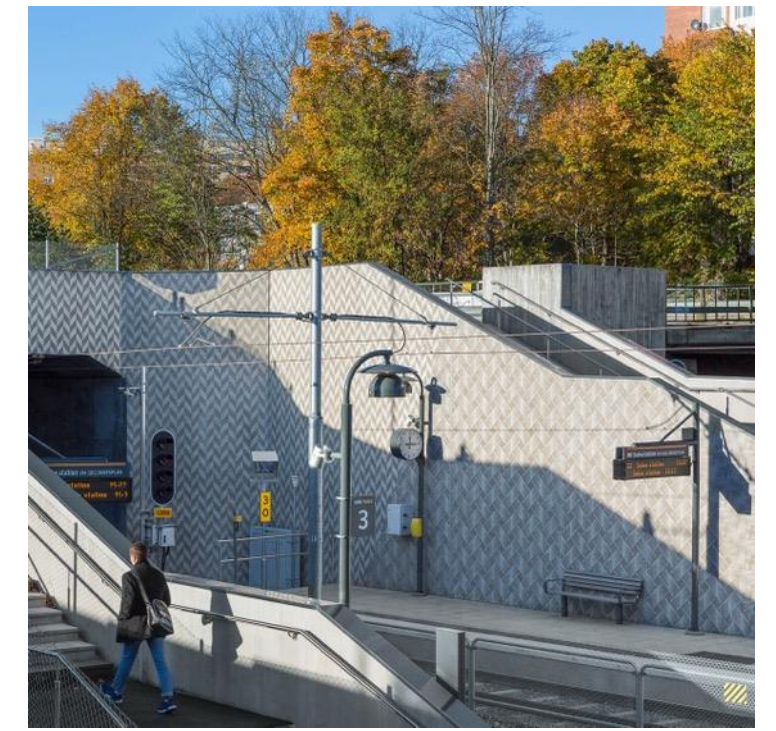
Public



Industrial

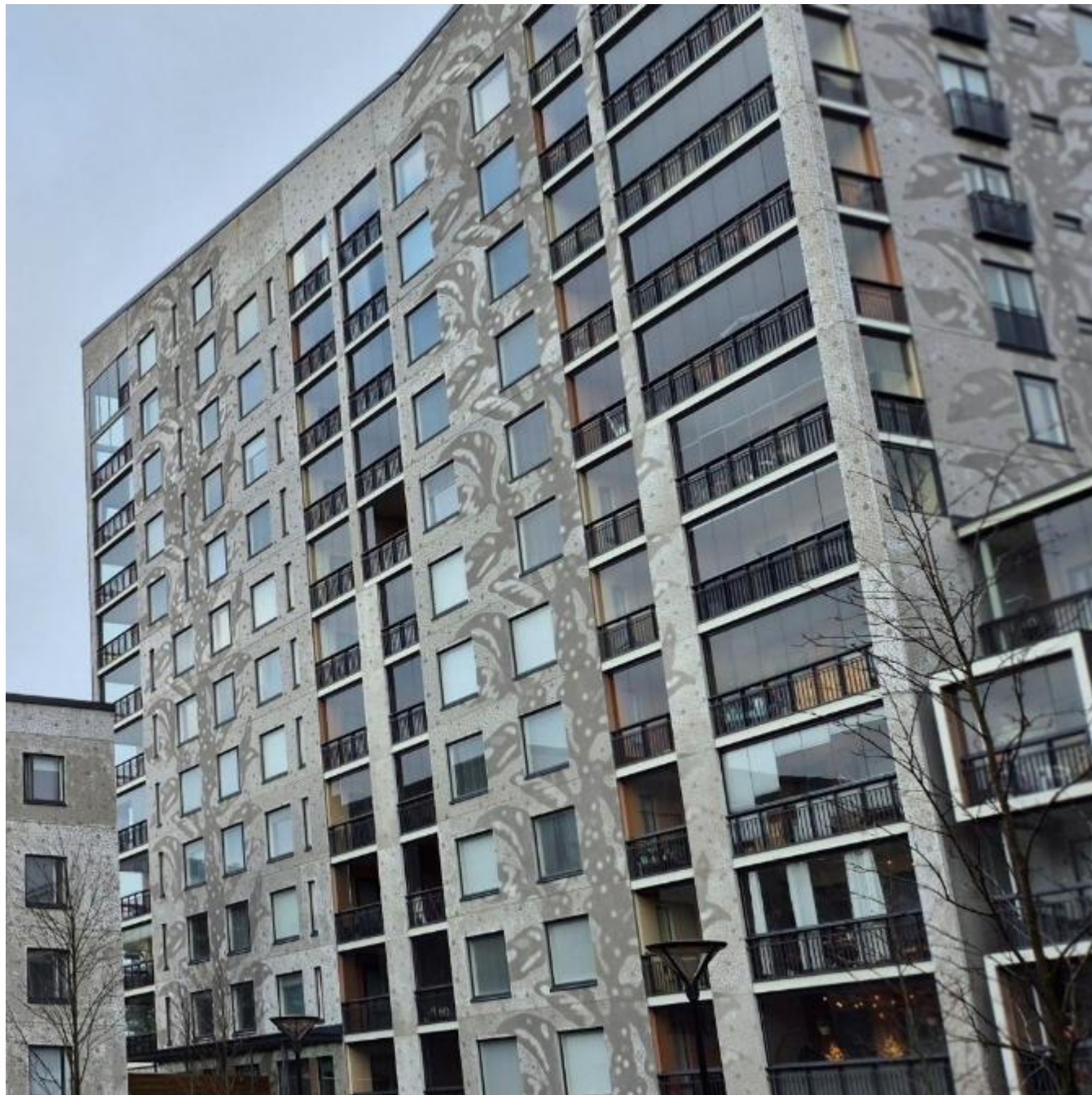


Health care



Infrastructure

Facades



Interiors



Landscape architect



Infrastructure



Small details



Overall design



Highlights



Holistic architecture



Floorings



Ceilings



2

Producing Graphic concrete

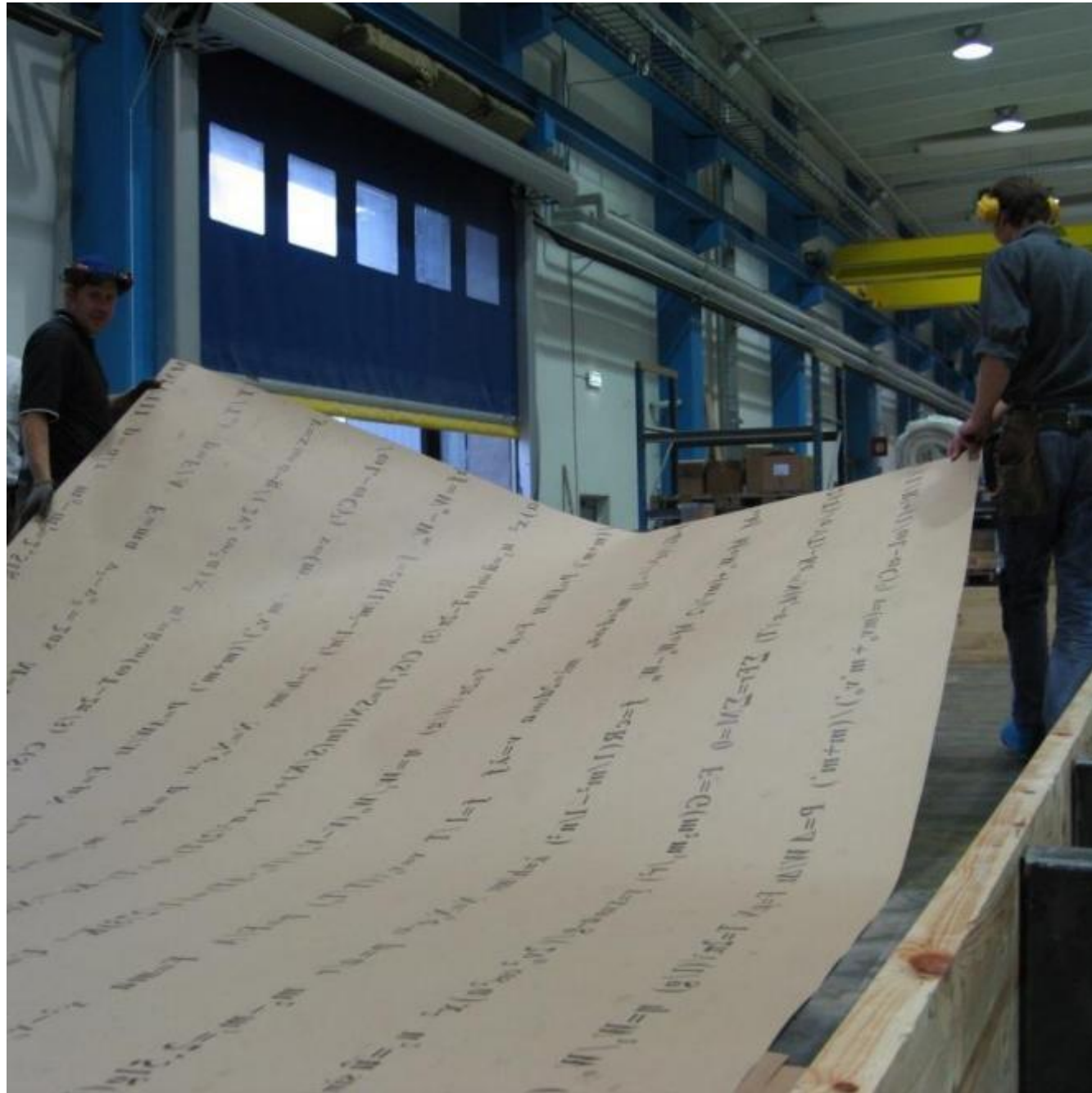
3

How is Graphic Concrete made?



Desired pattern is printed on the paper with special concrete retarder

The paper is delivered to the precaster.



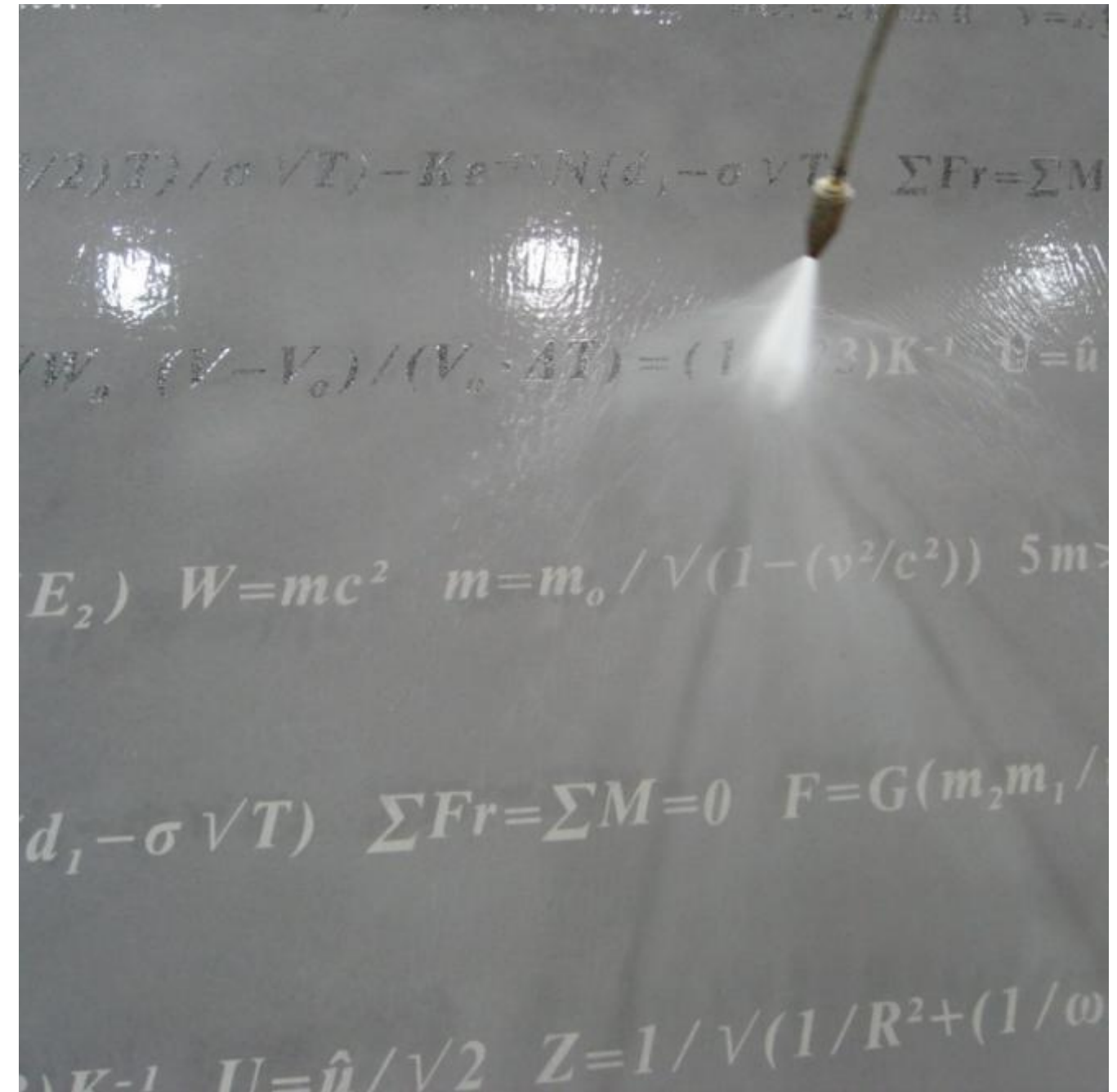
The paper is placed on the element mould (formwork).



Concrete is poured (casted) on the paper.

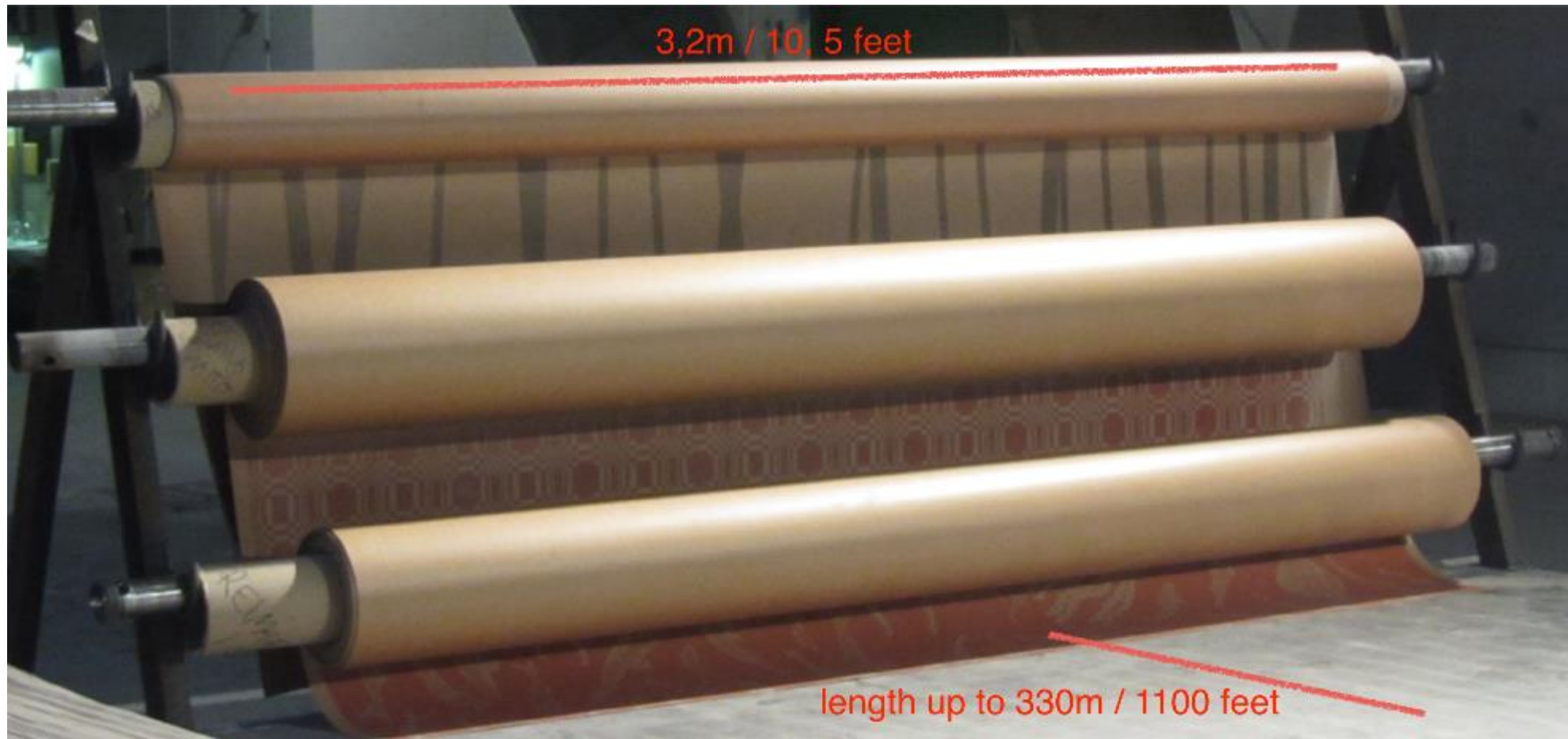


Once the concrete has hardened, it is removed from the mold and the paper is removed.



The element is washed with high-pressure washer.

Graphic concrete paper



- Disposable (used once)
- Flexible (can be cut to any size, works also in curved formworks)
- Papers can be joined => no limits to the panel size

Paper

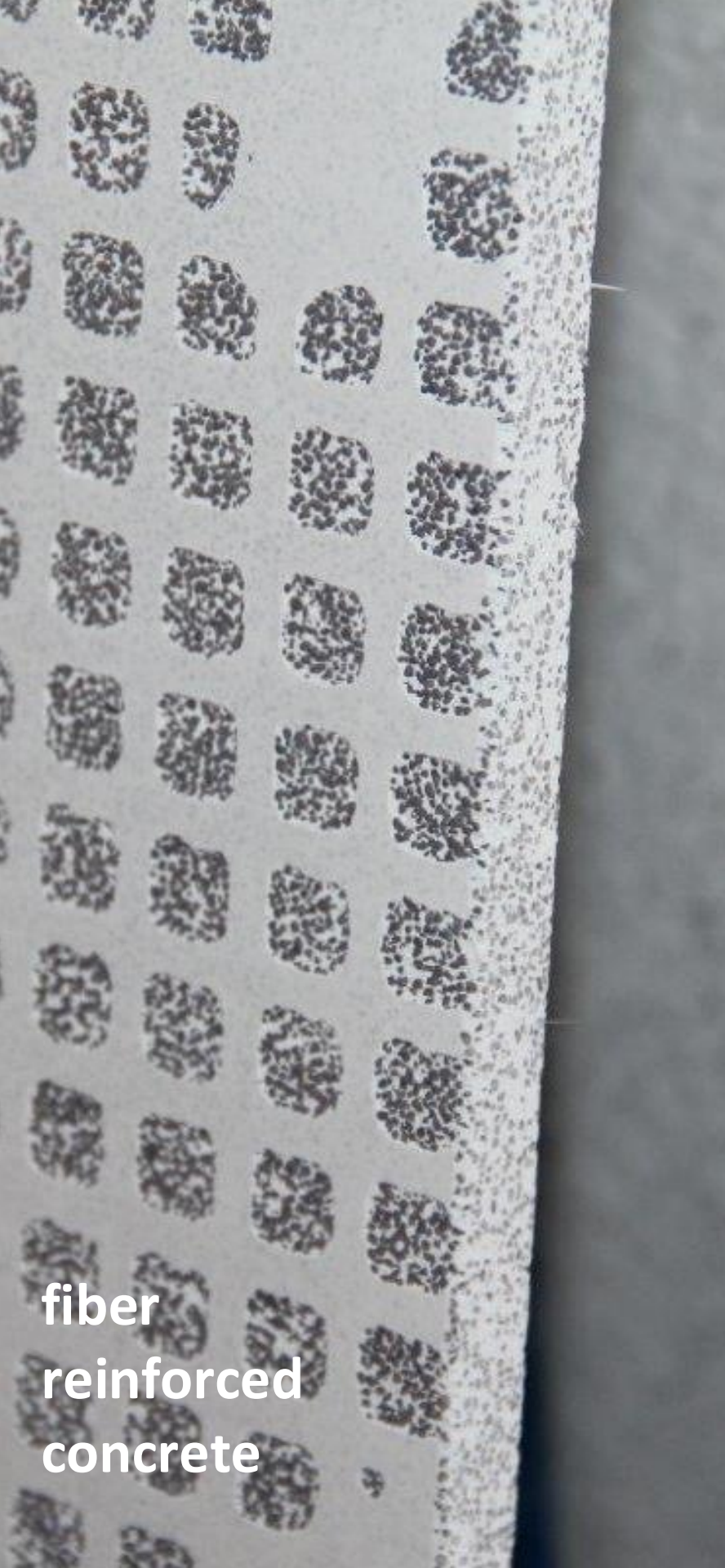
- **Manufactured in Finland**
- **Environmentally friendly**
- **Recyclable as energy waste**
- **No chemicals, fumes, solvents**



Production

- **No special equipment required; any precaster that can manufacture an exposed concrete panel, can also make graphic concrete**
- **Can be applied to various panel types and concrete recipes**





fiber reinforced concrete



sandwich elements



extremely hard concrete surfaces



© graphic concrete®

traditional concrete panels

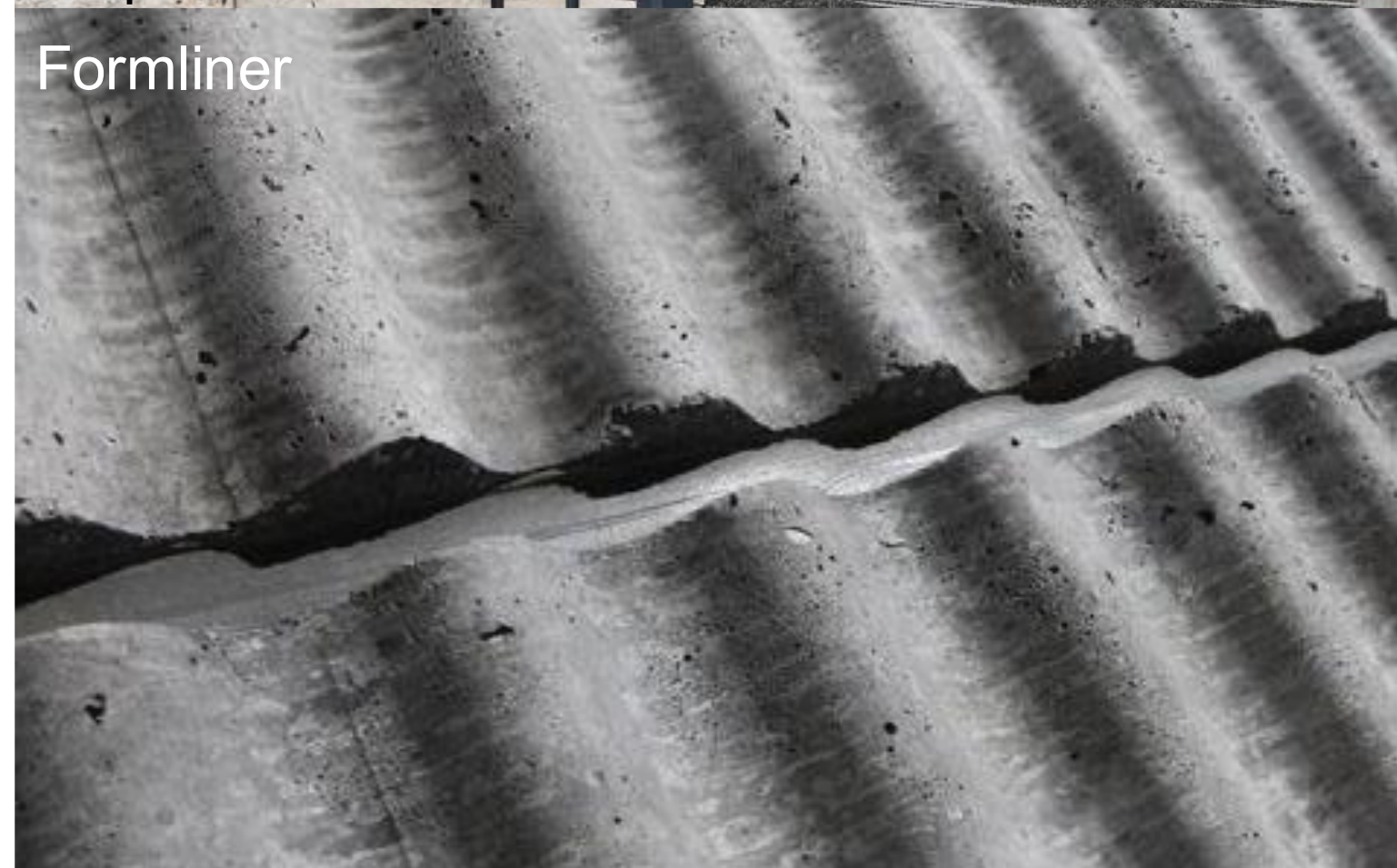
Production – structural perspective

- Depth of the graphics only 1-2mm
- Entire panel is part of load-bearing structure
- Minimizing material and freight costs



Graphic Concrete

Formliner



Concrete mix

- **Applicable for various concrete mixes**
- **Self-compacting concrete**
- **Fiber reinforced concrete panels**
- **Grey and white cement etc.**
- **GC product has 3 different surface retarders to choose from**

- **GC-SK0030**
- For cements with $\text{Na}_2\text{O}_{\text{eqv}} > 0,6\%$
- (the weakest retarder)
- *Usually used for grey cement based concrete mixes*
- **GC-SK0100**
- For cements with $\text{Na}_2\text{O}_{\text{eqv}} < 0,6\%$
- (middle effect retarder)
- *Usually used for white cement based concrete mixes*
- **GC-SK0150**
- For cements with $\text{Na}_2\text{O}_{\text{eqv}} < 0,6\%$
- (the strongest retarder)
- *Usually used for white cement based concrete mixes (and if more than 50% of image is exposed aggregates)*



GCCollection™
SampleMembrane

Size
715x3200mm

Patterns
GCCollection_Royal nega
GCCollection_Ikat

Exposure
GC-SK0030 (brown)
GC-SK0100 (grey)
GC-SK0150 (red)



GCCollection™
SampleMembrane

Size
715x3200mm

Patterns
GCPlus / Cochlea
GCCollection_Pebbles nega

Exposure
GC-SK0030 (brown)
GC-SK0100 (grey)
GC-SK0150 (red)

Insitu and vertical casting not recommended
Prestressed panels challenging

3

Design

What affects the outcome?

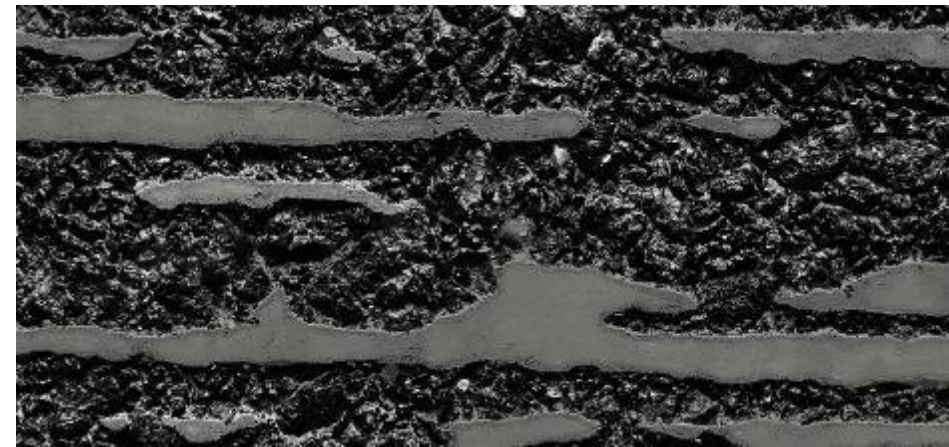
- Chosen pattern
- Aggregate color and size
- Cement color
(grey/white/coloured
(pigments))
- Finish / treatment of the
surface – including color



Appearance vs Color

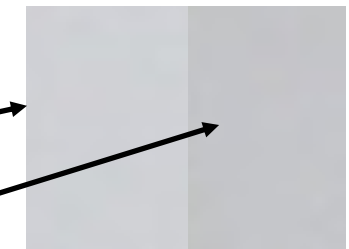
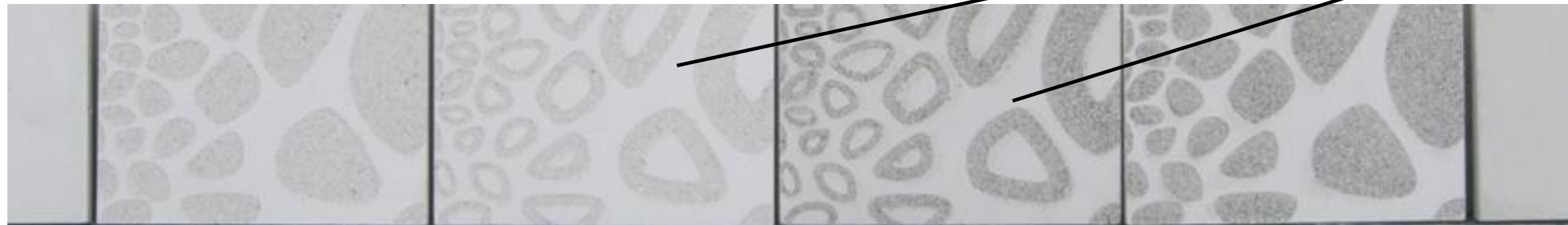
- Lightness/darkness adjustment by using nega/posi version of graphics
- Pigments of the cement affect the color of the aggregates

white cement
+
black aggregate



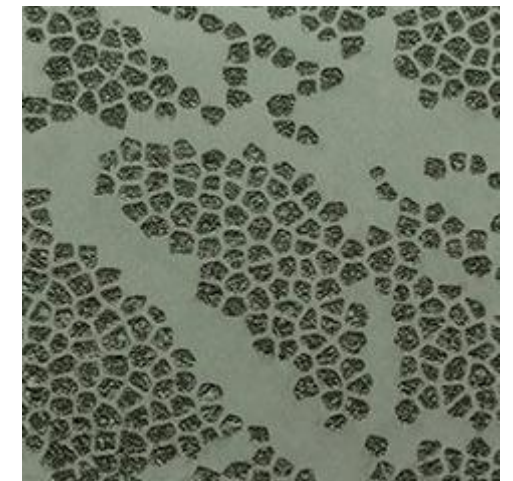
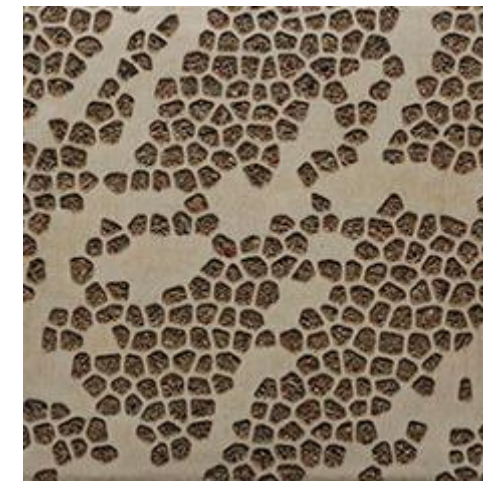
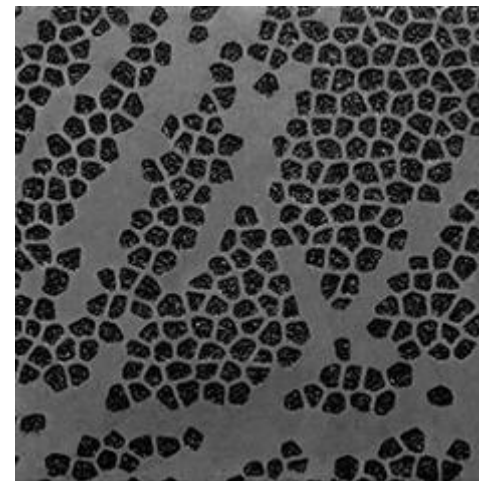
white cement + 3 % black pigment
+
black aggregate

- Aggregate color affects the color of the cement



Appearance vs Color

- Lightness/darkness adjustment by using nega/posi version of graphics
- Small / big contrast
- White cement /. Grey cement
- Aggregate (size, color)
- Pigmented (colored) cement
- Color treatment



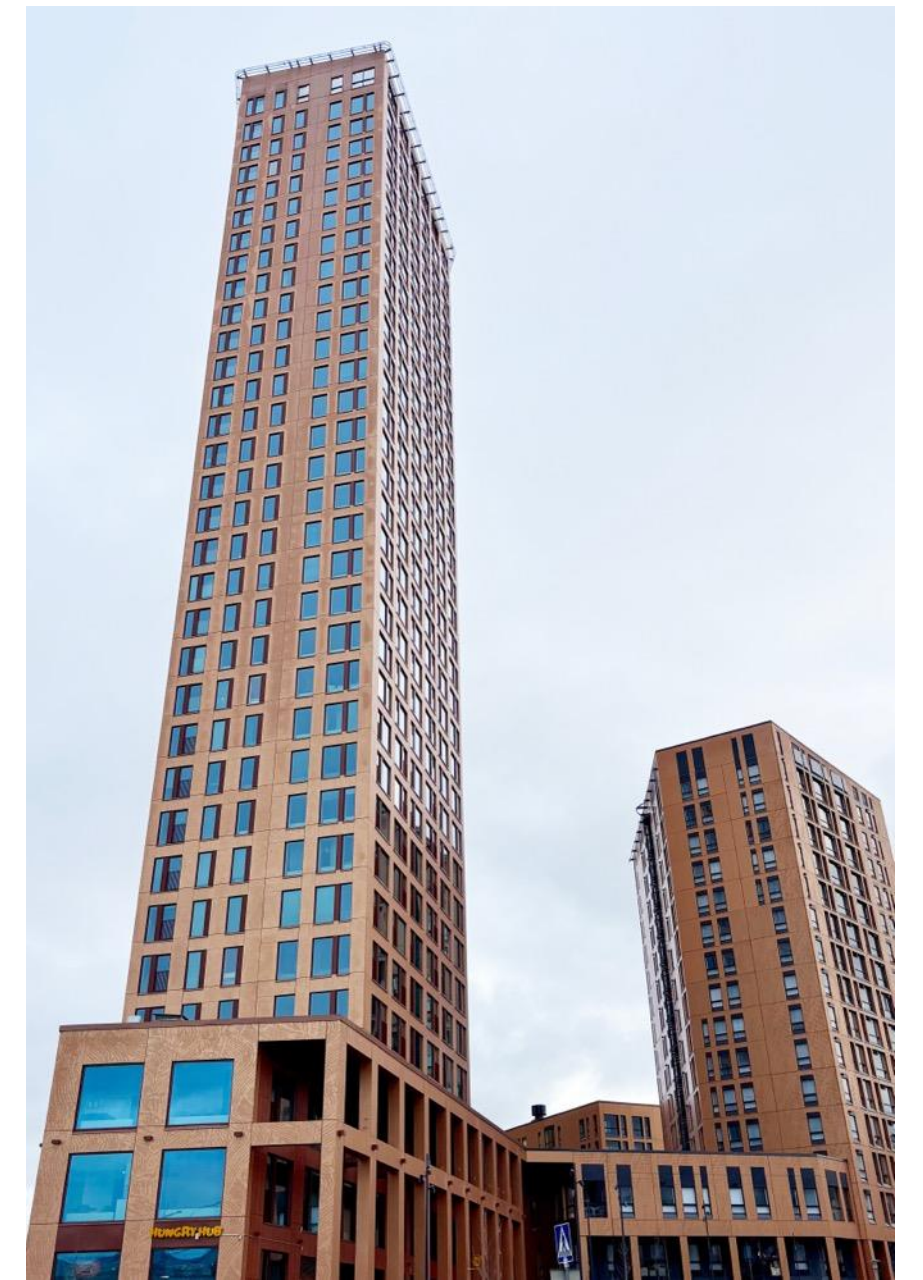
© graphic concrete®



Color stain

Tikkurila Daycare
Vantaa, Finland
Parviainen Architects

© graphic concrete®



Color stain

Delfiinikortteli
Helsinki, Finland
Architect HMM / graphic design by
Samuli Naamanka

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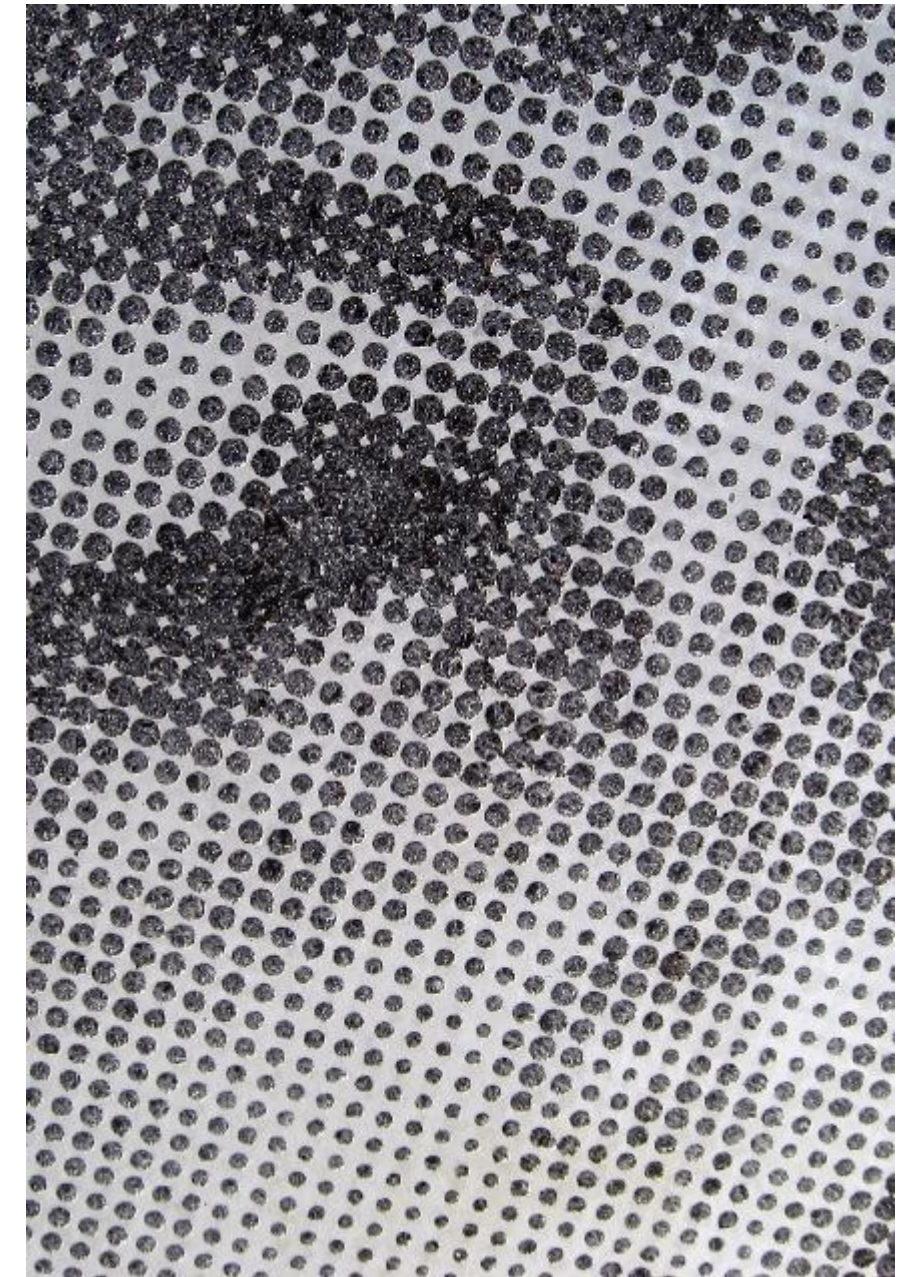
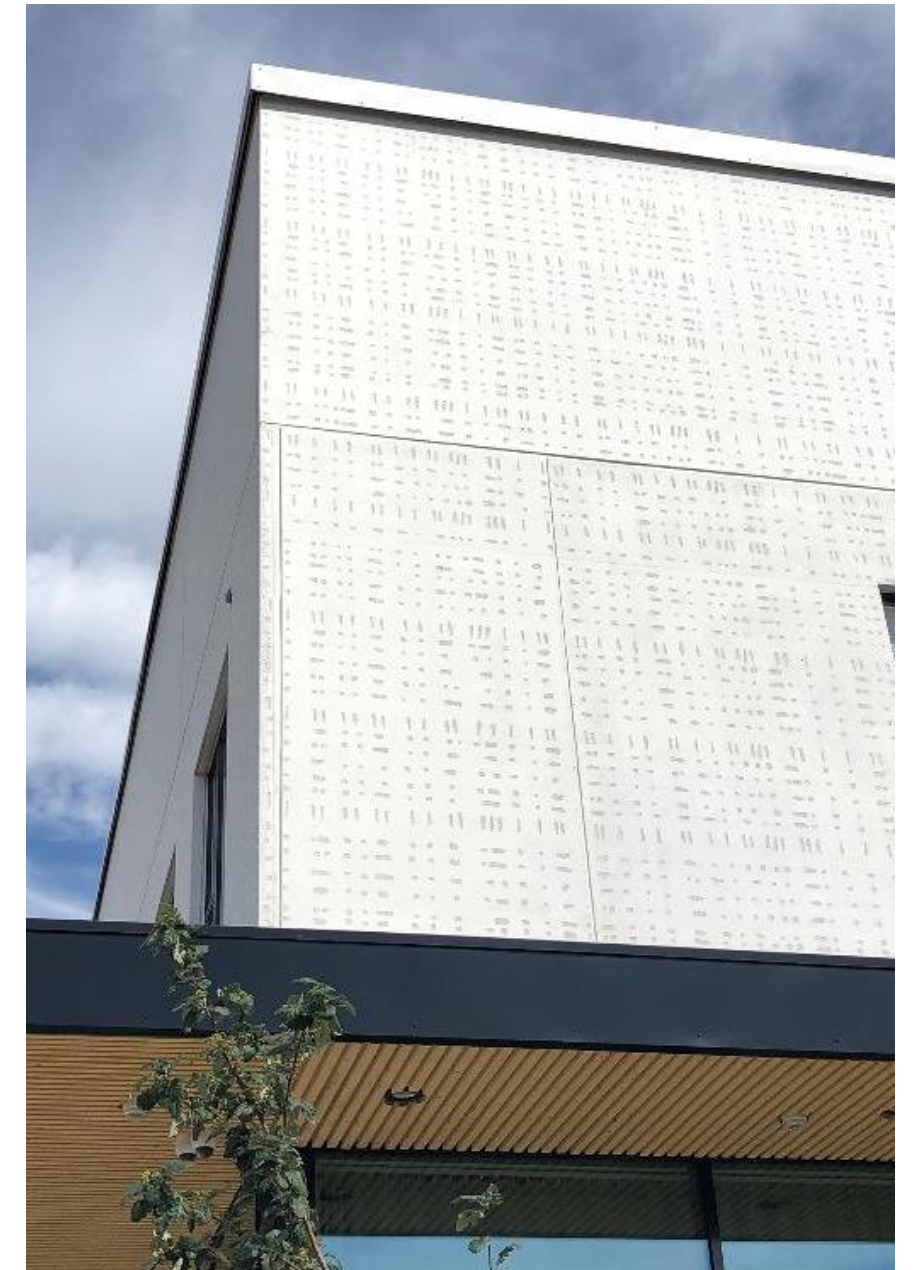


Photo – dot rasterized

Albert Edelfelt school
Porvoo, Finland
Eduarch Architects

© graphic concrete®



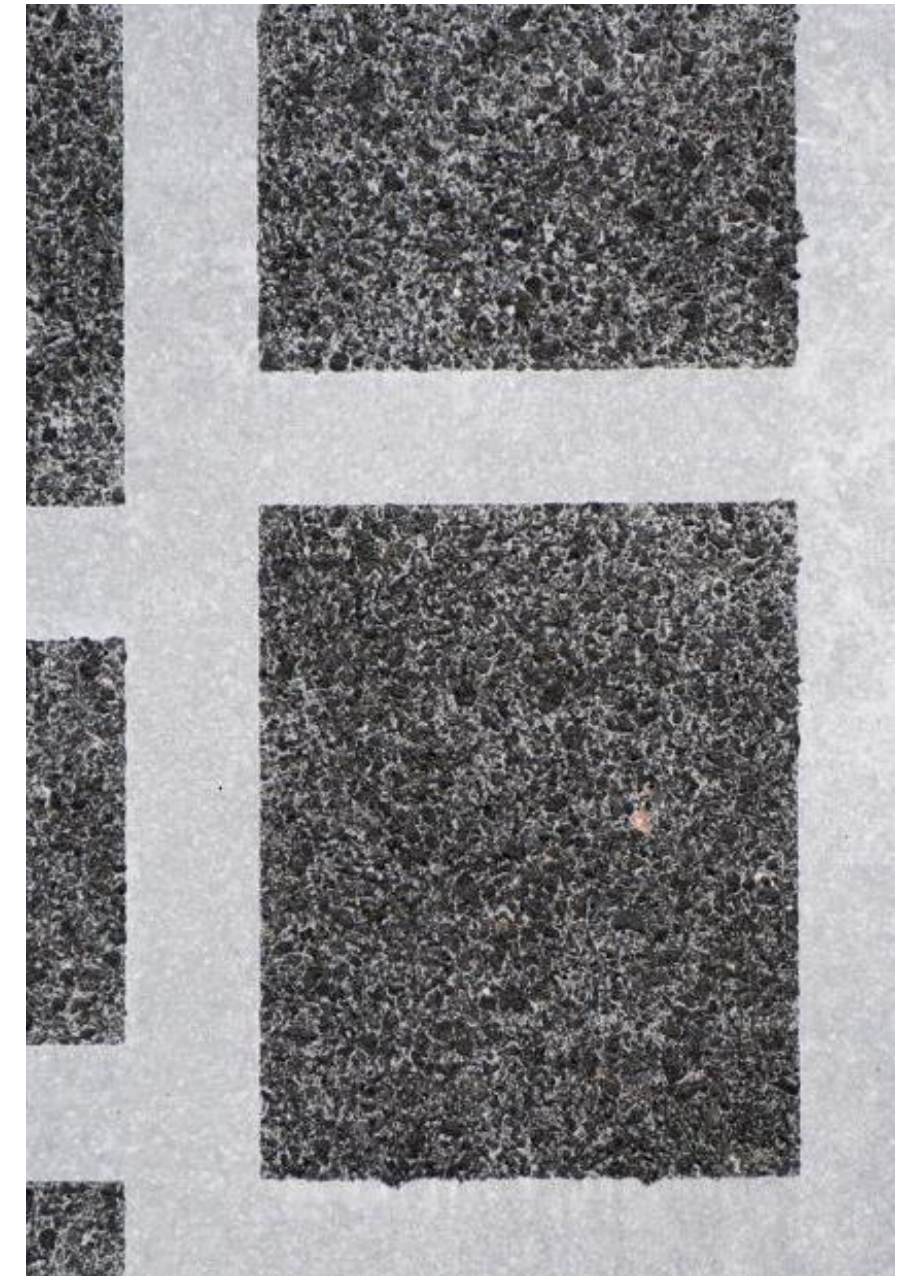
Contrast – mild

Järvenpää Elementary School

Järvenpää, Finland

Architects: Renell Käppi Architects

© graphic concrete®



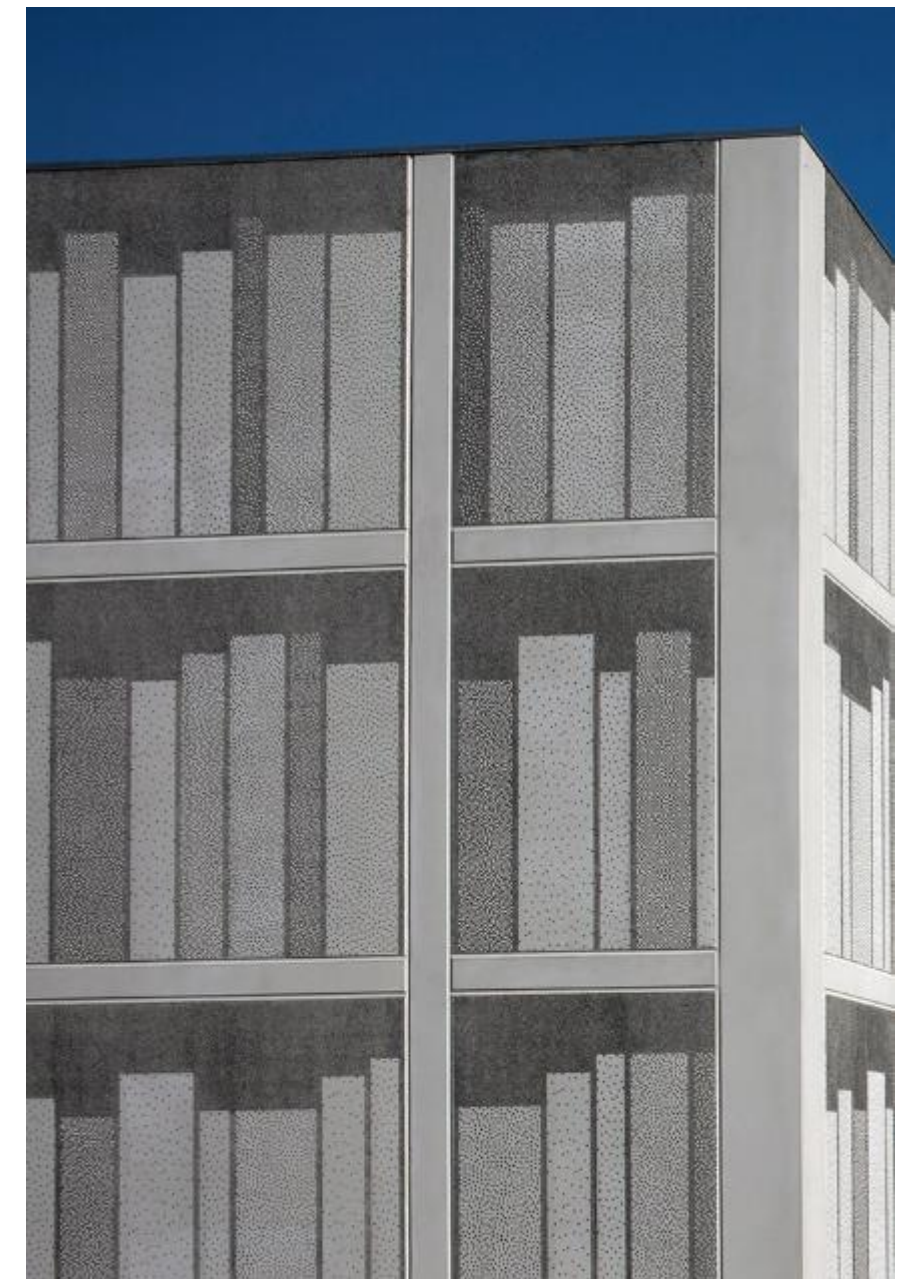
Contrast – high

HOAS Siltakuja Residential Building
Helsinki, Finland
Architect: Vuorelma Architects



"The new archive needed to be sustainable, simple, modern and minimalist. We also wanted to add a piece of art to express the purpose of the building"

Rasmus Kierkegaard, Partner, Schmidt Hammer Lassen Architects



3D appearance

Viborg Provincial Archive

Viborg, Denmark

Schmidt Hammer Lassen Architects

Pattern design: Grethe Sørensen

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**Surface Design Award, London 2015:
Best interior space - winner
Best of the best - winner**



The image - line raster

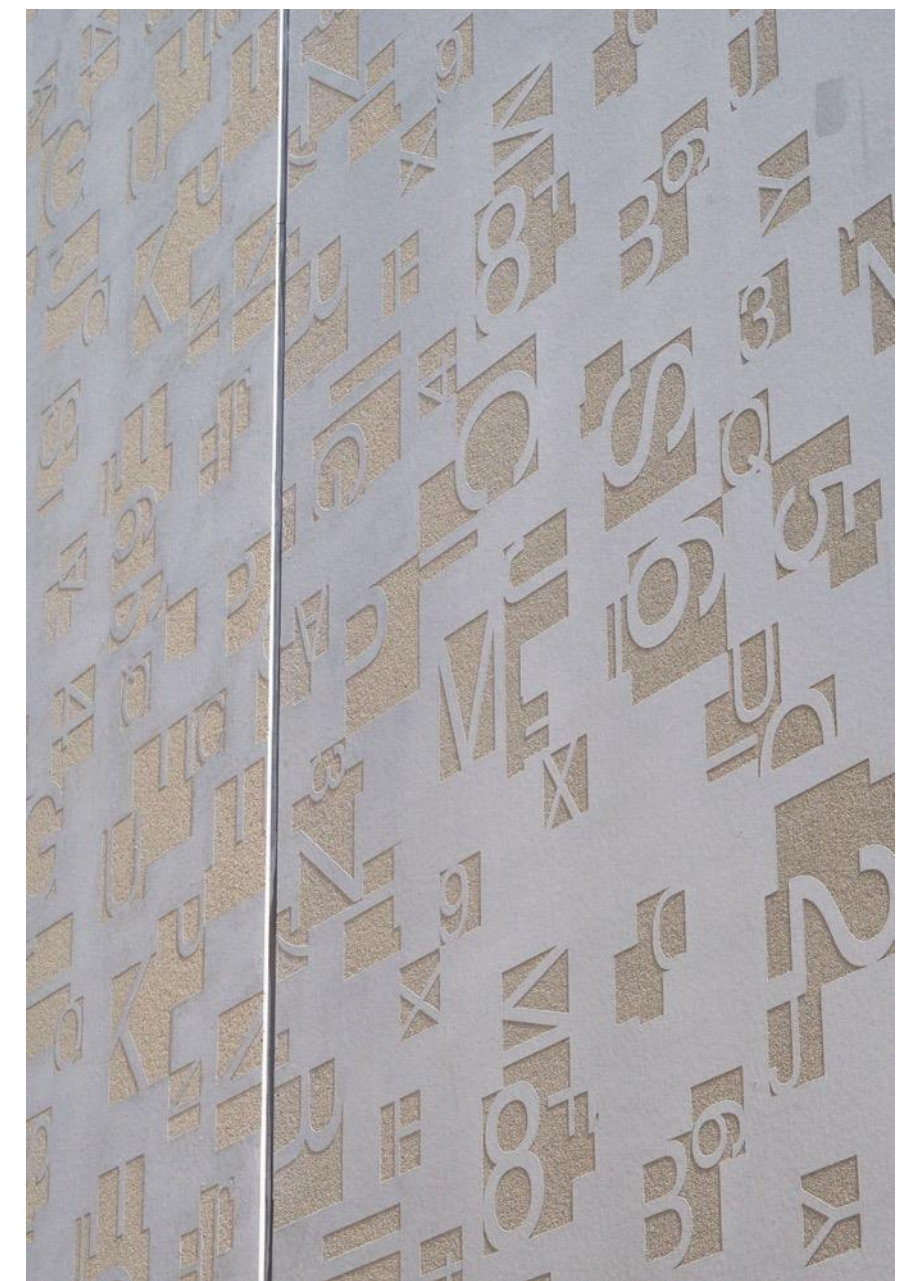
Chapel Beato Papa Giovanni XXIII
Bergamo, Italy
Traversi + Traversi Architetti



The image -vector graphics

DIGIPLEX Data Centre
Fetsund, Norway
Mad Arkitekter

© graphic concrete®

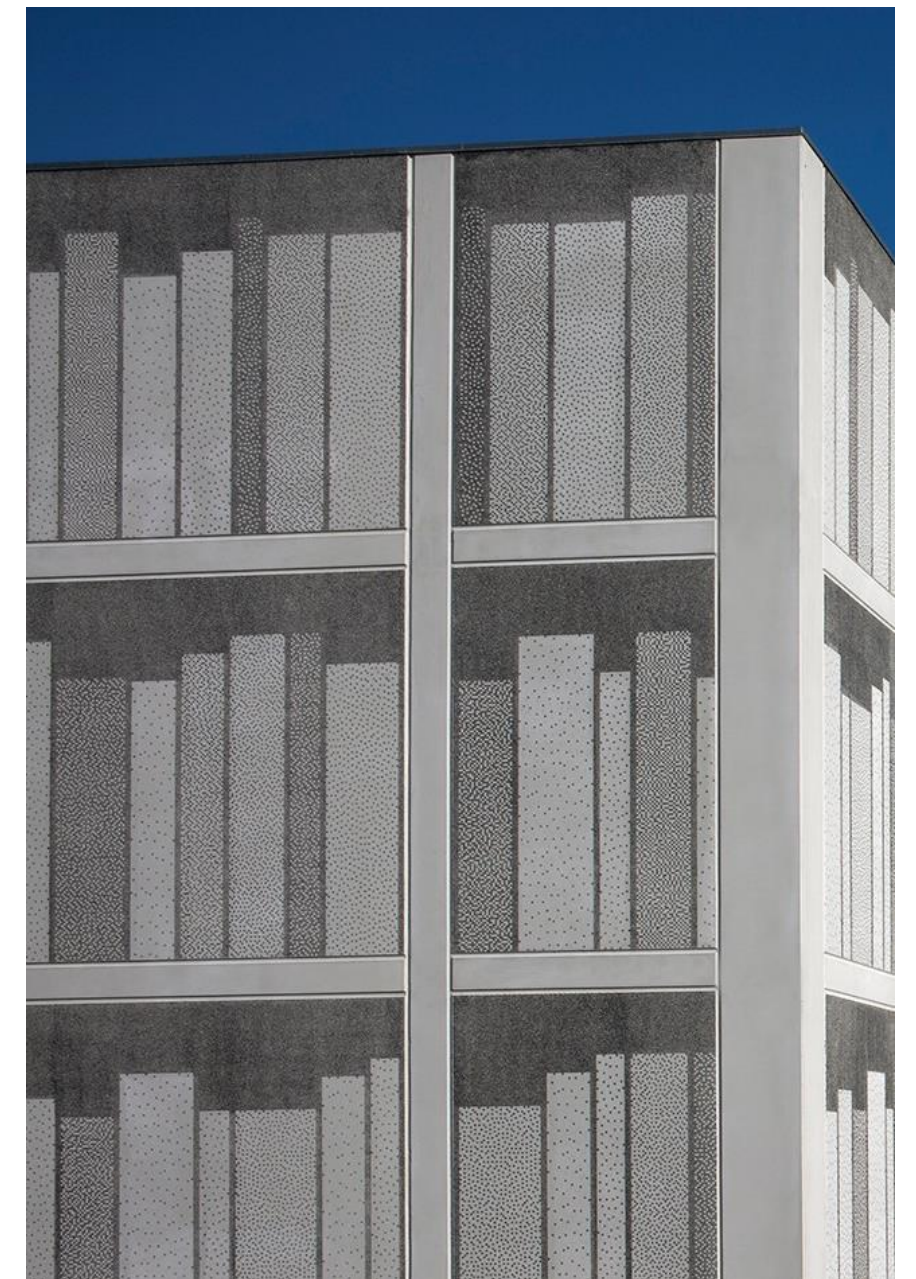


Color - from aggregate
White cement - buff aggregate

Josep Guinovart Primary School
Barcelona, Spain
Pich-Aguilera Architects



“Utzon- prize” concrete construction nominee 2017, Denmark
City of Viborg Honorable Mention for fine architecture 2016
Construction of the Year nominee 2016, Denmark



3D designs

Viborg Landsarkiv- Archive

Viborg, Denmark

Schmidt Hammer Lassen Architects

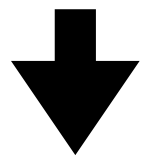
Pattern design by Grethe Sørensen

4

Graphic concrete products

Type of papers

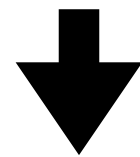
1. Patterned paper



Patterned Graphic Concrete



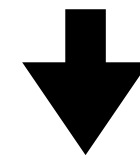
2. Fully printed paper



Exposed-aggregate finish



3. Empty paper



Smooth surface finish



Graphic Concrete Surfaces

Patterned

Ready-made GC Collection patterns



Custom-made designs and patterns



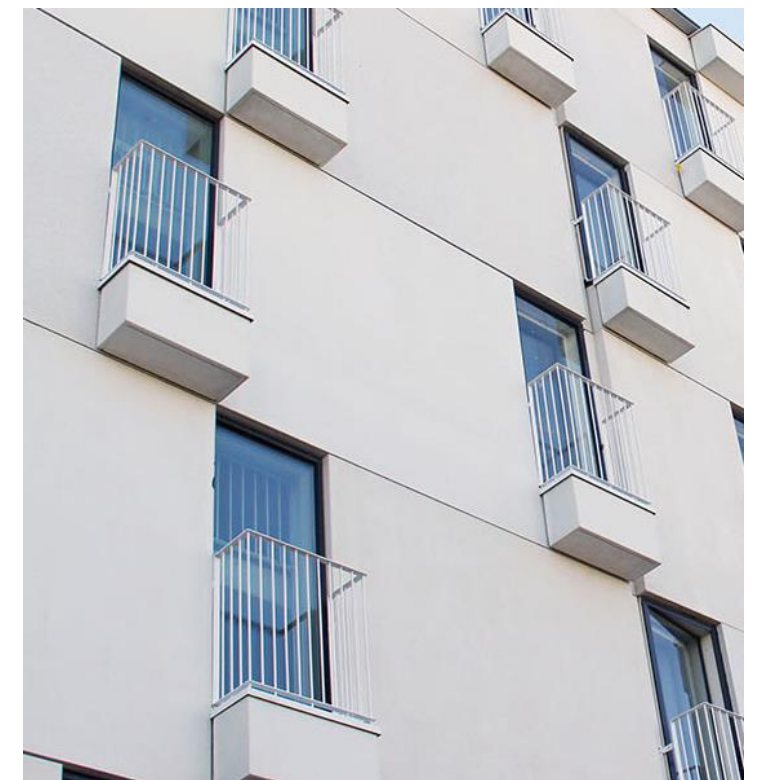
Fully Exposed

Environmentally friendly option for making exposed aggregate surfaces



Smooth

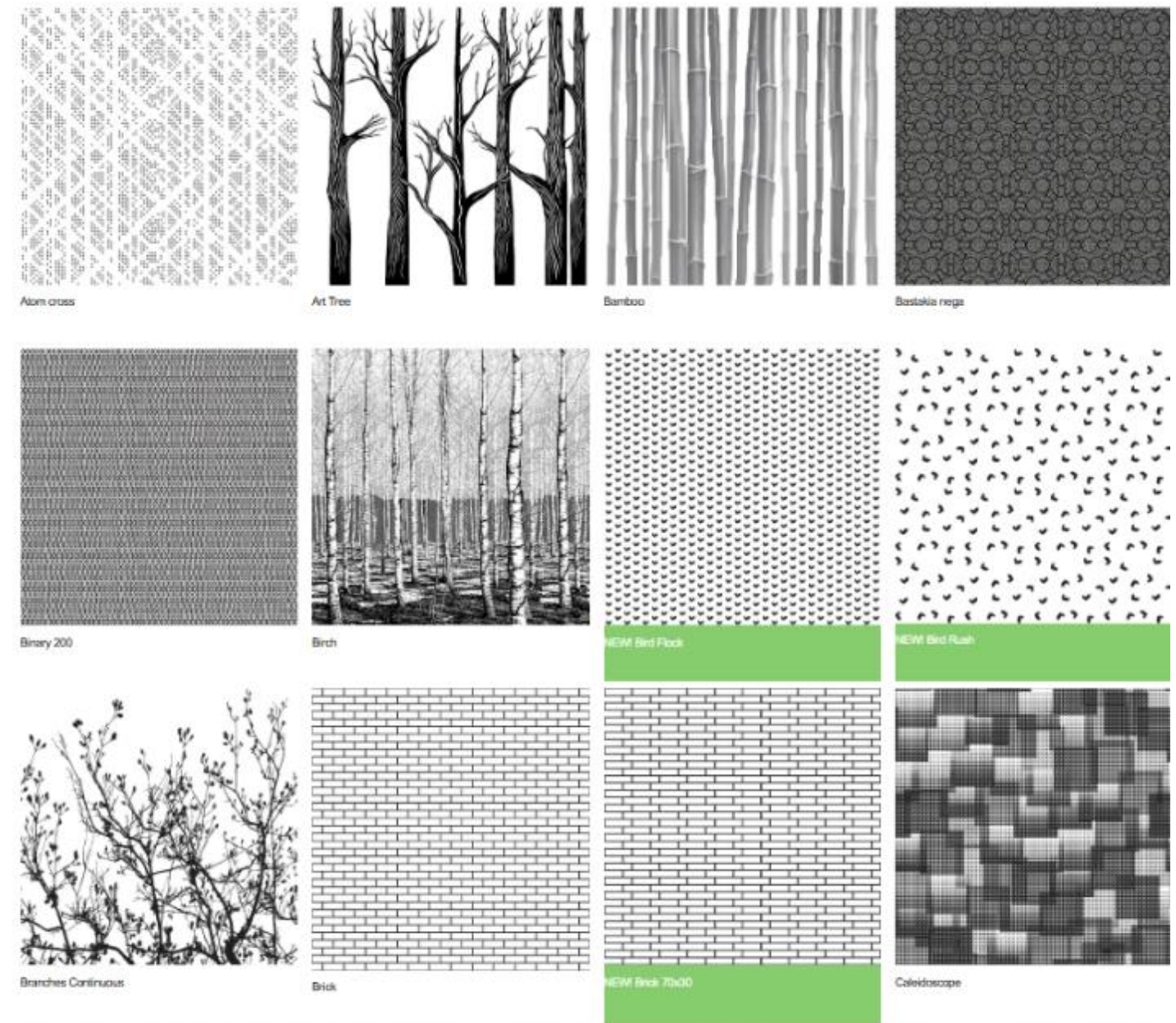
Transforms the concrete surface into velvety soft and slightly shiny



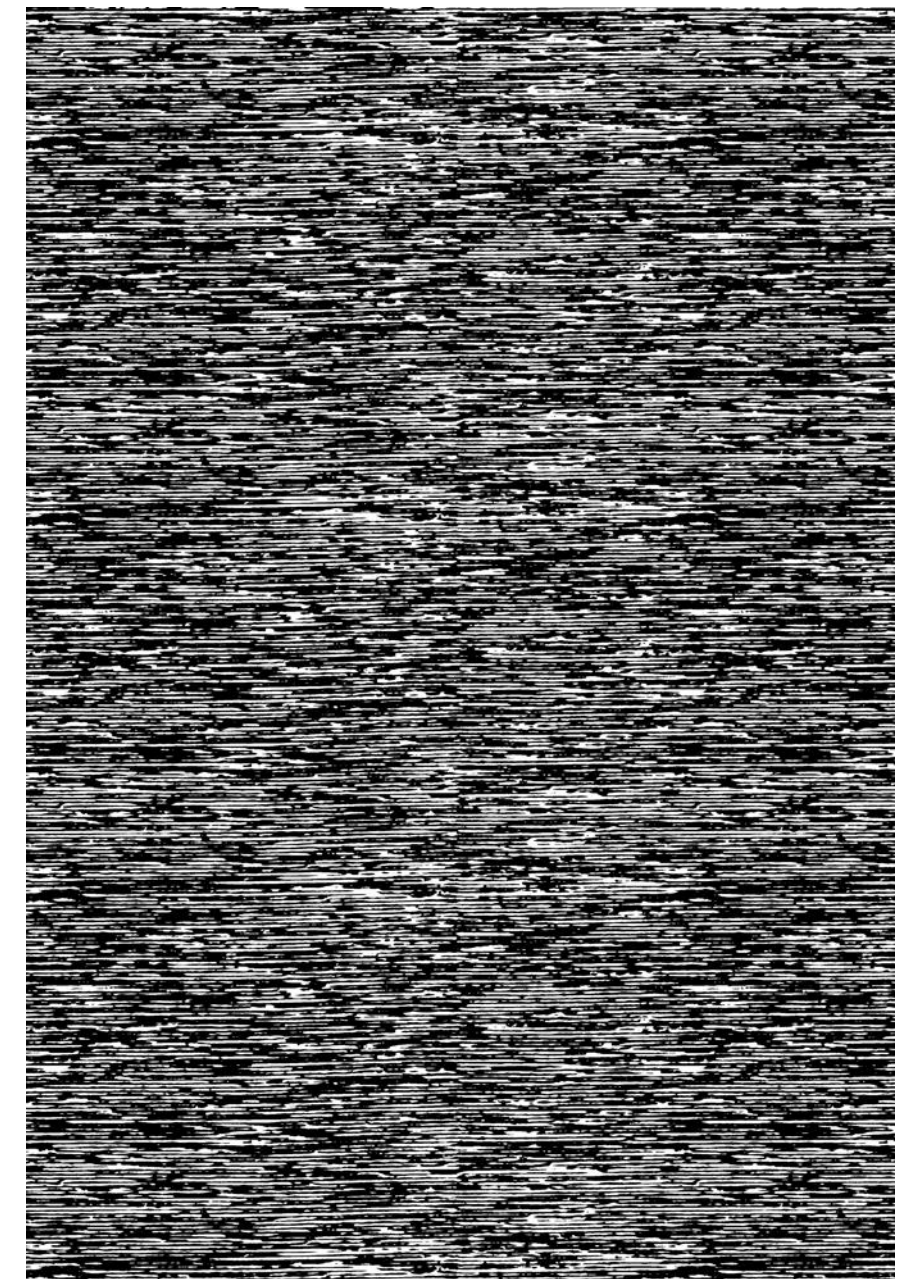
GCCollection™

- Appr. 100 ready-made repeated patterns
- Available from www.graphicconcrete.com in jpg format, other formats available upon request
- Available as libraries in Revit and Archicad
- Patterns can be adjusted/modified according to request
- A unique pattern can also be utilized

NEW!

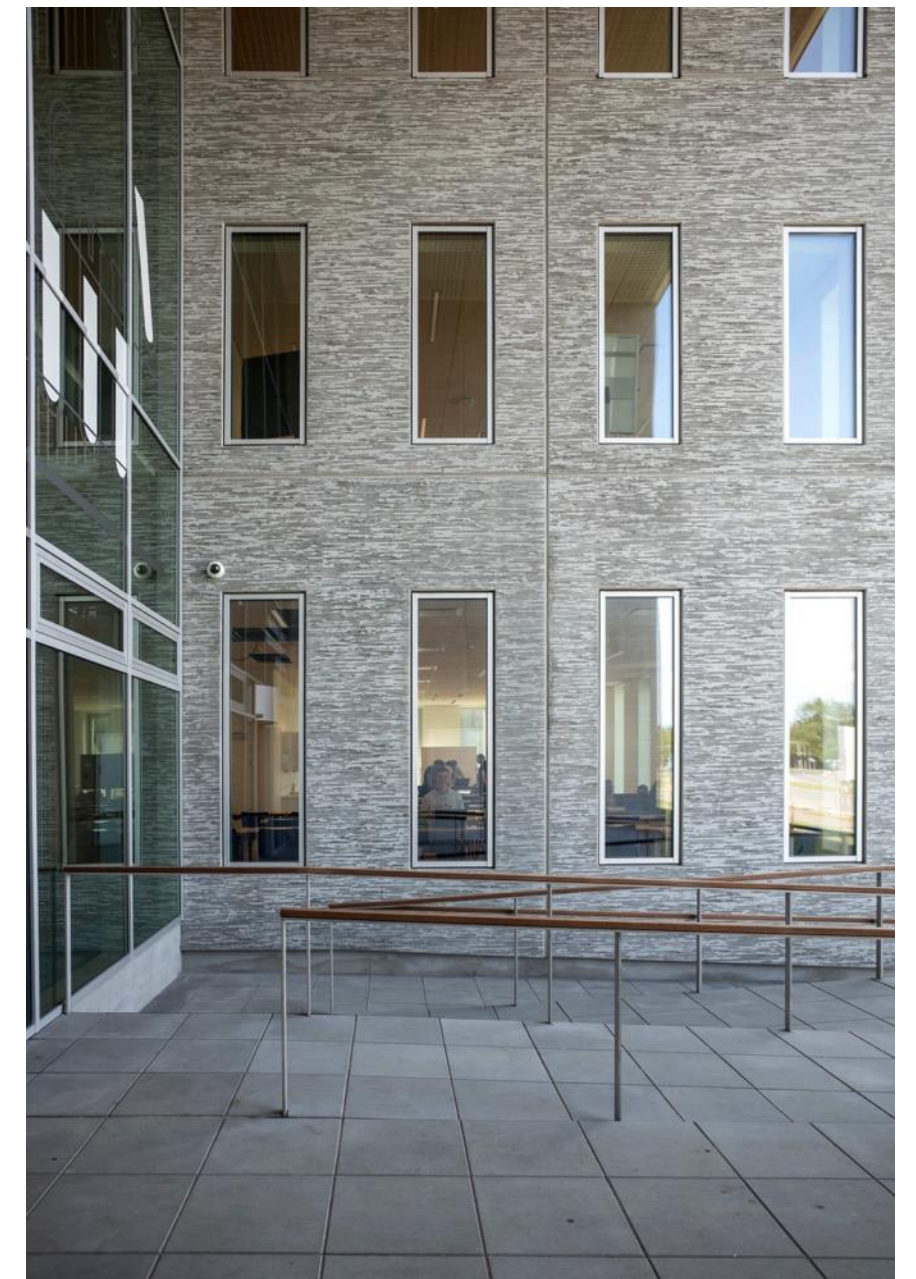


© graphic concrete®

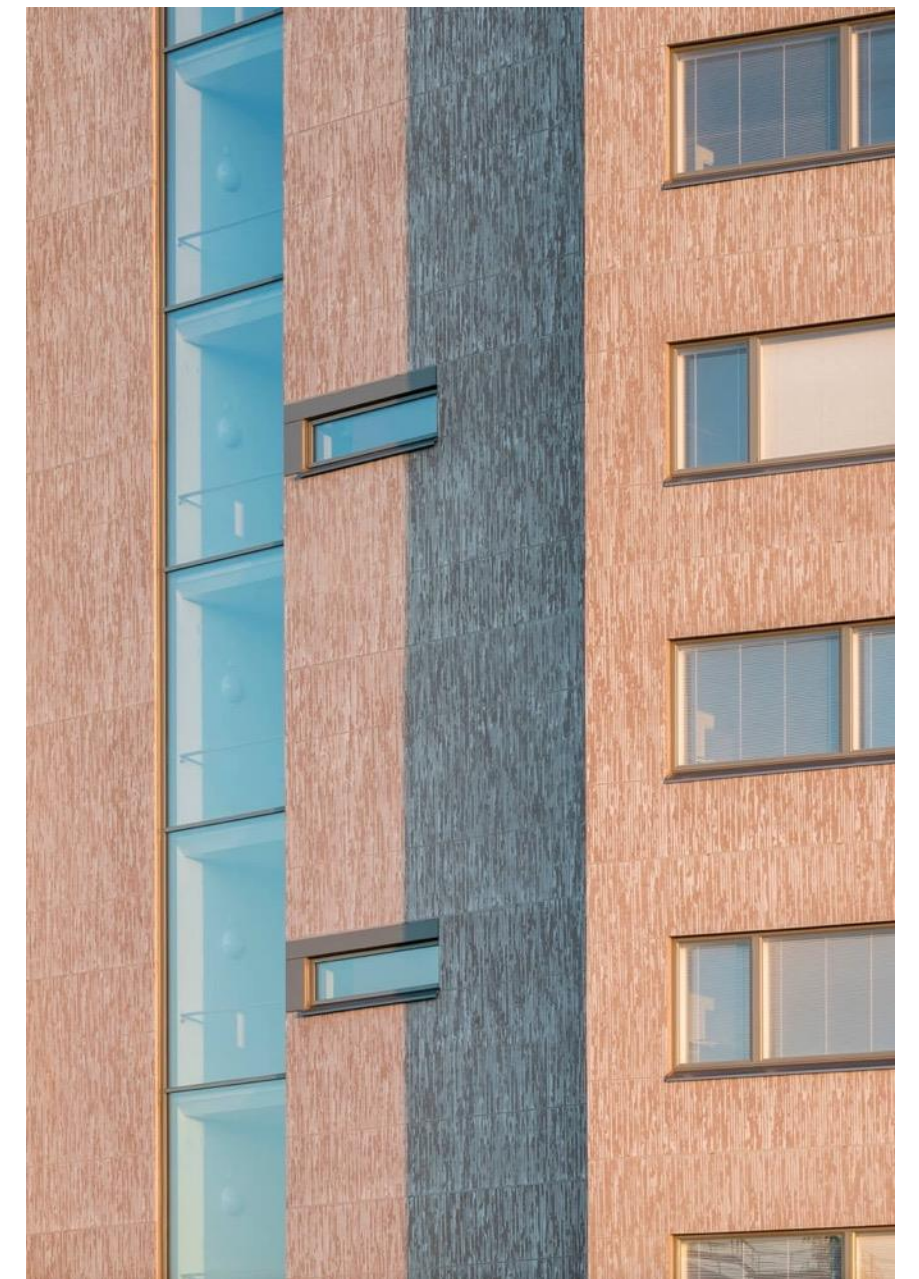


GCCollection™
Textilia nega
Revontulentie residential
building, Espoo, Finland

© graphic concrete®



GCCollection™
Textilia nega 200%
Science Park Cortex
Odense, Denmark



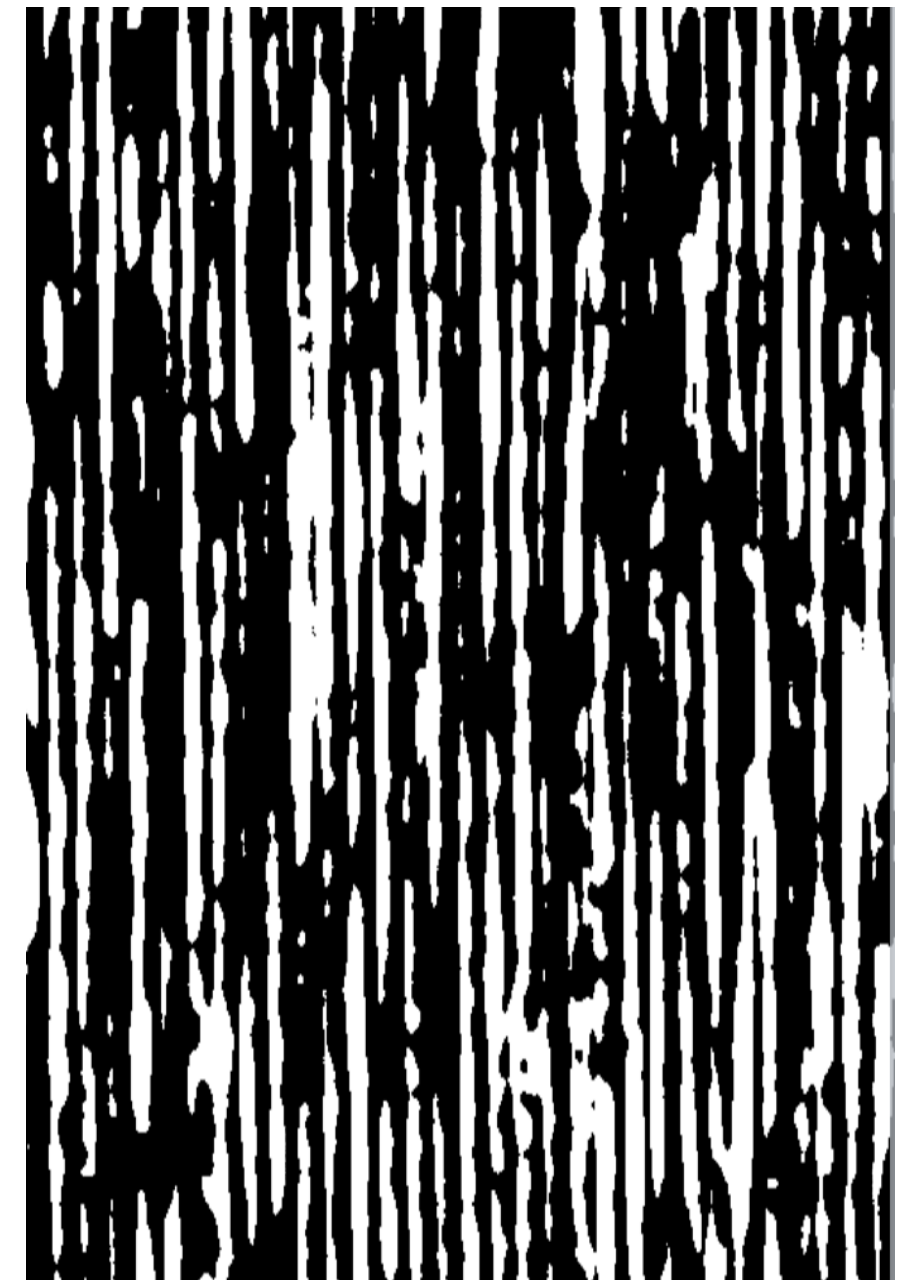
GCCollection™

Textilia nega Vertical

Perilänniitty residential building,

Espoo, Finland

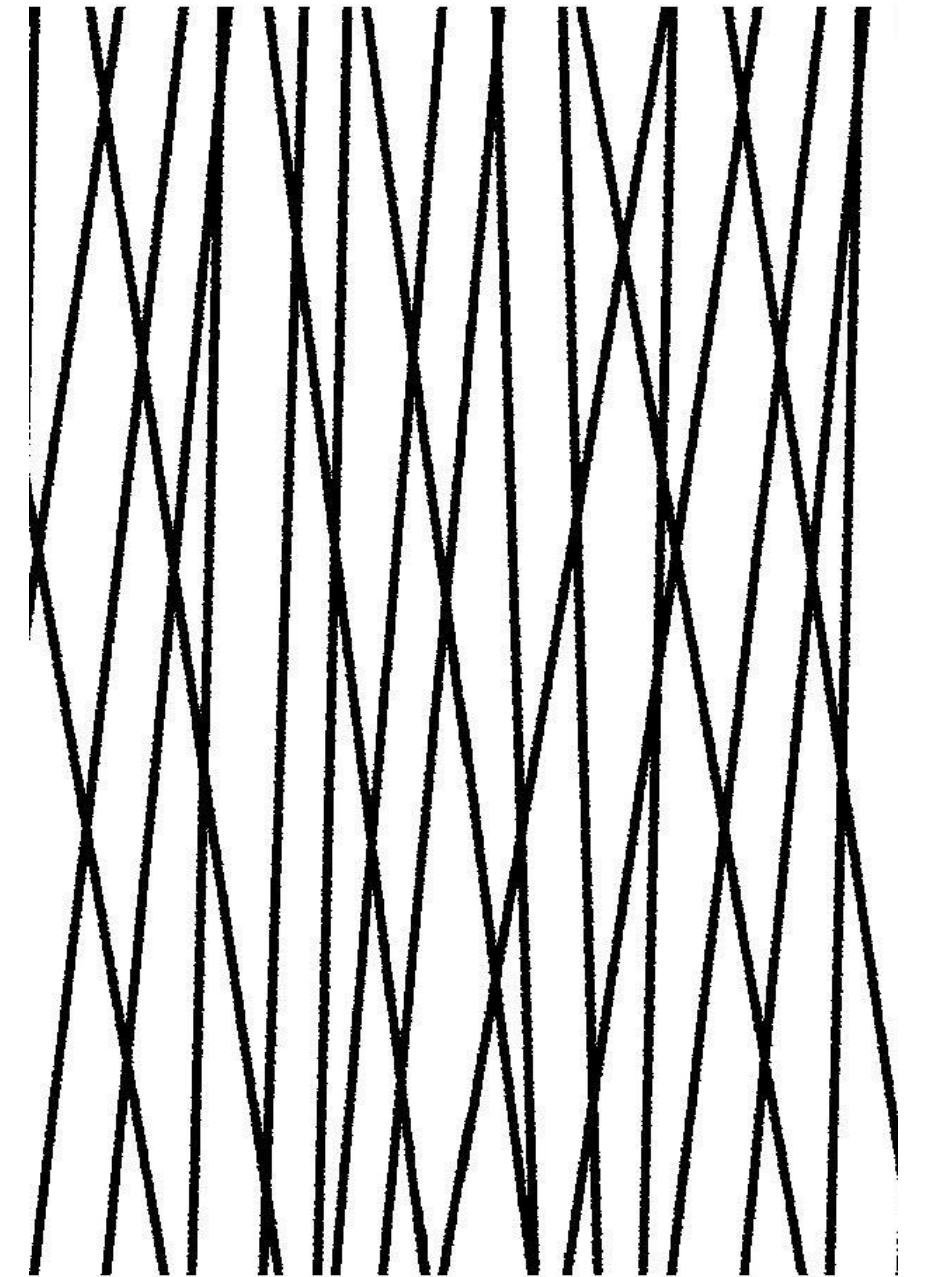
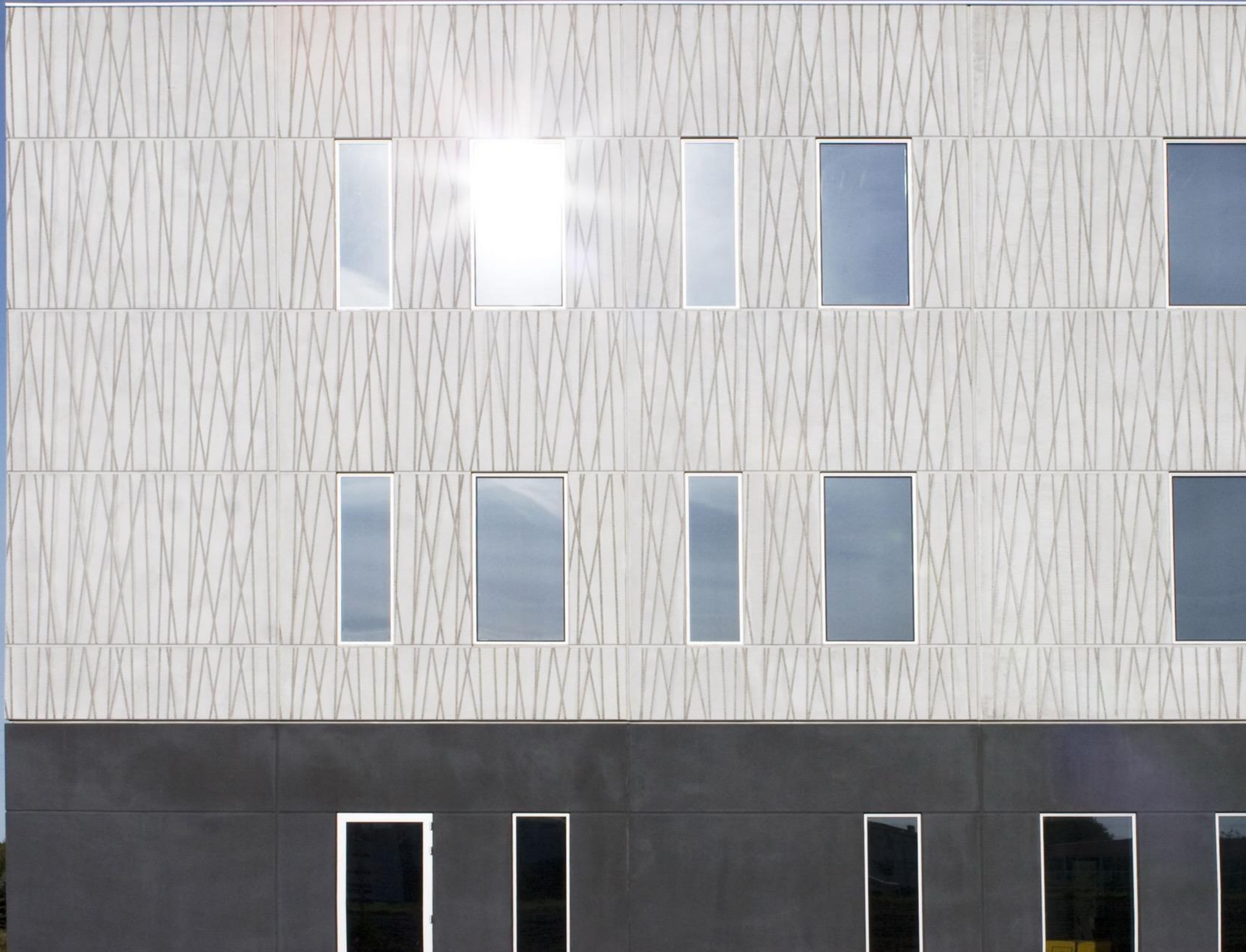
© graphic concrete®



GCCollection™

Textilia nega Vertical 500%

Suutarinen Concrete Factory, Finland



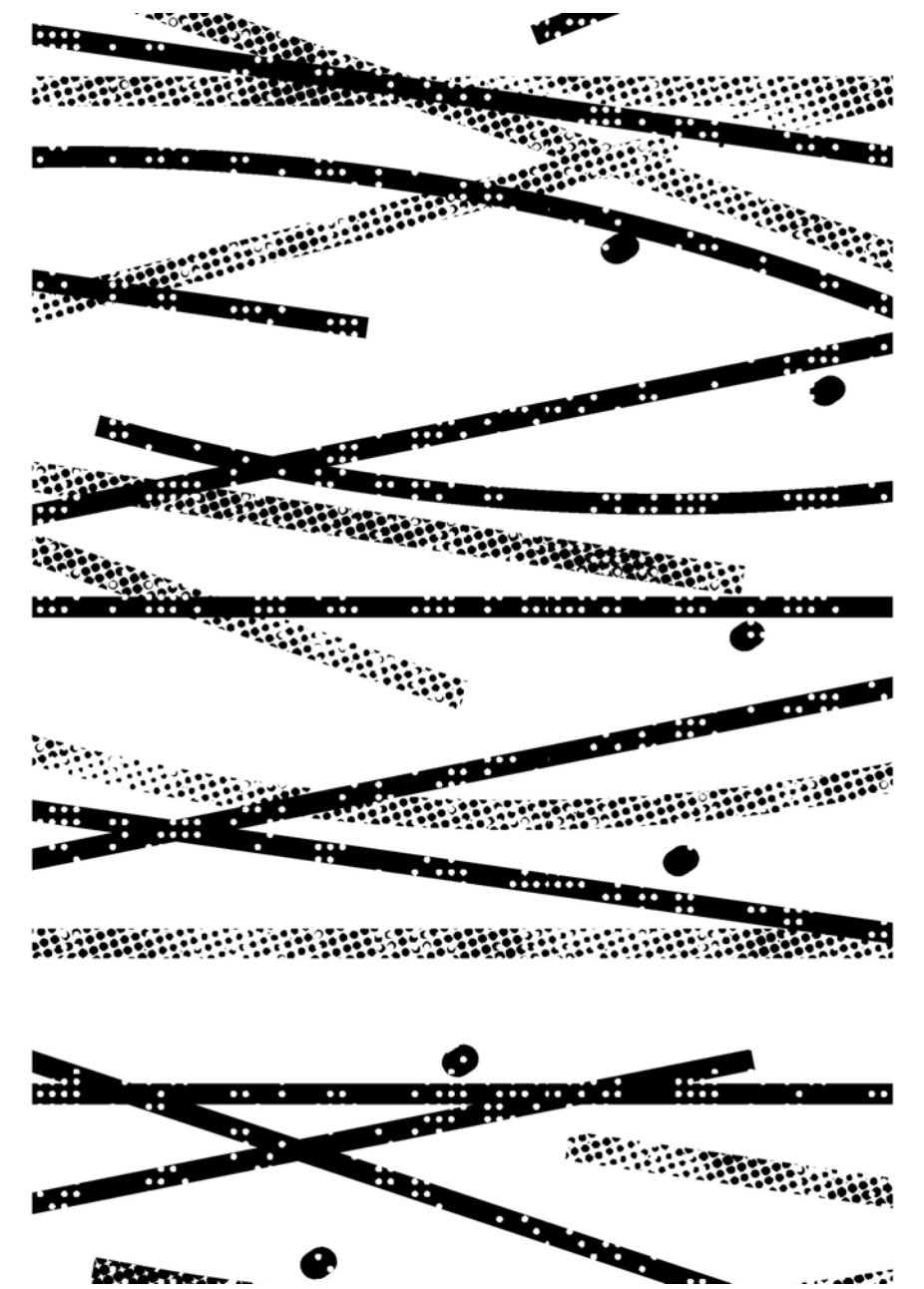
GCCollection™

Vertex

Viborg office building

Viborg Denmark

© graphic concrete®



Designer Own Pattern
Inspired by Vertex

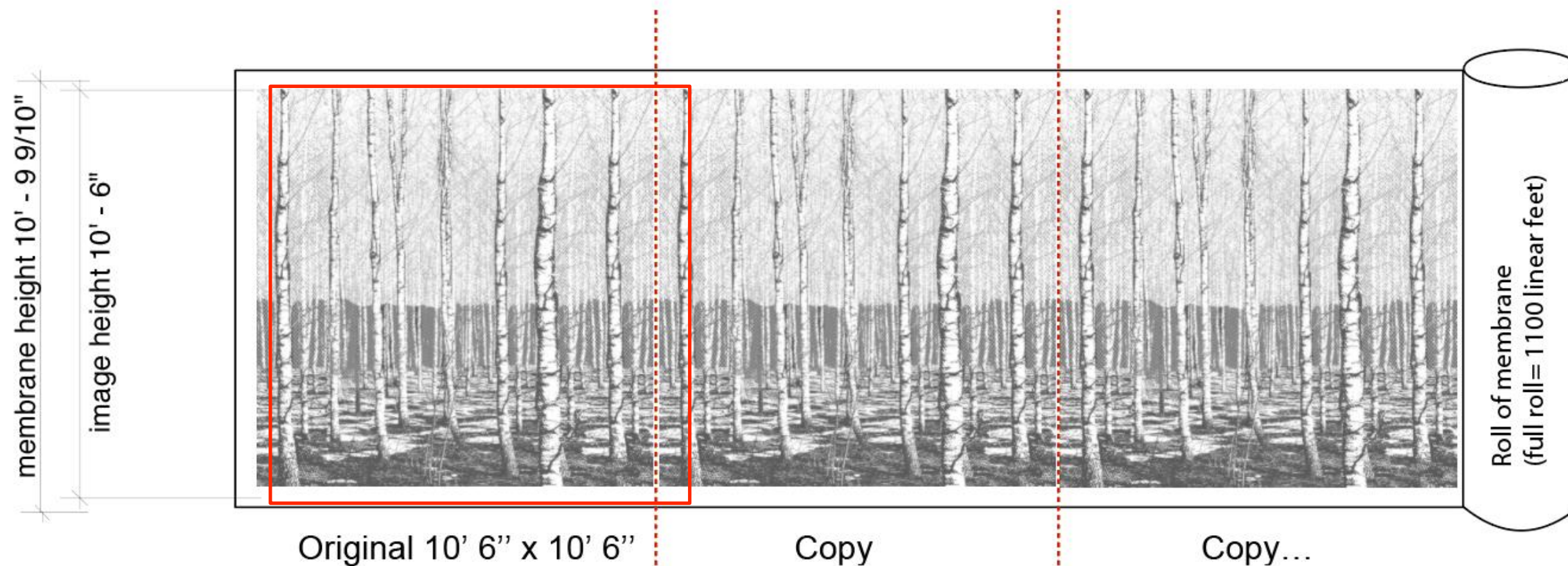
Espoo Hospital, Espoo, Finland

5

Pricing of graphic concrete

Paper pricing principles

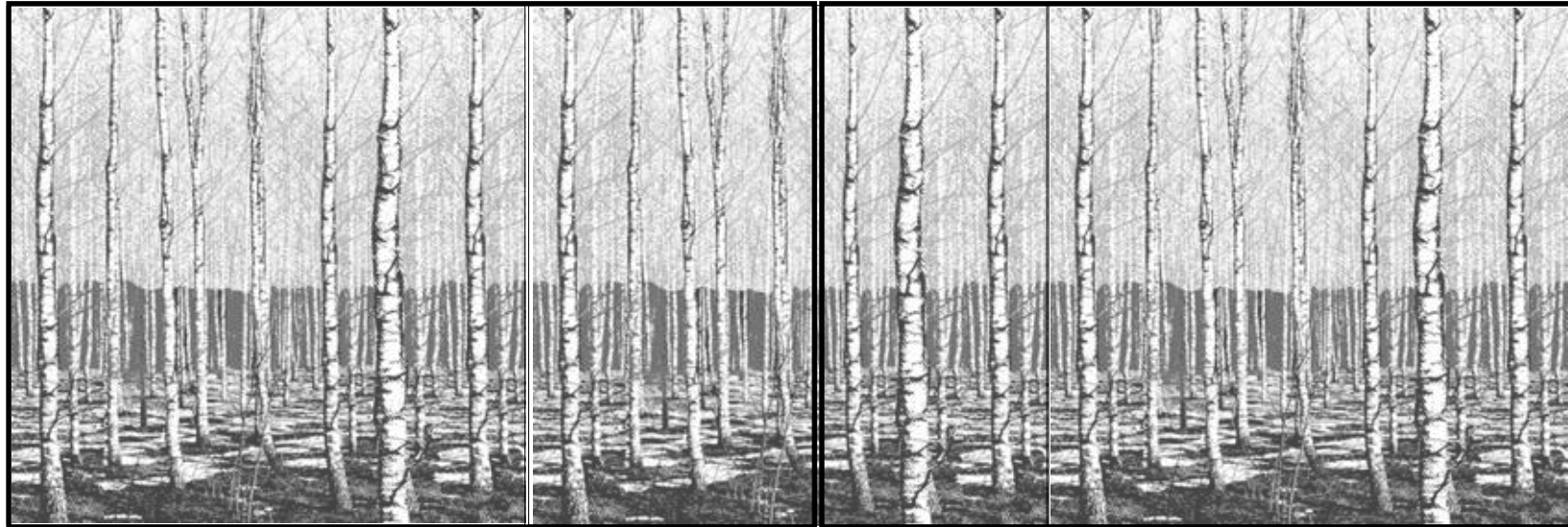
- The start-up cost for printing is high, copying is cost-effective
- The larger amount of the same image /pattern the lower the price per m2 / sq.ft
- The amount of retarder printed on the membrane does not affect the price



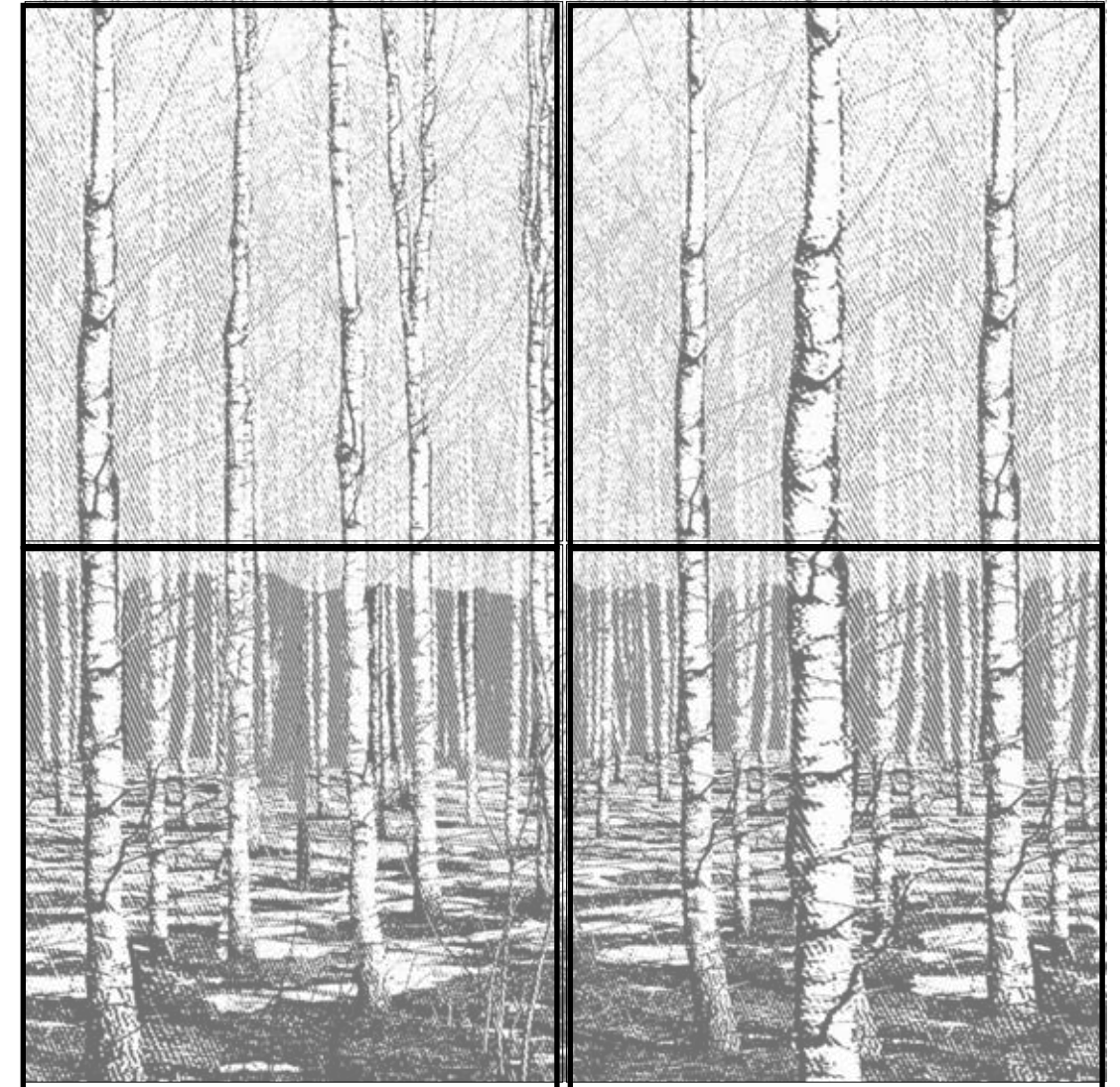
Original 3,2 x 3,2 meters

The Stock Patterns are made up of an image sized 3,2 x 3,2 m (10' 6" x 10' 6"). This is the most affordable option.

Paper pricing principles



Pattern in original size on panels



Pattern enlarged

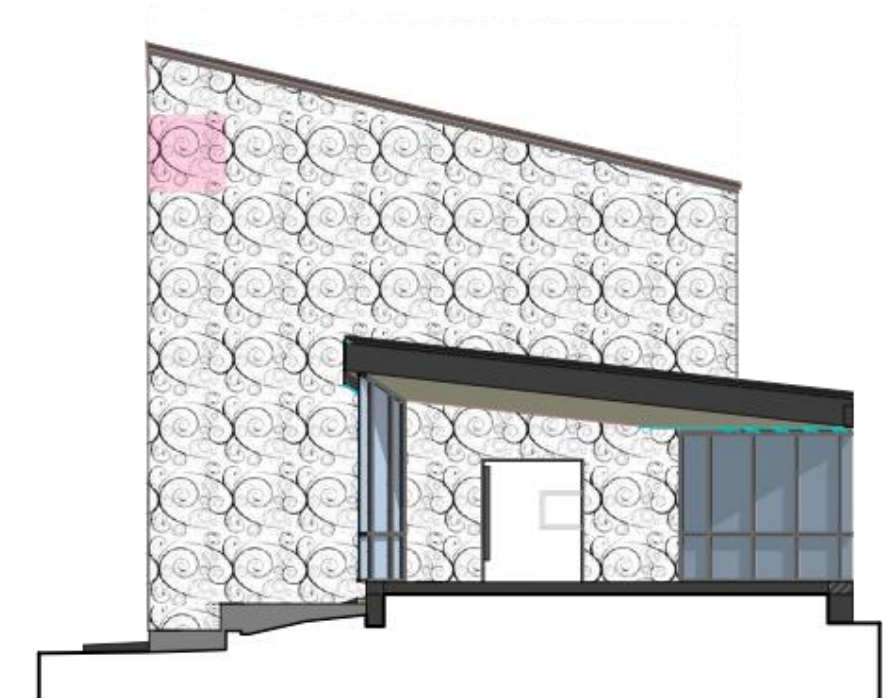
Paper pricing principles



One unique piece of art:
price 100 %



A smaller image repeated four times:
price 32 %



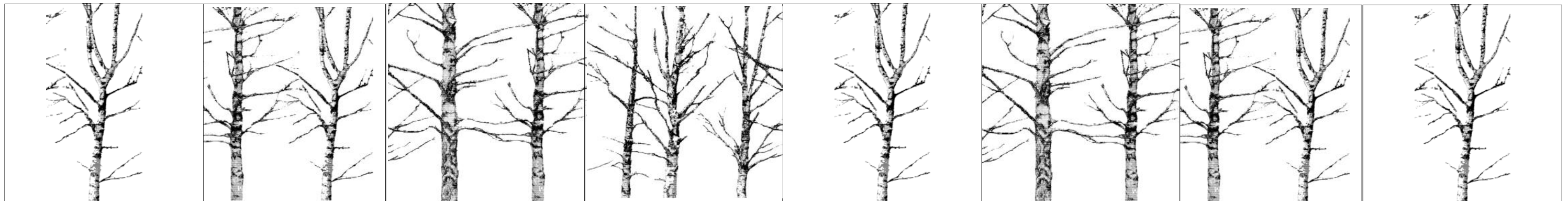
A wall-paper type continuing pattern:
price 12 %

The final panel price is always given by the producer - precaster

Using different images can also be cost effective:

Copy the images and use them in varying order:

- the design will constantly change
- the repetition will not be noticeable



A

B

C

D

A

C

B

A

© graphic concrete®



Repetition

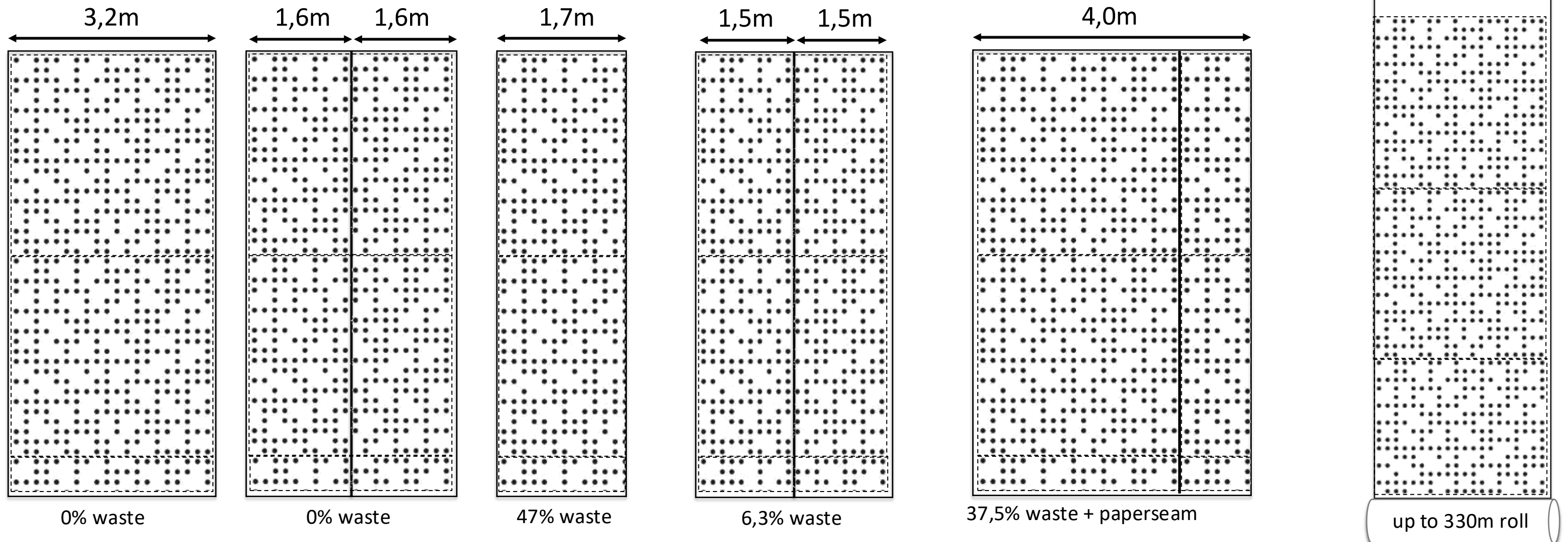
Pihlajalaakso noise wall

Kuopio, Finland

Panel design plays important role in cost-efficiency

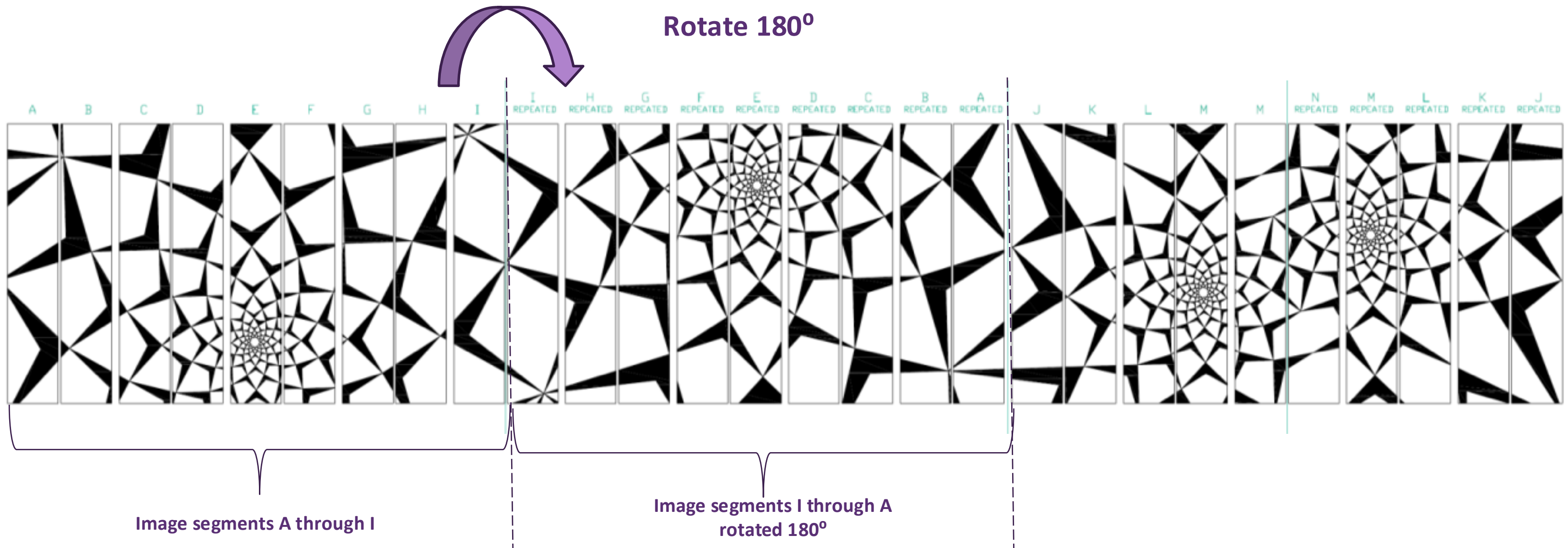
Panel width defines how efficiently GC material can be utilized

Optimizing to 3,2m minimizes waste



Using different images can also be cost effective:

Remember that the membrane can be turned in the form



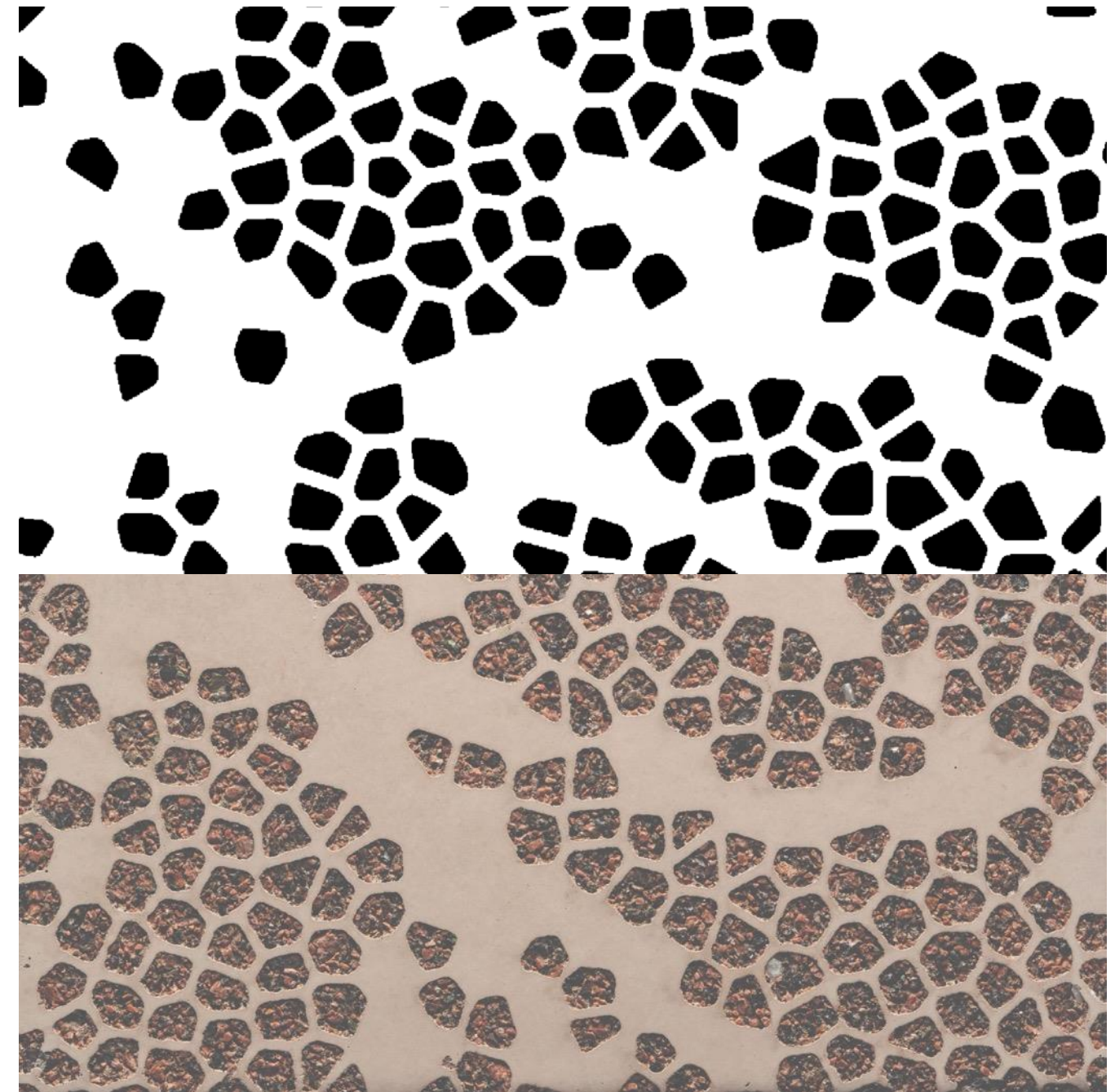
Design your image / pattern

A 100% black and white original

Black= aggregate will be exposed

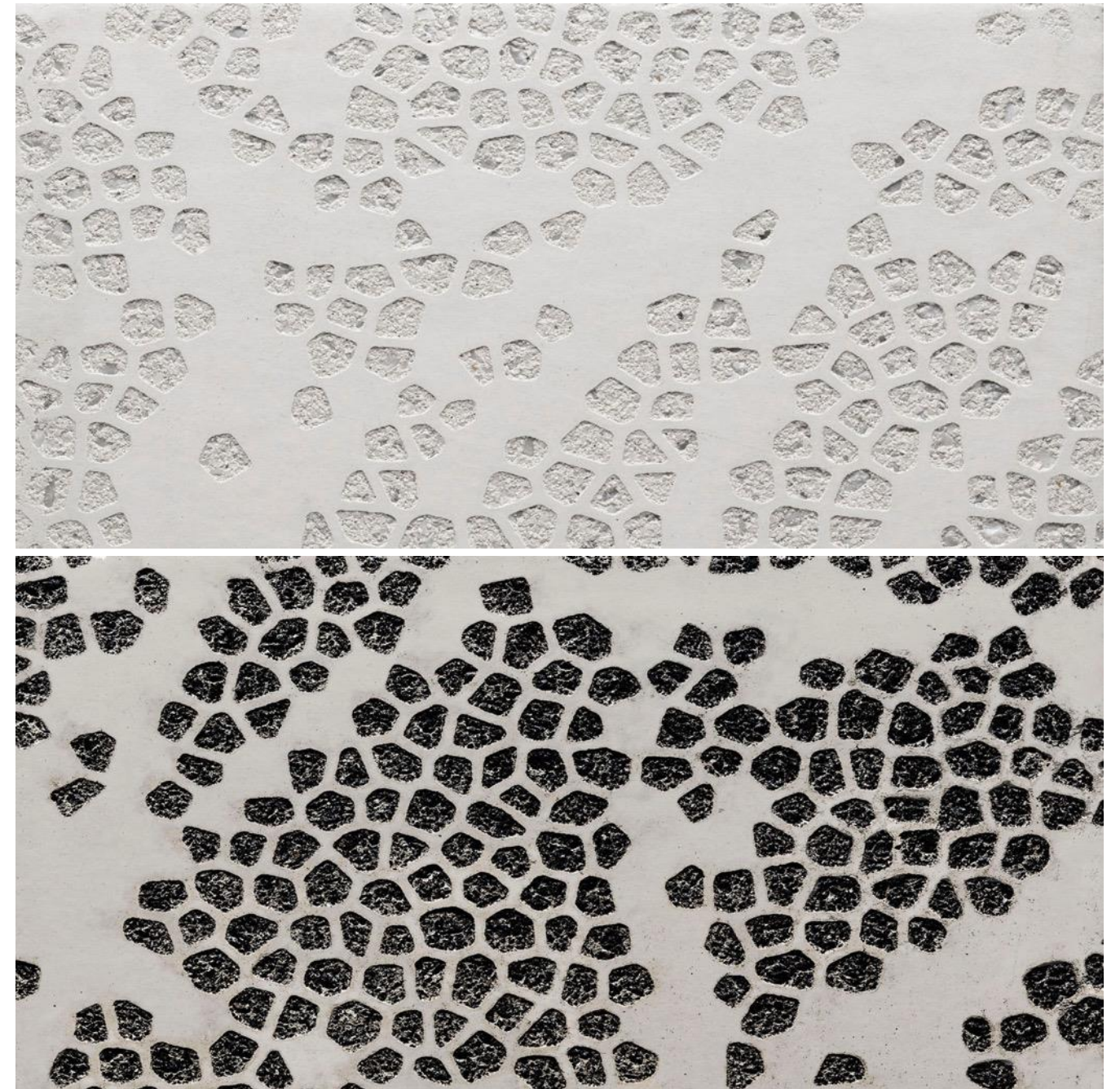
White= smooth form finish

- No line/dot should be finer than 5 mm/
0.2 inches



Design your concrete / color

The contrast between the smooth form finish color and the exposed aggregate color will determine the final outcome



Design your concrete / color

Final result =
pattern
+
concrete mix



Design your concrete / color

- You can test your design by printing in real scale
- View from the real viewing distance
- Color samples from the chosen precaster can be made with standard testing membranes



© graphic concrete®



LEED Platinum building



Unique design

Skanska Headquarters

Helsinki, Finland

Pattern by Architect Katja Salo



Unique design

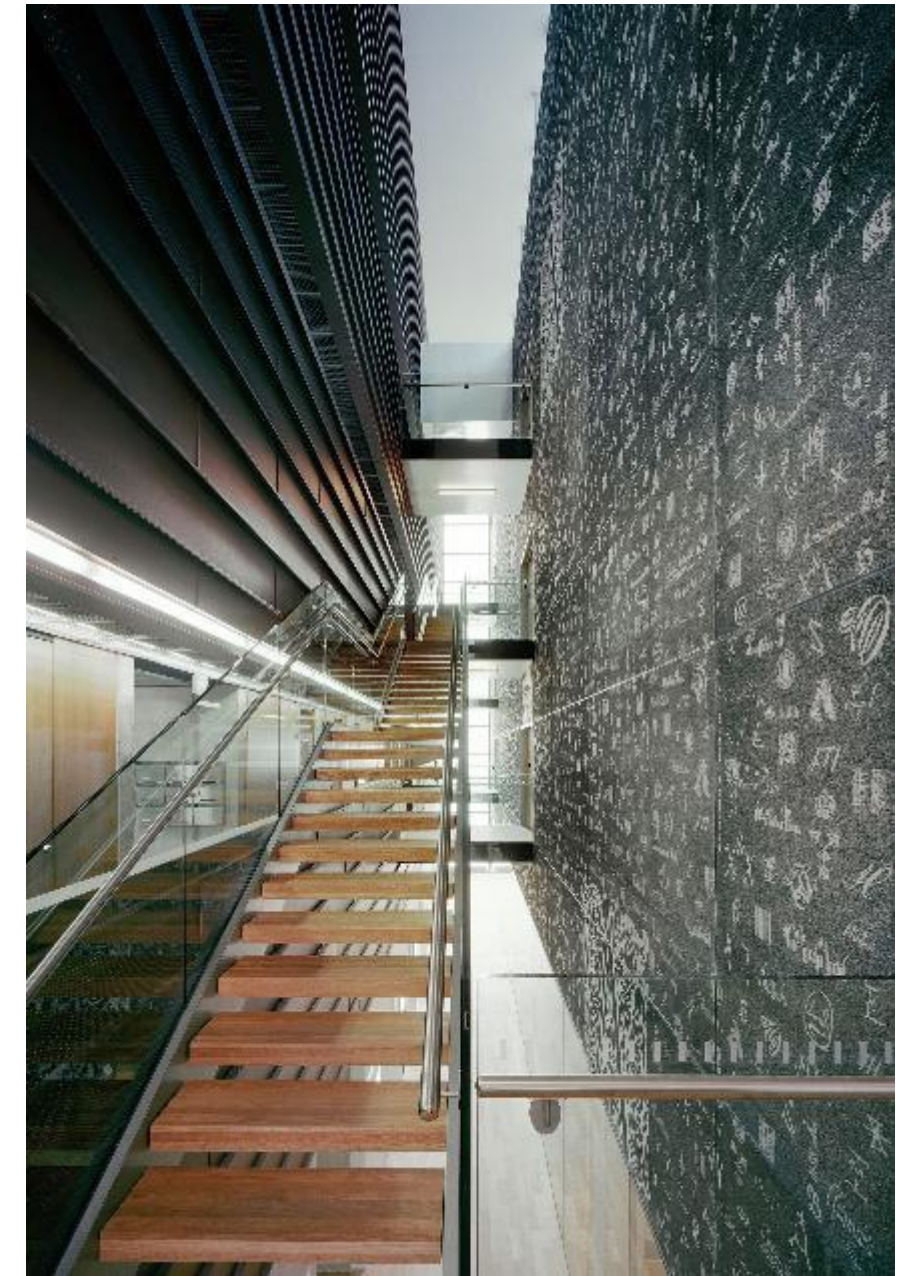
Niittysillankulma 2 Residential building
Espoo, Finland
Pattern by Textile Designer Outi
Heiskanen



GCCollection Dead End
Tartu mnt 49, Tallinn, Estonia
Prefabrication: E-Betoonelement OÜ



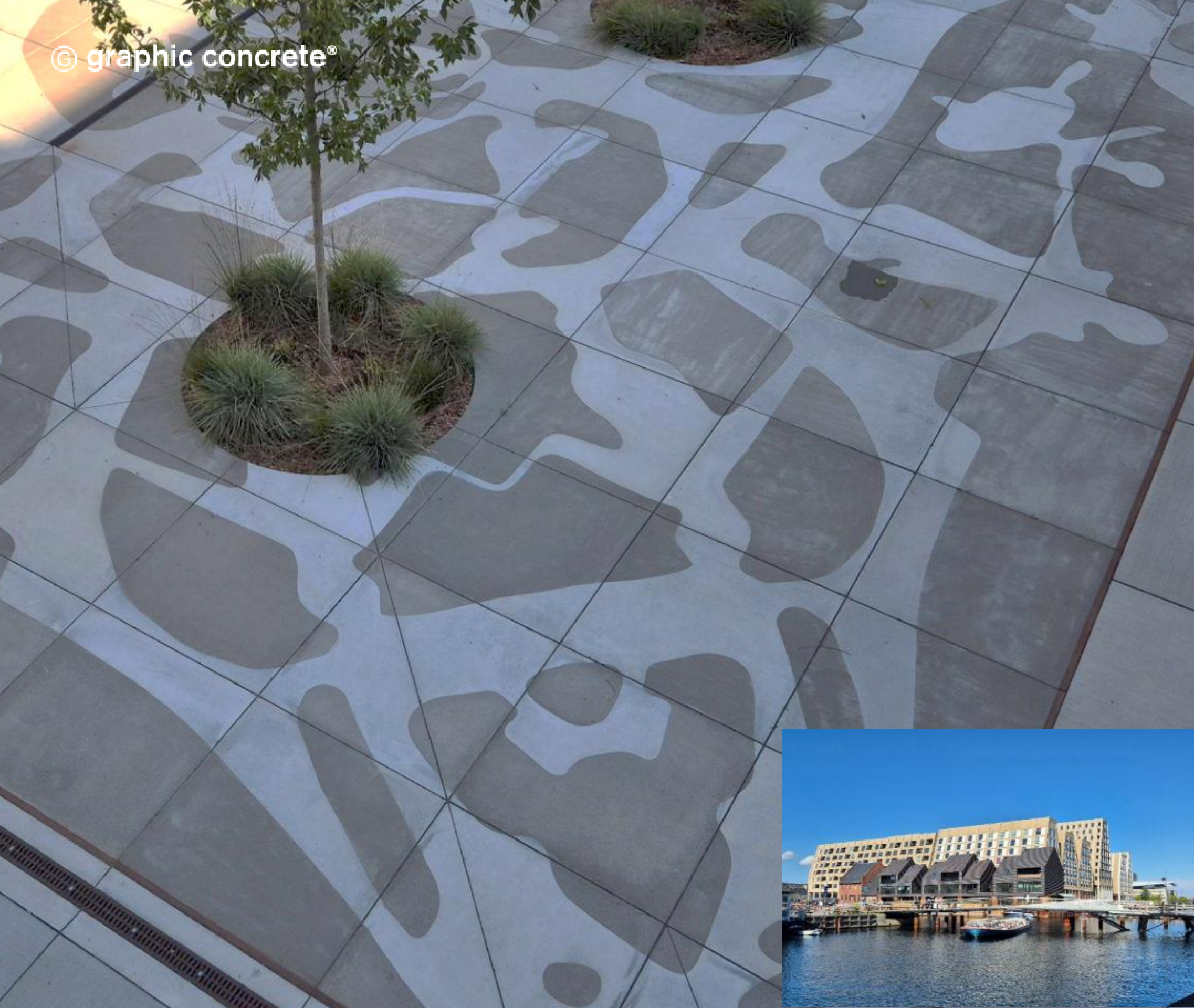
Best Concrete Facade of the Year 2009, Finland
Concrete Structure of the Year 2010, Finland
Nominee for the Mies van der Rohe Award for European Architecture 2011



Unique design

Hämeenlinna Provincial Archive
Hämeenlinna, Finland
Pattern by Graphic Designer
Aimo Katajamäki

© graphic concrete®



Paper Island, Copenhagen

Name of the Island from it's history
HC Andersen – a famous writer was known
to create also paperclips
Inspired by these, the architect designed
pattern for a pavement area

6

Durability

Graphic concrete & Durability

- The service life design of concrete is generally 50 to 200 years, although even a thousand years is not unheard of in Europe. The Graphic Concrete technique binds the surface design to the concrete. As part of the concrete surface, Graphic Concrete lasts as long as the concrete does.
- The surface retarder used removes approximately 1 millimeter of concrete adhesive from the surface. The amount of concrete adhesive removed is so small that it has no effect on the durability of the concrete slab itself or of the reinforcement.
- Time will tell what these Graphic Concrete surfaces will look like after 50 or 100 years, but we strongly believe – for good reason – that they will not have changed at all.

2004



2015

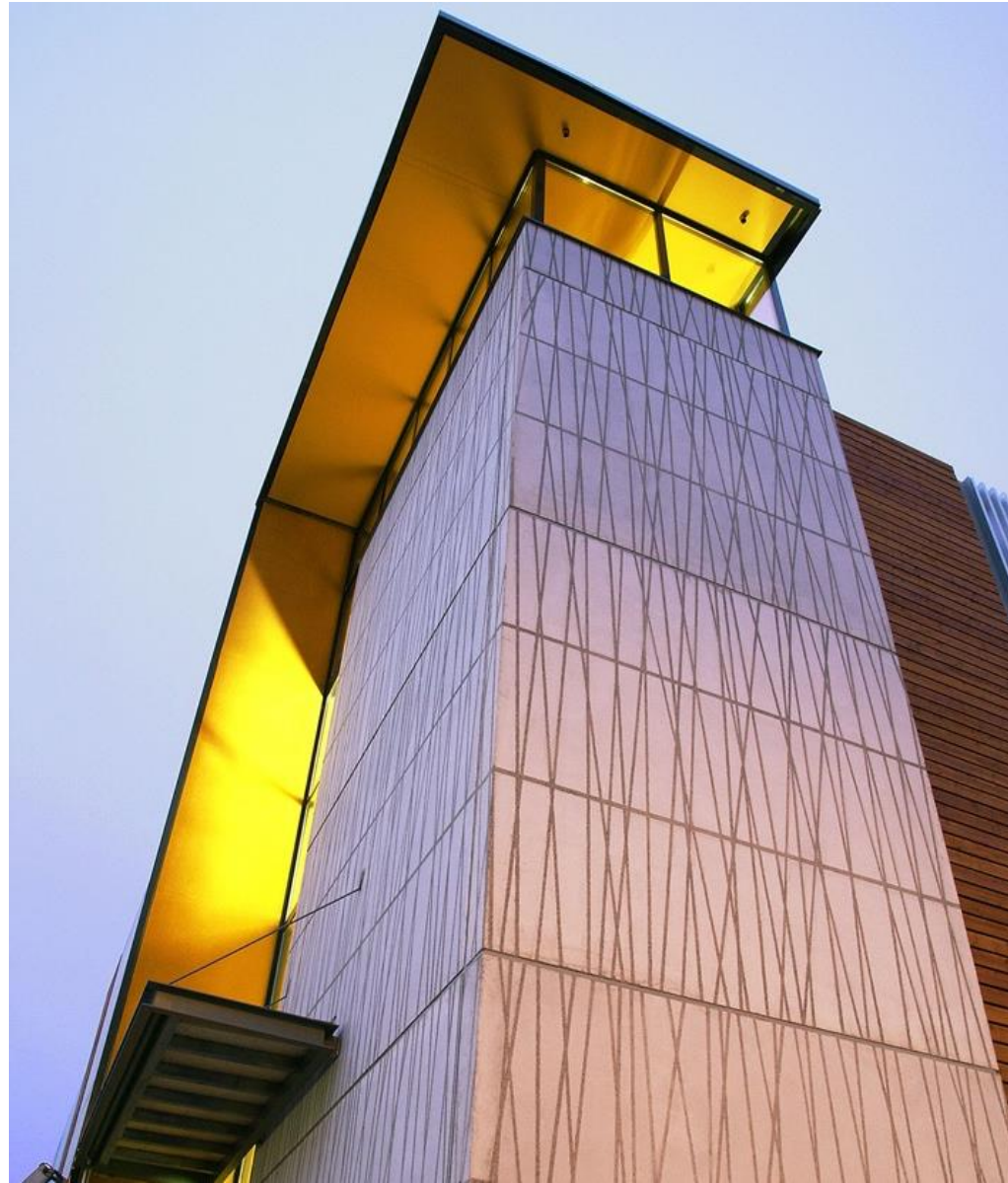


2024

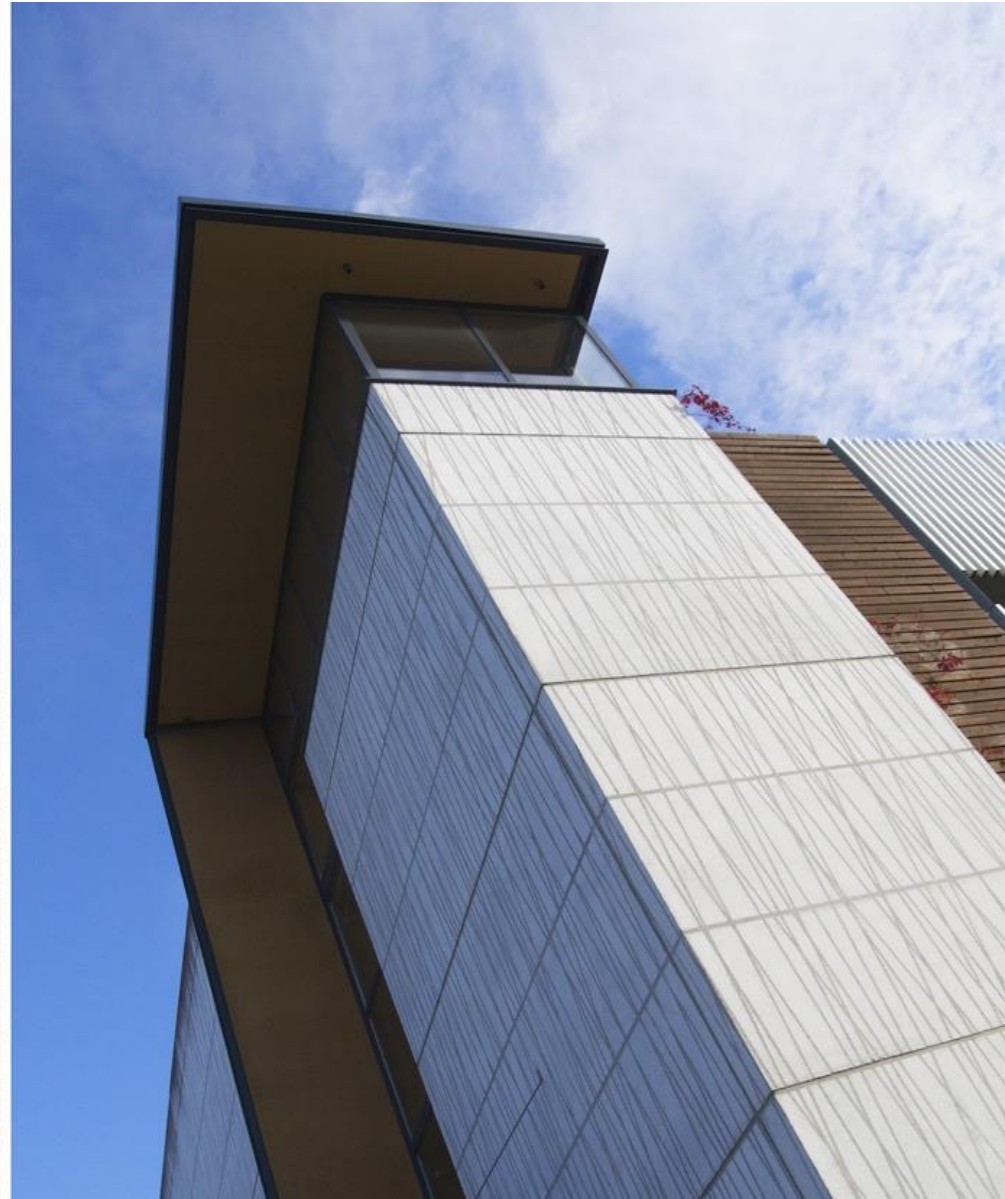


This is the very first Graphic Concrete project which plant patterns on the ground slabs. This projects was completed in 2004 and the concrete patterns have been still well sustained.

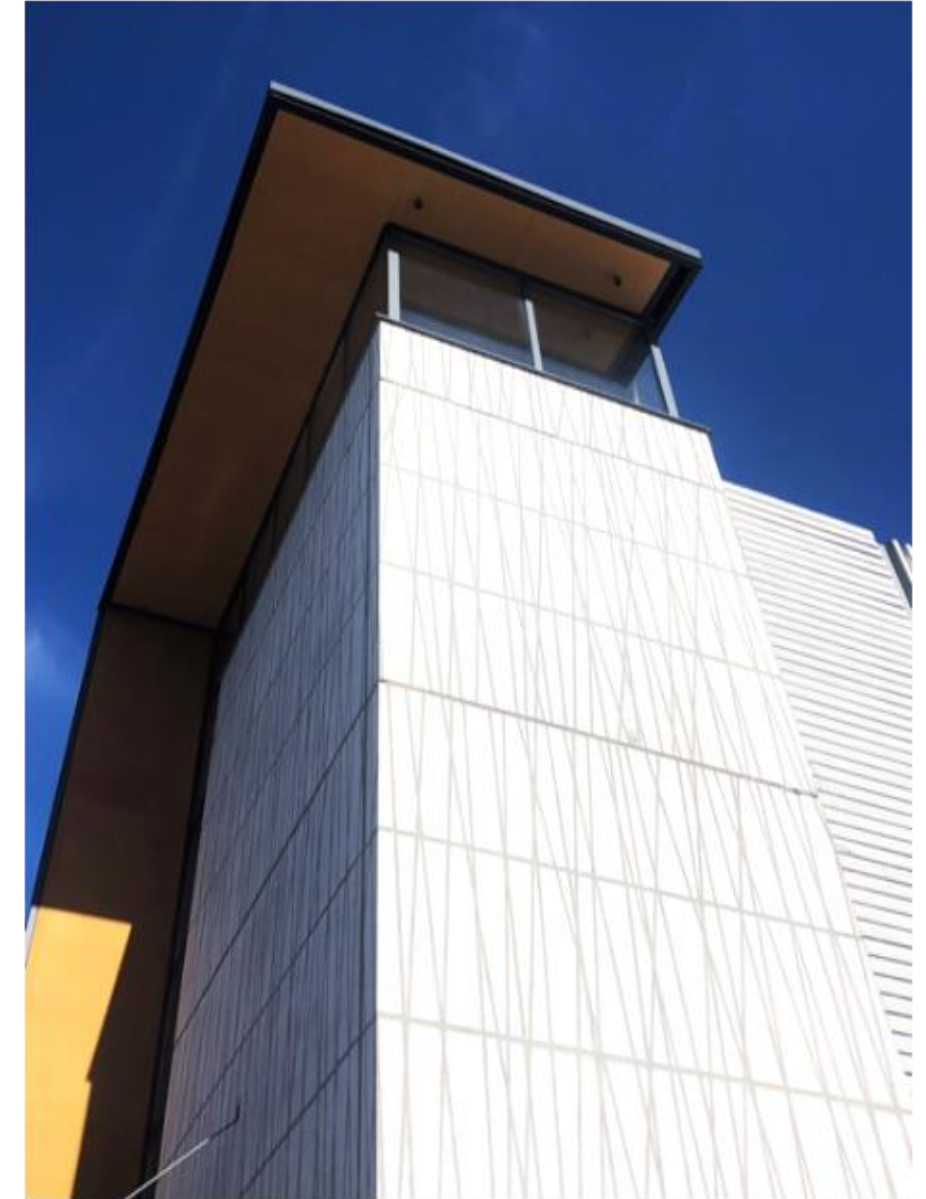
2006



2016



2024



This parking garage at the Nokia Mobile Phones old head office looks perhaps even better than it did 18 years ago. The passing of time can be detected only in the marks left by the creeper vines on the wood latticework next to the concrete surfaces. Otherwise the edges and contrasts of the graphic concrete pattern remain as clear as ever.

2012



2020

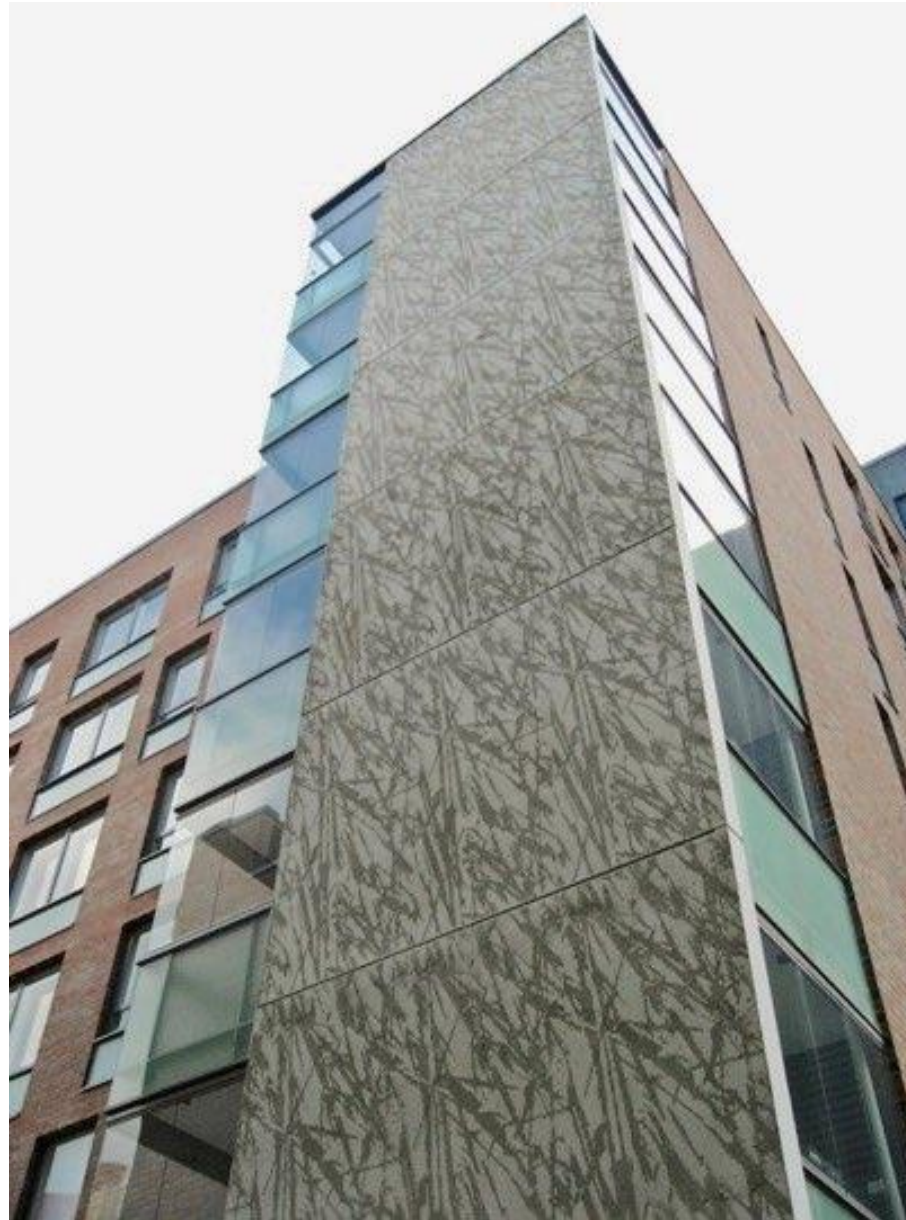


2020



Plejecentre Søndergård has implement Graphic Concrete on the ground slabs and roof panels. This projects was completed in 2012 and the concrete patterns have been still well sustained.

2007



2018



2018



The best proof of graphic concrete's durability is our long list of references dating back to the mid 2000s. For more than a decade our graphic concrete surfaces have been exposed to harsh climate conditions ranging from snow and ice to bright sunshine and heat waves.

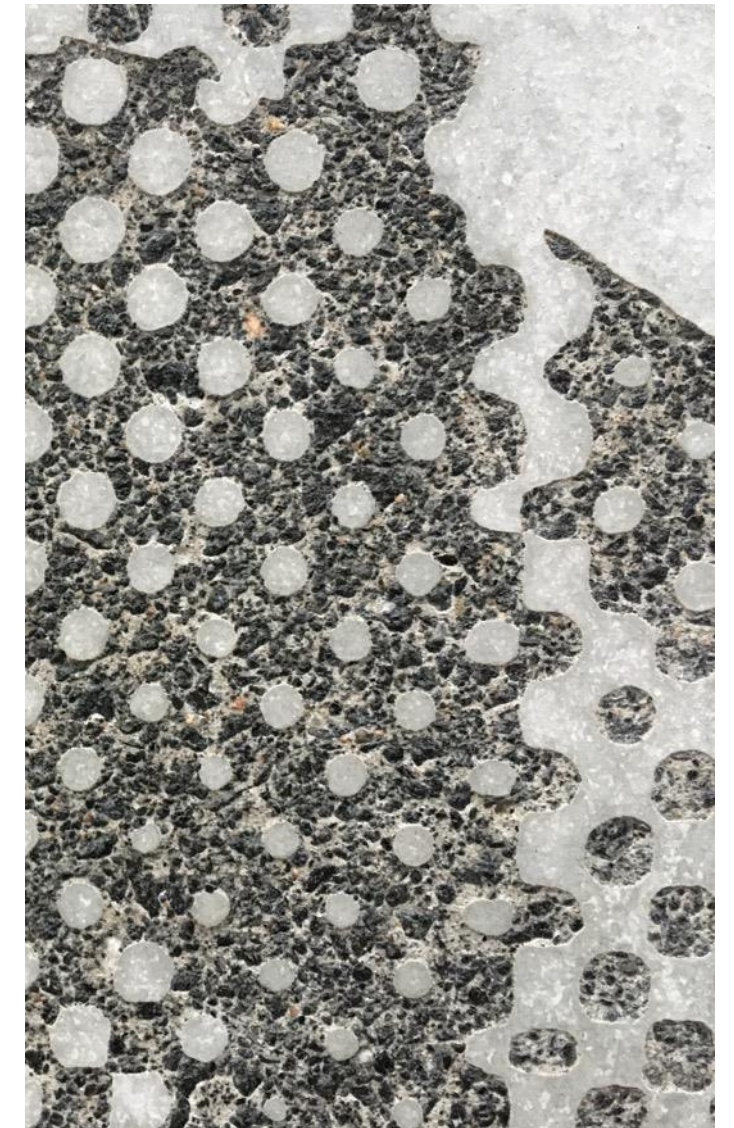
2011



2018



2018



The graphic concrete surface has neither a positive nor a negative effect on attracting dirt. In fact, it has been noted in several locations that graphic concrete surfaces do not attract graffiti in the same way as plain concrete walls, as the street artists apparently appreciate the designs and leave them alone. Naturally, graphic concrete surfaces can be protected in the same way as any other concrete surfaces.

Noticeable issues

- Graphic Concrete is 100% standard concrete and it can be treated the same way as any concrete panel
- A product suitable for concrete is also suitable for graphic concrete
- Testing is always recommended to achieve desired outcome



Coating/surface treatment

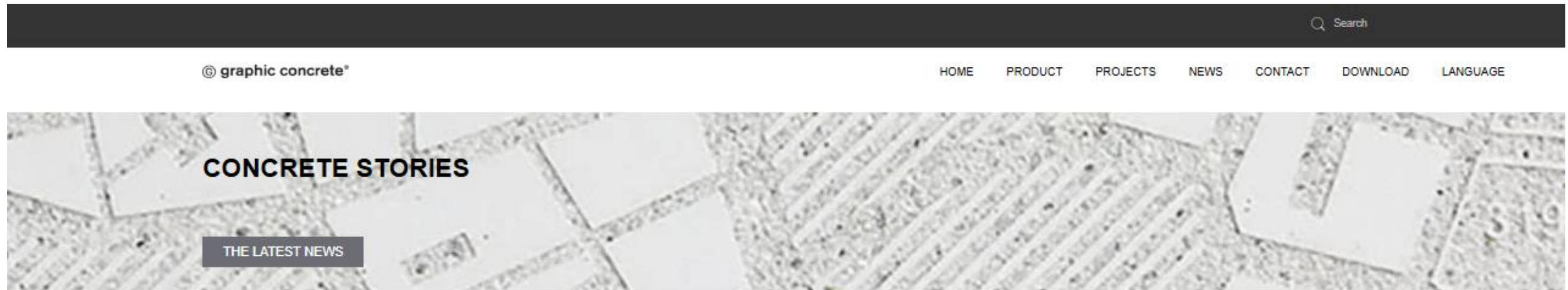
- Permanent protection as a base
- Sacrificial protection on the top
- Top layer will be re-applied after cleaning procedure



7

What to learn more?

Website: www.graphicconcrete.com

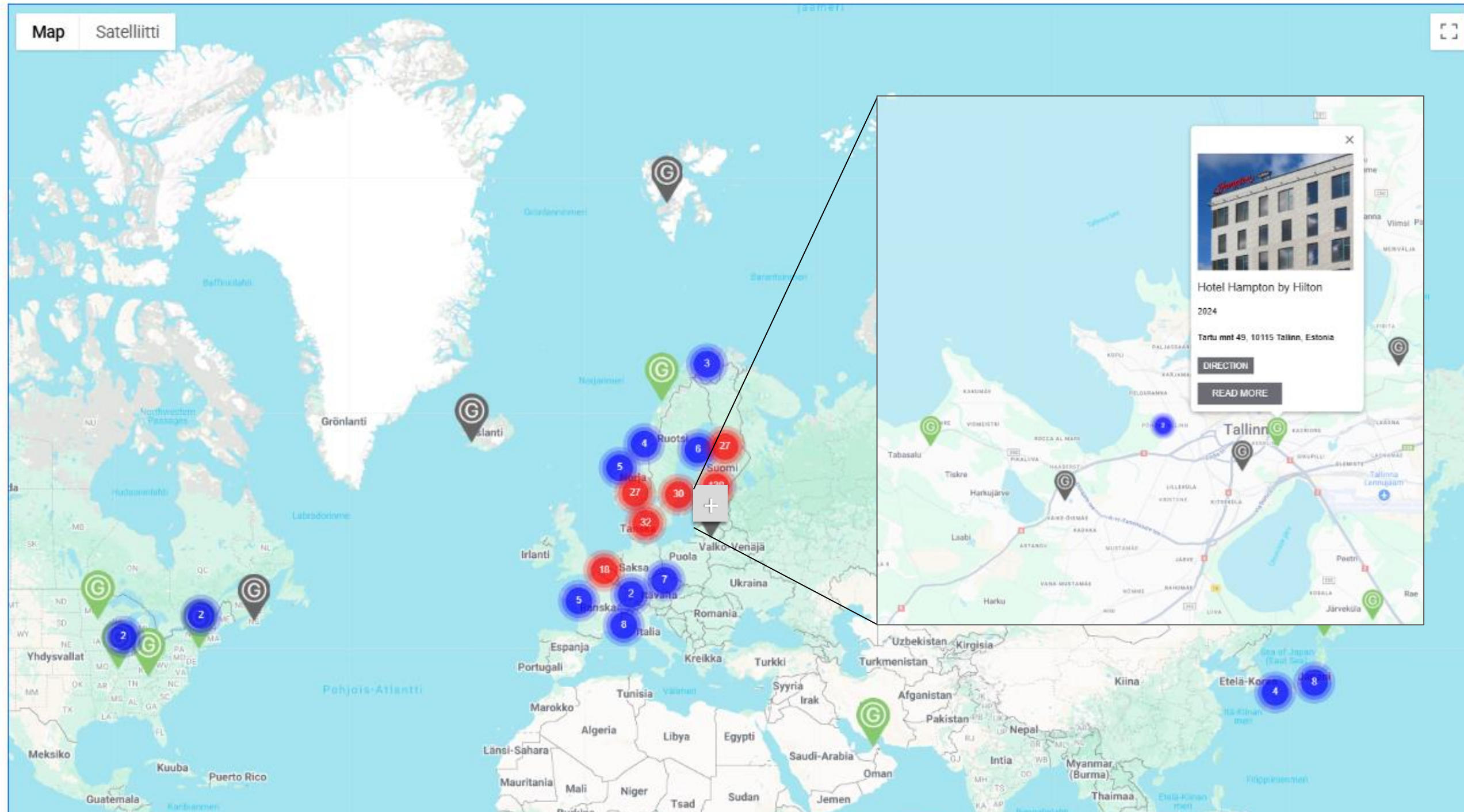


- Latest news (6-7 newsletters annually with different theme)
 - Product -> GC collection patterns
 - Projects -> numerous reference project around the world
 - Download -> REVIT and Archicad libraries
- + a lot of useful materials, instructions, videos, etc.

Project locations around the world

You can find our reference projects on the map. Projects marked with green icons have dedicated pages on our website with more information and photos. Projects marked with blue icons only display only basic information. We will continue updating the map with more projects over time. If you have any questions, please feel free to [contact us](#).

- PROJECT TYPE
- COUNTRY
- PROJECT LOCATIONS



Thank you!

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