

CONCRETE RESEARCH

What is concrete?

CONCRETE

60-75% **Cravel** and **sand**



Up to 8% of **Air**



14-21% **Water**



7-12% **Cement**



What is cement?

- Calcium
- Silicon
- Bauxide/Aluminum
- Iron

What are the raw materials for making cement?

CEMENT

Limestone



Shells / Shellsand



Chalk

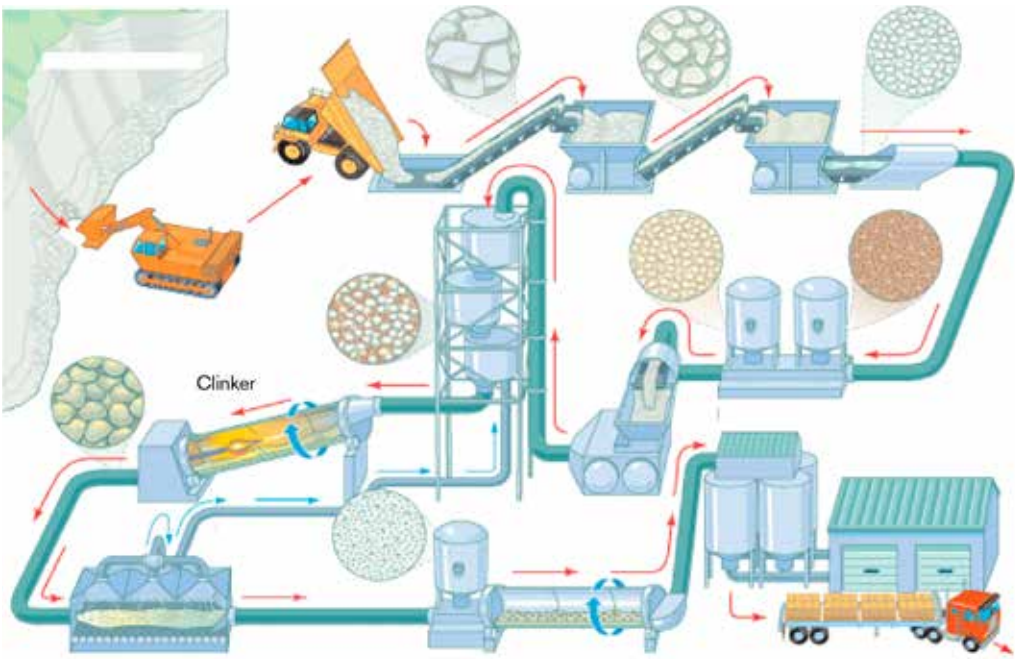


Marl



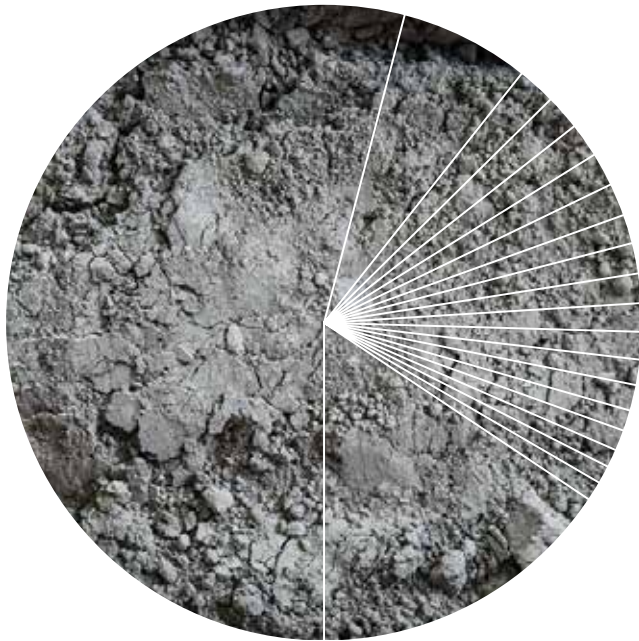
How is cement made?

CEMENT PRODUCTION



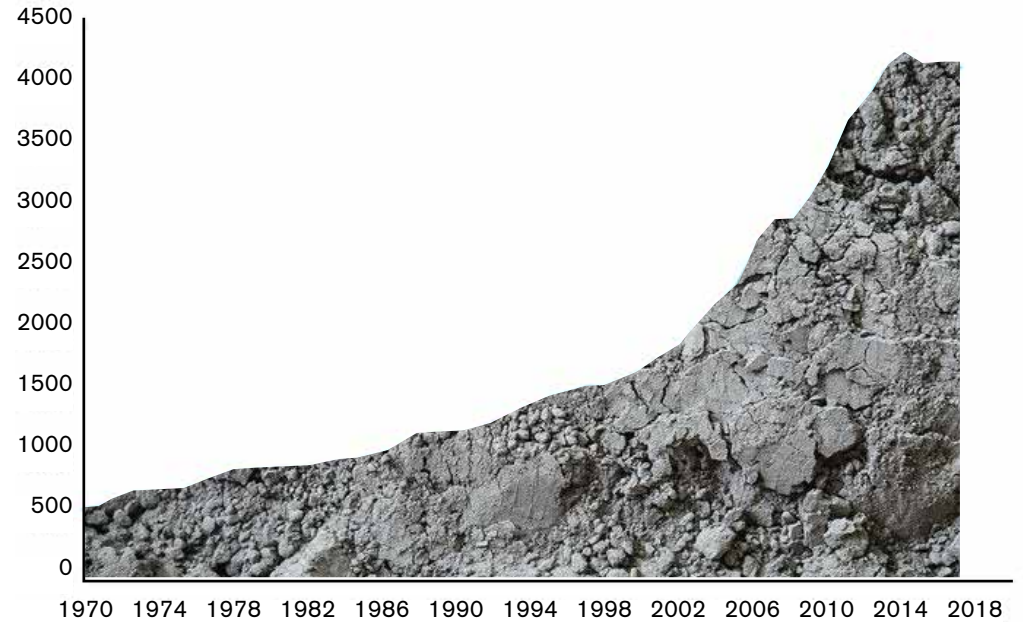
GLOBAL CEMENT PRODUCTION

“Cement is the most widely used material in existence and is behind only water as the planet's most-consumed resource.”



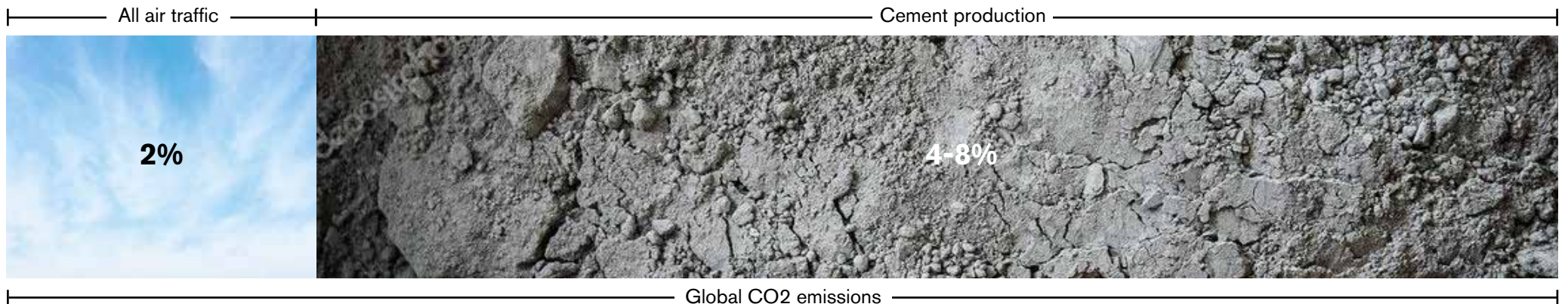
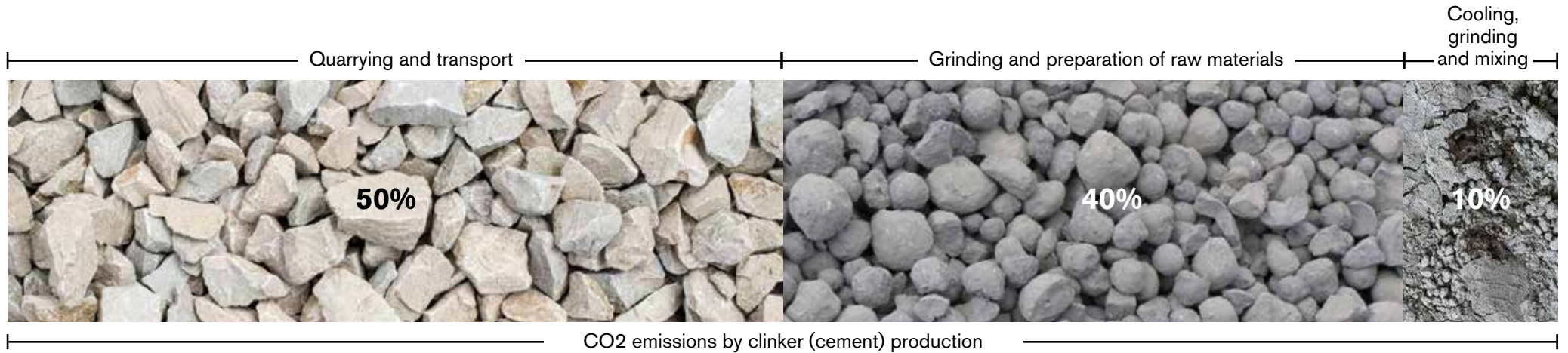
54%	China
7%	India
2%	US
2%	Turkey
2%	Brazil
2%	Japan
31%	The rest of the world

Millions of metric tonnes



GLOBAL CARBON FOOTPRINT OF CEMENT

The production of “clinker” accounts for most of the CO2 emissions of cement production.



SAND SHORTAGE

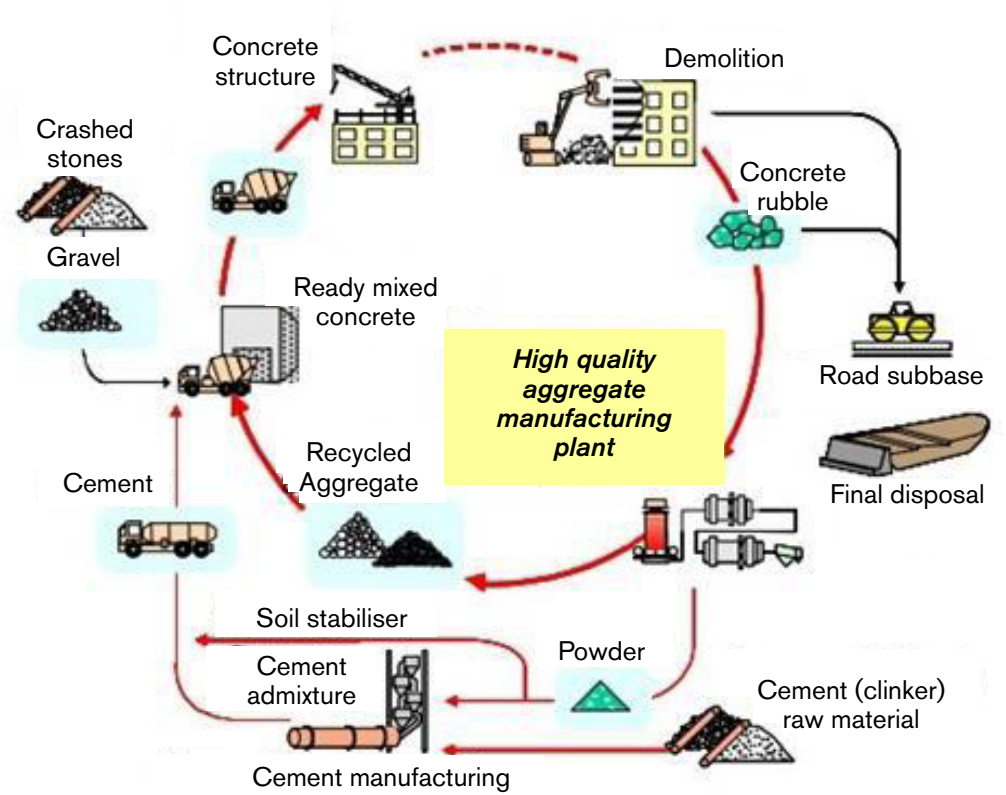


Desert Sand



Sea Sand

CONCRETE RECYCLING



THE CONSTRUCTION INDUSTRY

Construction waste in Iceland:
364.943 tonn 2014
873.522 tonn 2017

Waste from the construction industry



Waste

CO2 emissions from the construction industry

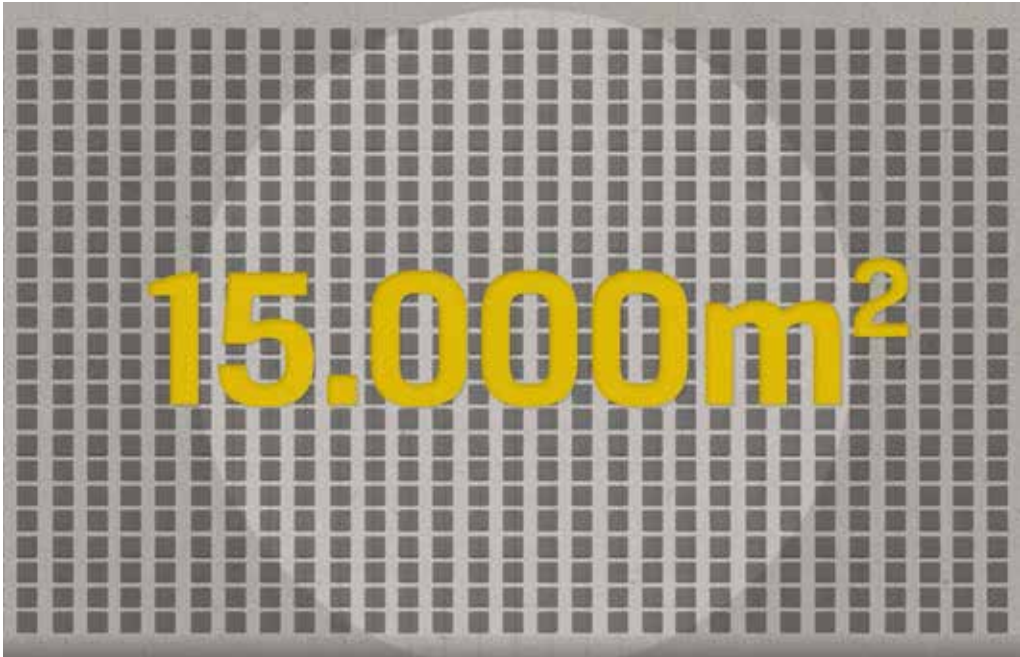
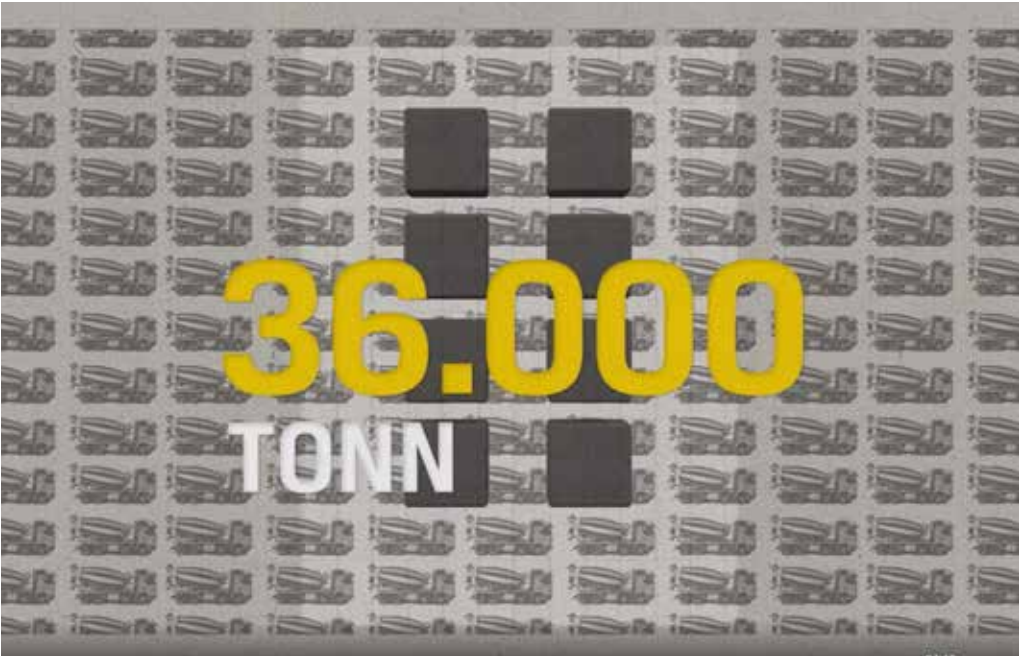


Global CO2 emissions

CONCRETE WASTE



CONCRETE WASTE



CONCRETE EXPERIMENTS

Experiment

THE CONCRETE GLOBE

Globe from concrete waste



Industrial area at Grandi

THE CONCRETE CAIRN

Cairn from concrete waste



This research is not complete....

DEMOLISING IN REYKJAVIK

DEMOLISHED



PLANNED TO DEMOLISH



DEMOLISHING VÍÐIR

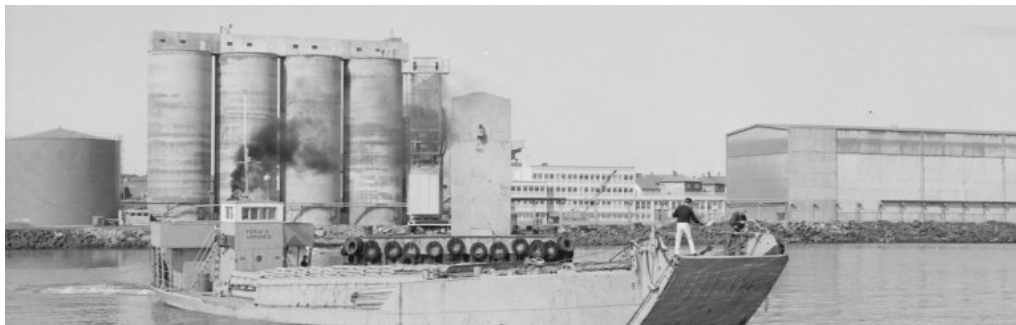
Demolished: 2021



The cement plant: 1958

SEMENTSVERKSMIDJAN

Demolished: 2018



The material reserch

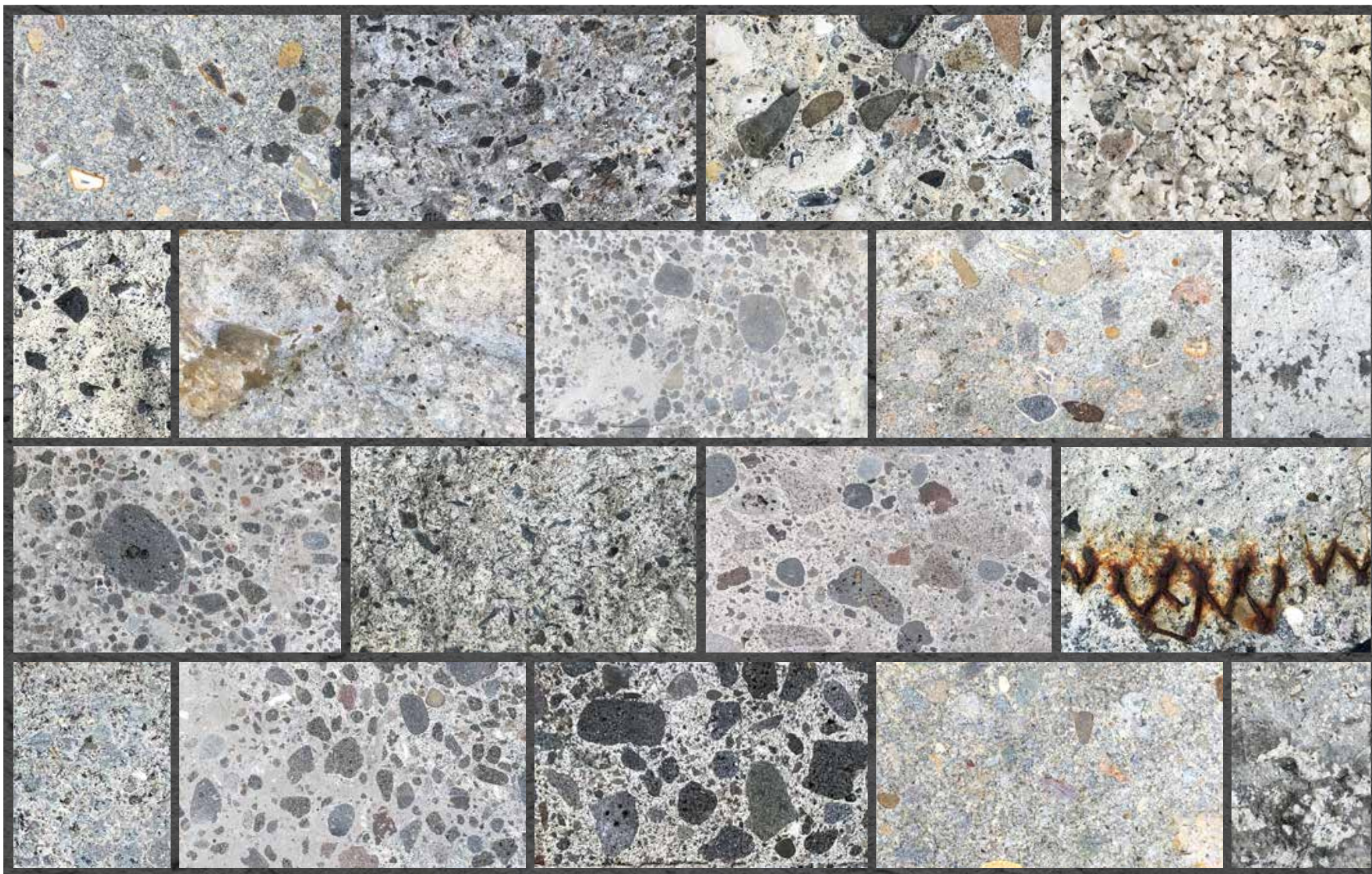
CONCRETE WASTE

Colours in concrete



Bricks from different houses

RÚSTSTEINAR SKETCHES



Bricks from different houses

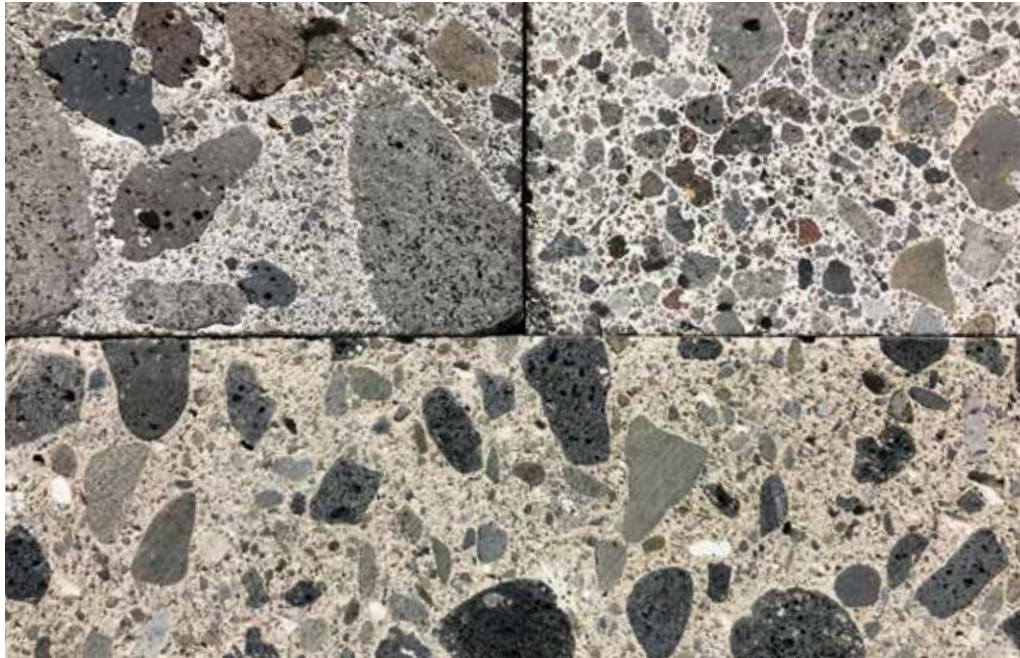
RÚSTSTEINAR SKETCHES



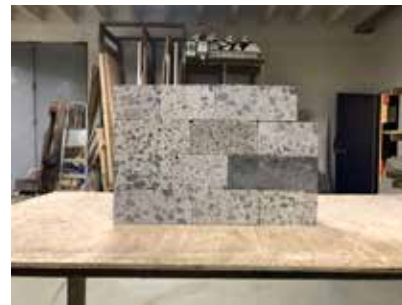
RÚSTSTEINAR PROTOTYPE PROCESS



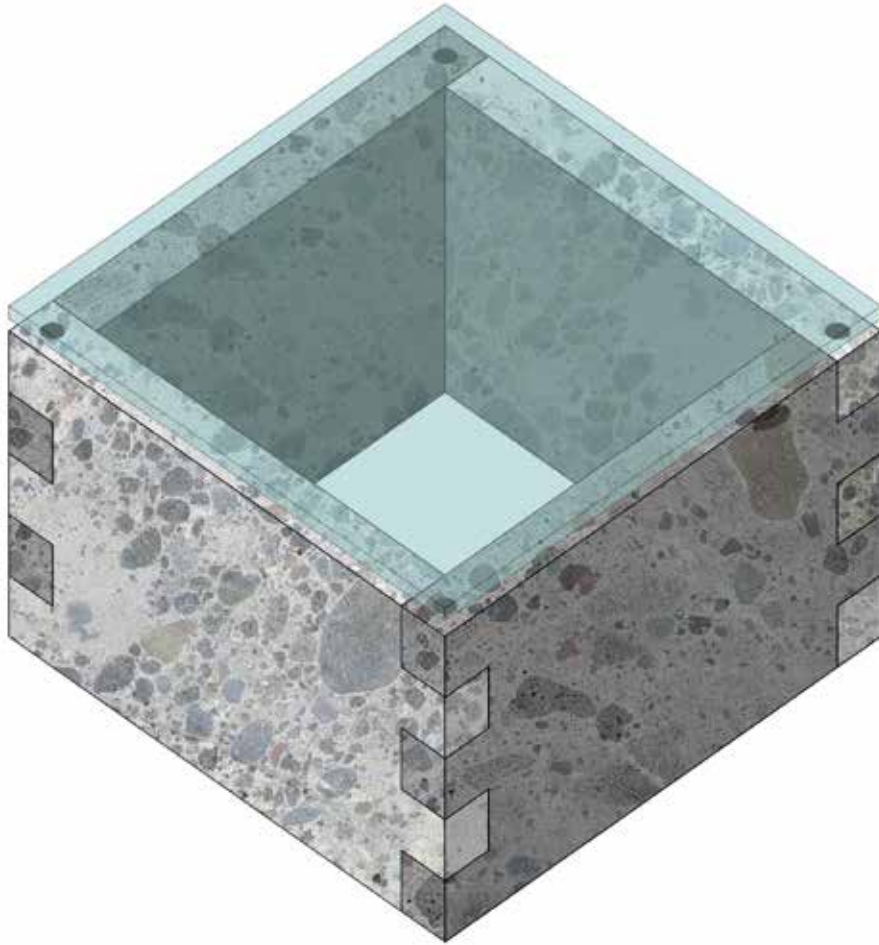
RÚSTSTEINAR PROTOTYPE



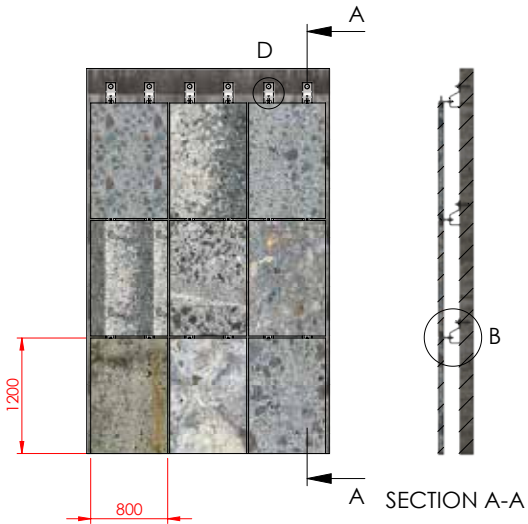
RÚSTSTEINAR PROTOTYPE



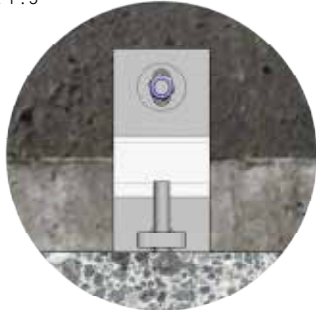
CONCRETE WASTE STRUCTURES



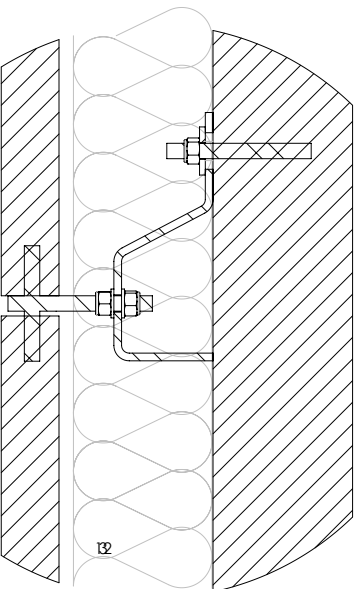
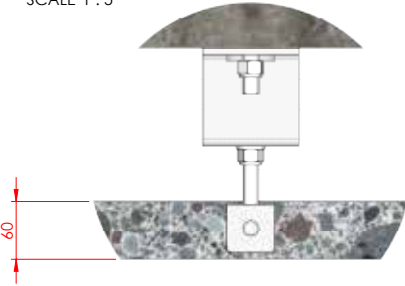
CONCRETE WASTE CLADDING



DETAIL D
SCALE 1 : 5



DETAIL C
SCALE 1 : 5



DETAIL B
SCALE 1 : 5



NEW LANDSBANKINN



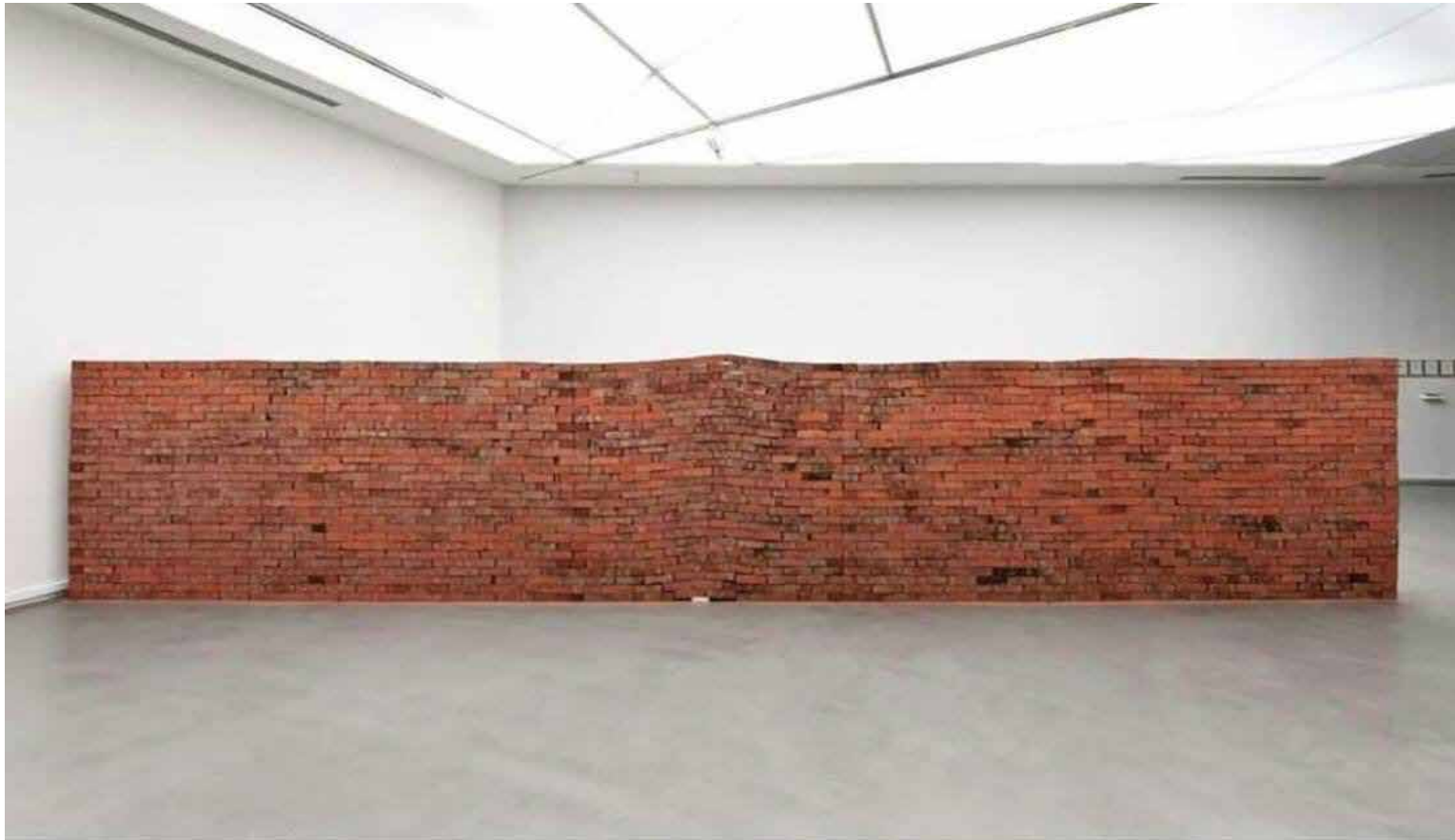
STONE CLADDING



FURTHER RESEARCH AND REFERENCES



IMPACT OF A BOOK







ANNE HOLTROP







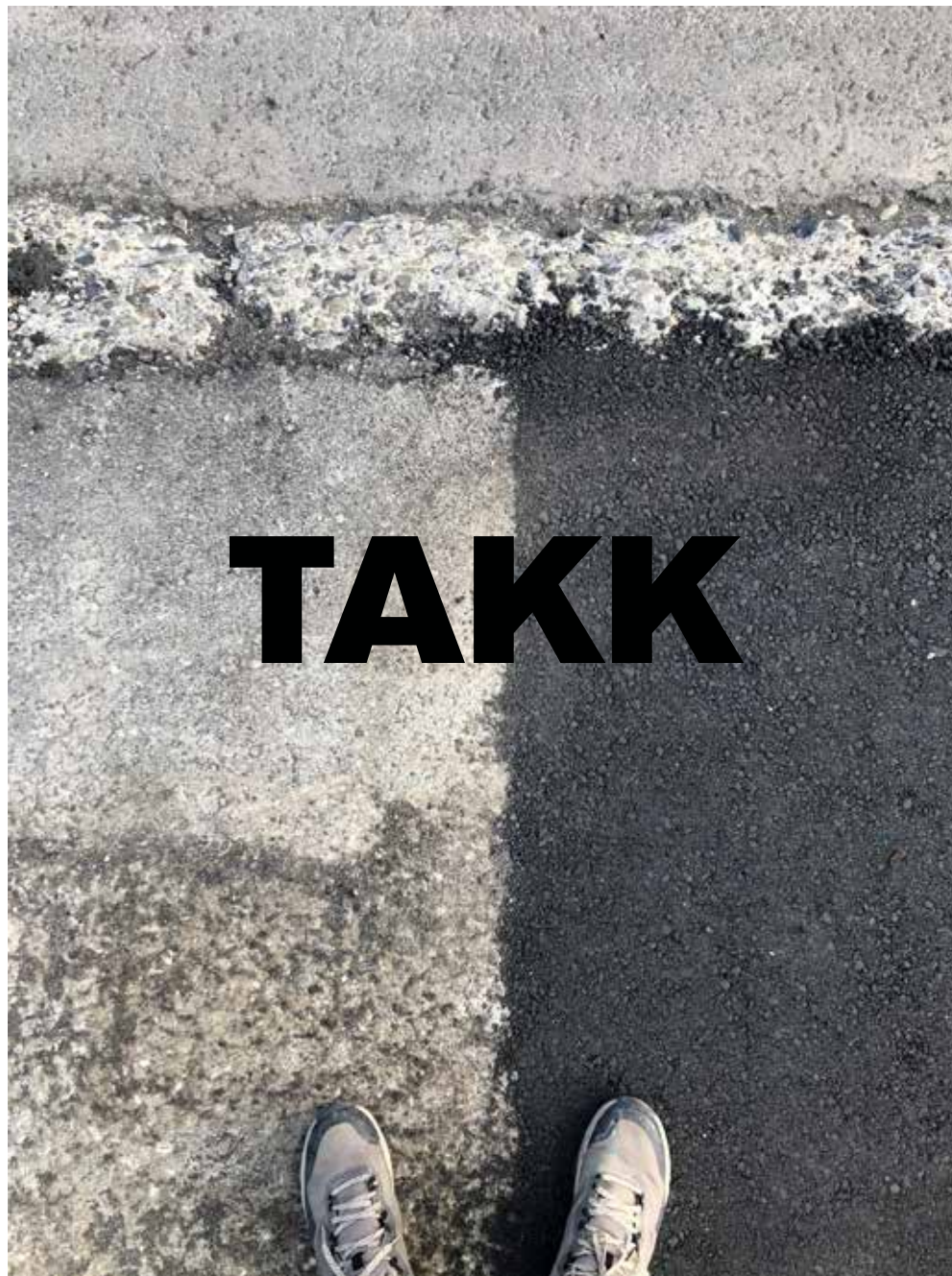
LACATON & VASSAL

“Never demolish!”





Rúststeinar



Narfi Þorsteinsson