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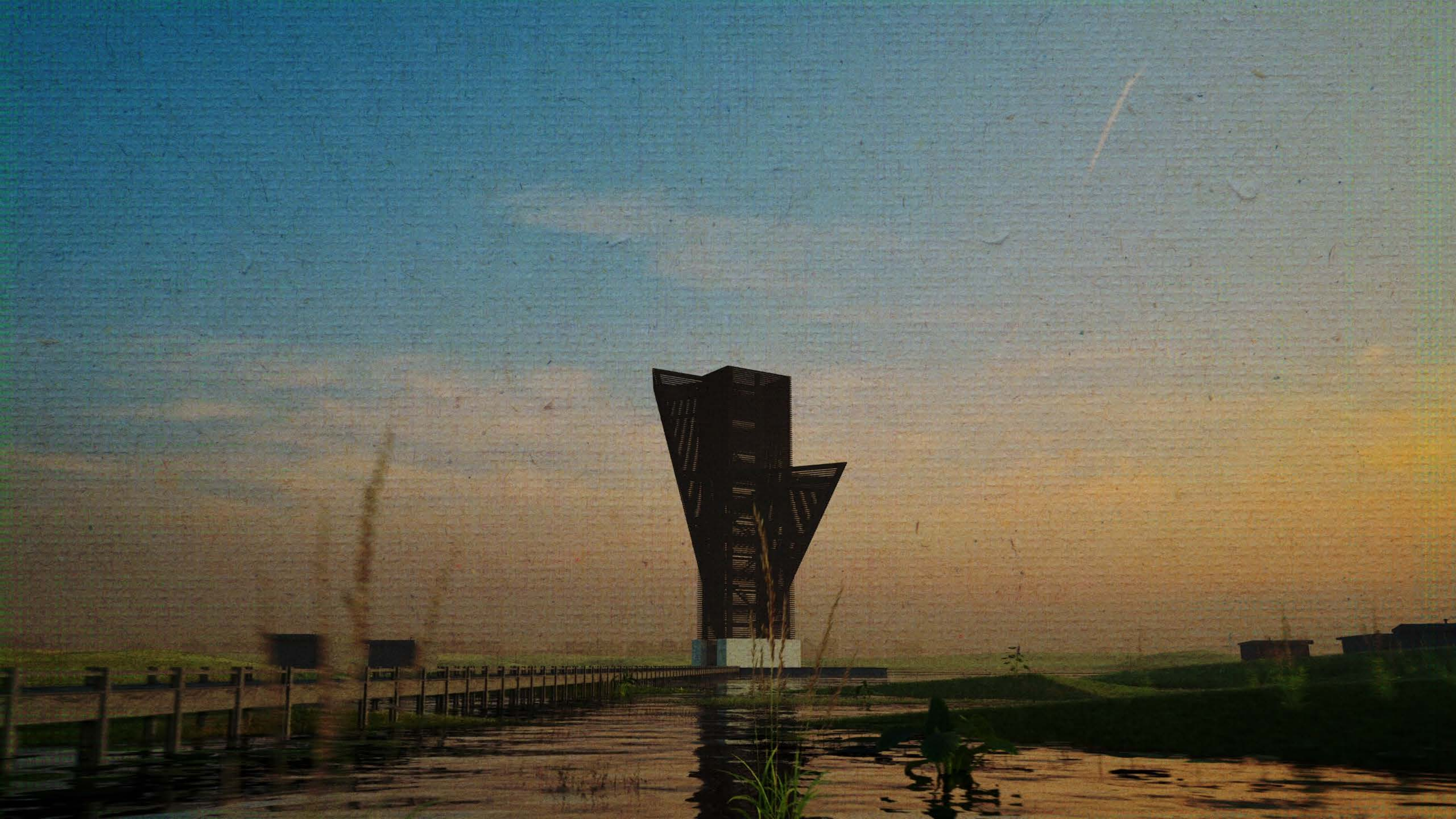
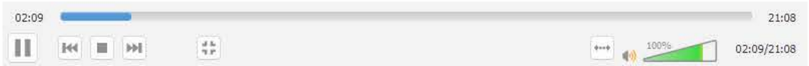
Dallinga, Siert. *Oilspot*. 2007. Oil on canvas. 150×250 cm

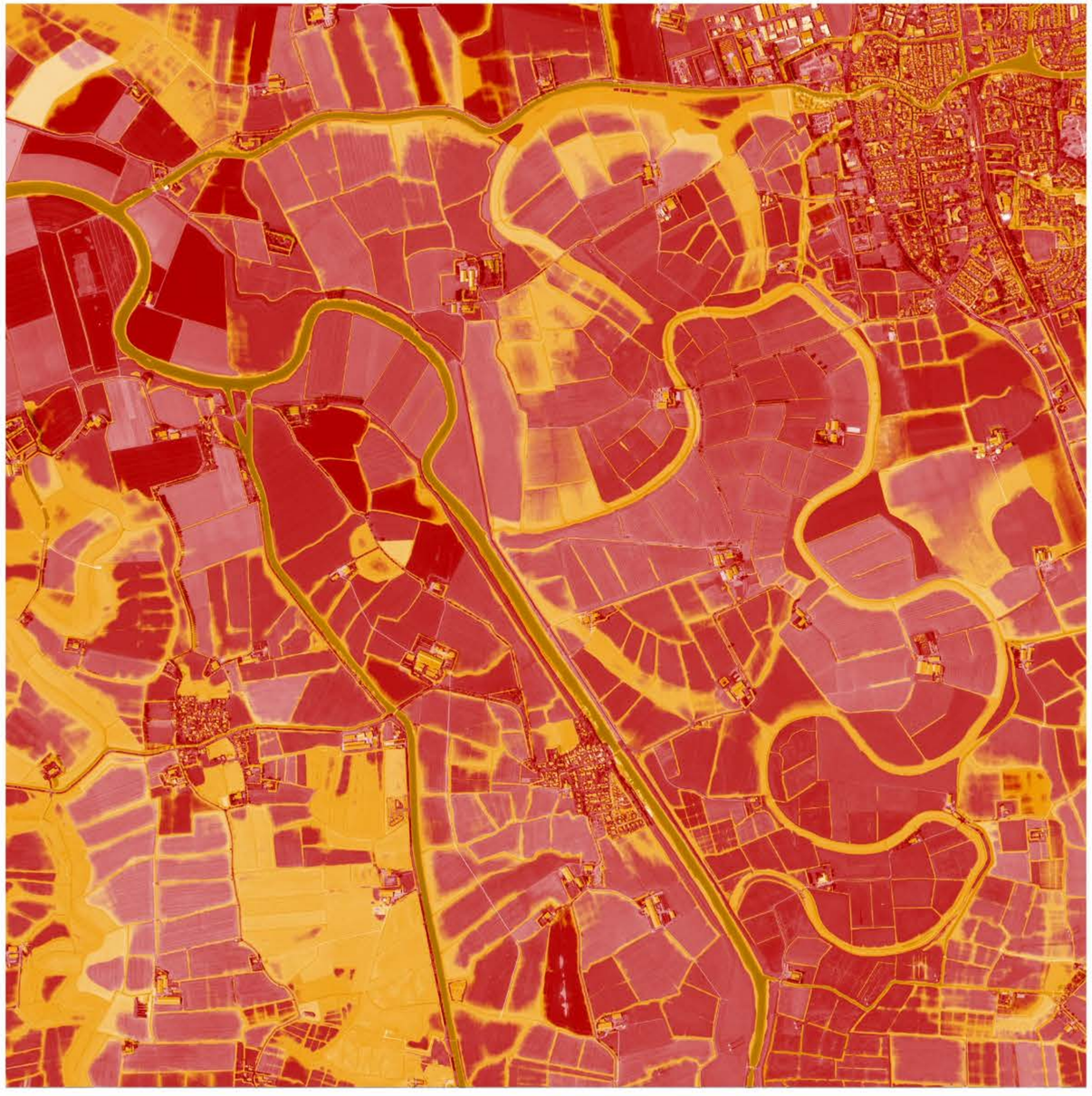


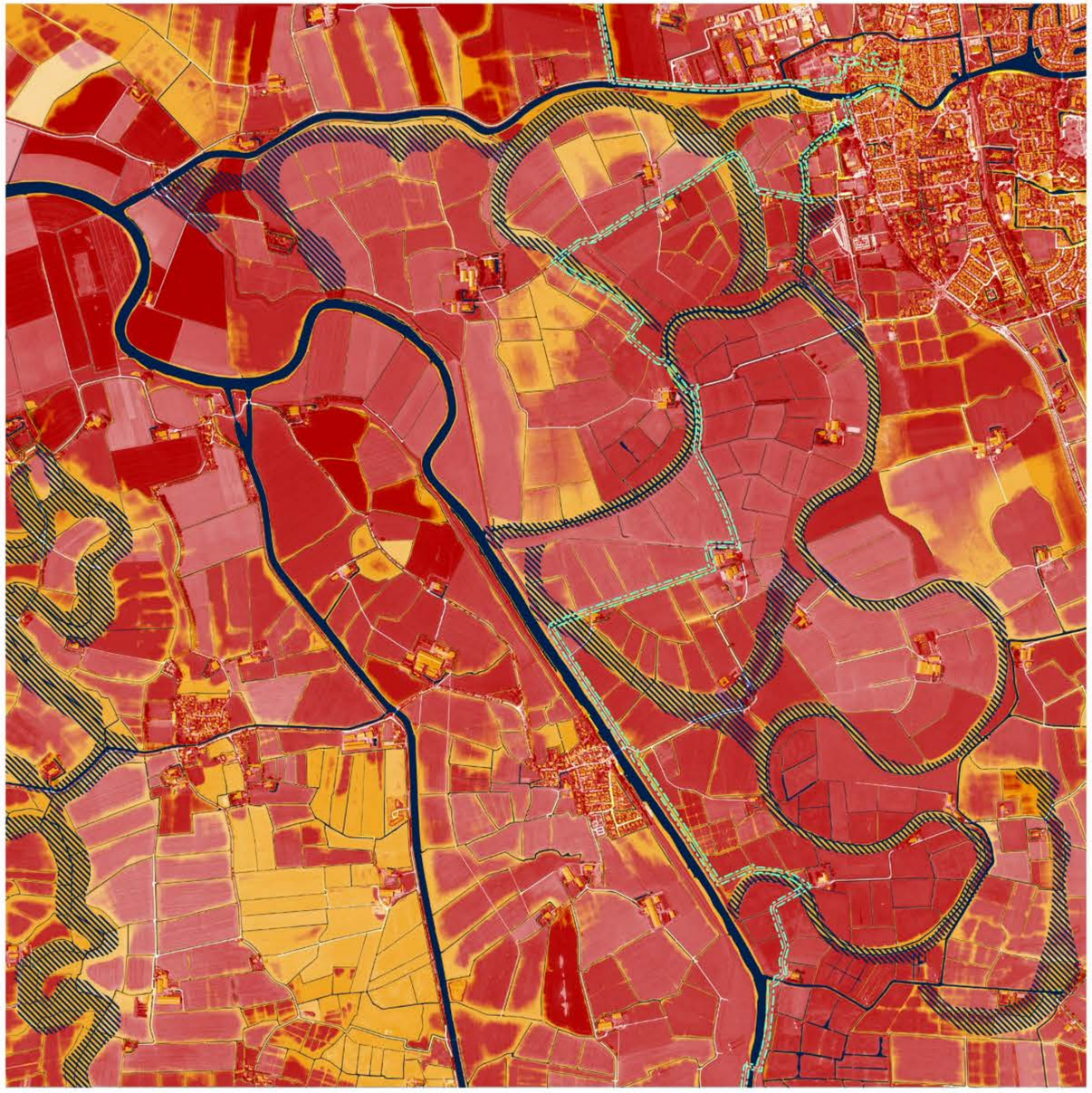
goal

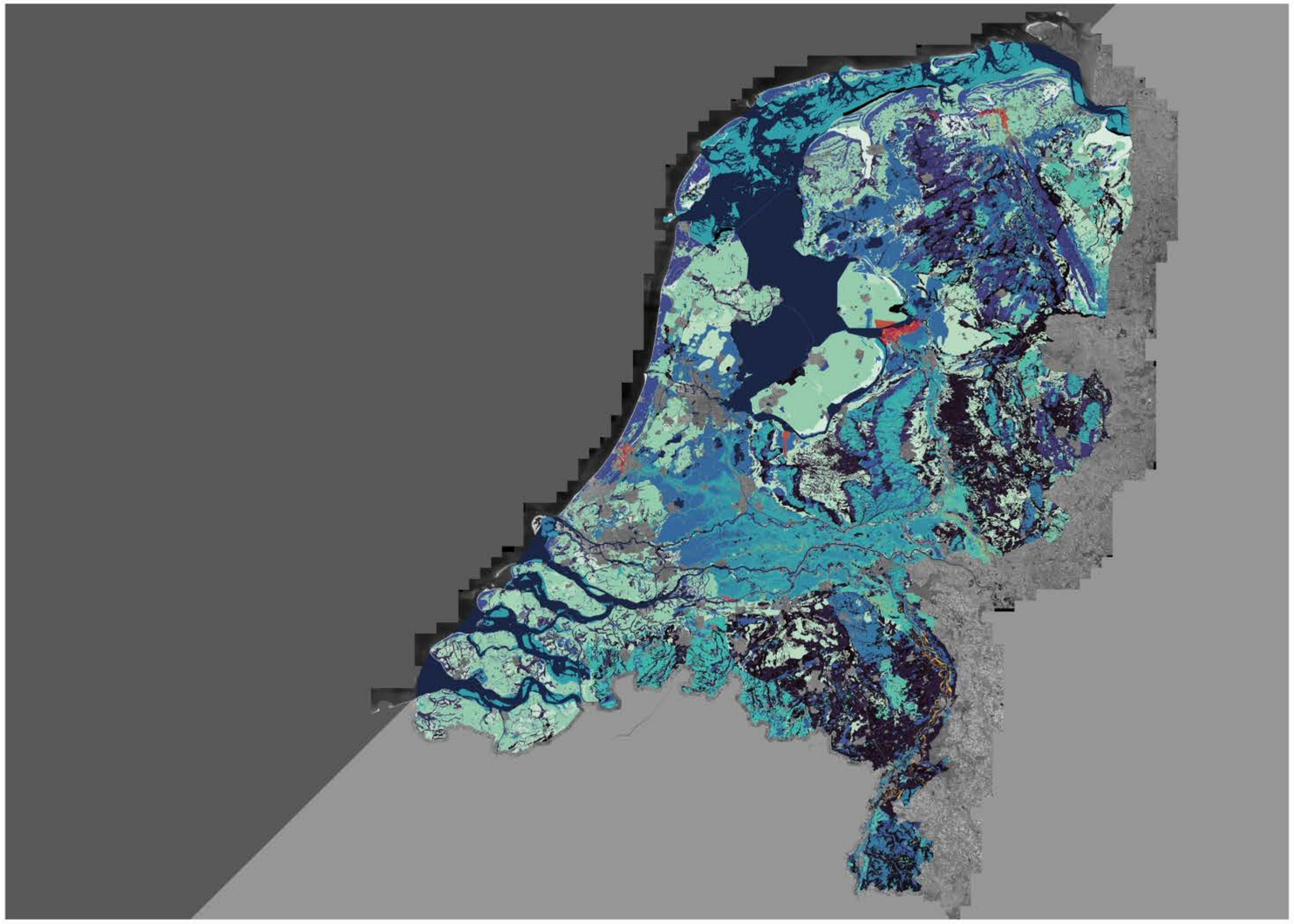
attract tourists to Winsum while giving back
to the locals and the surrounding ecosystem

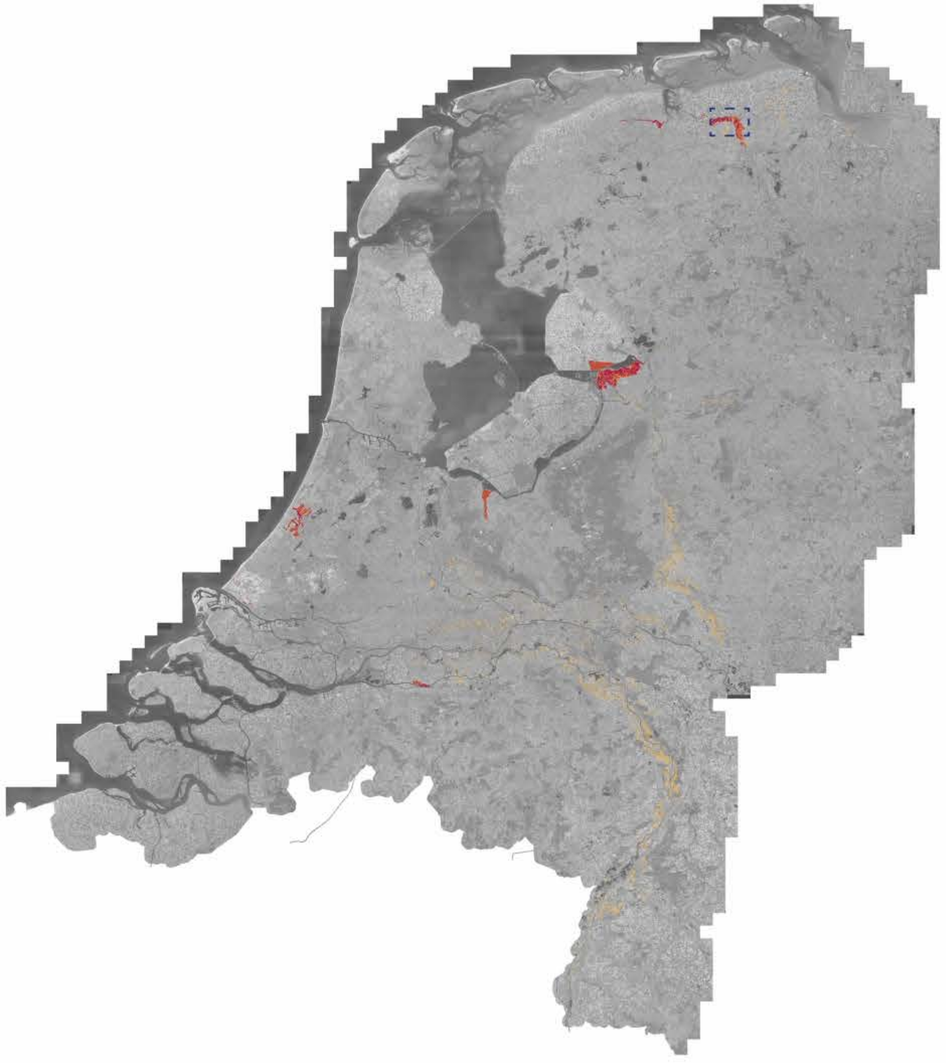


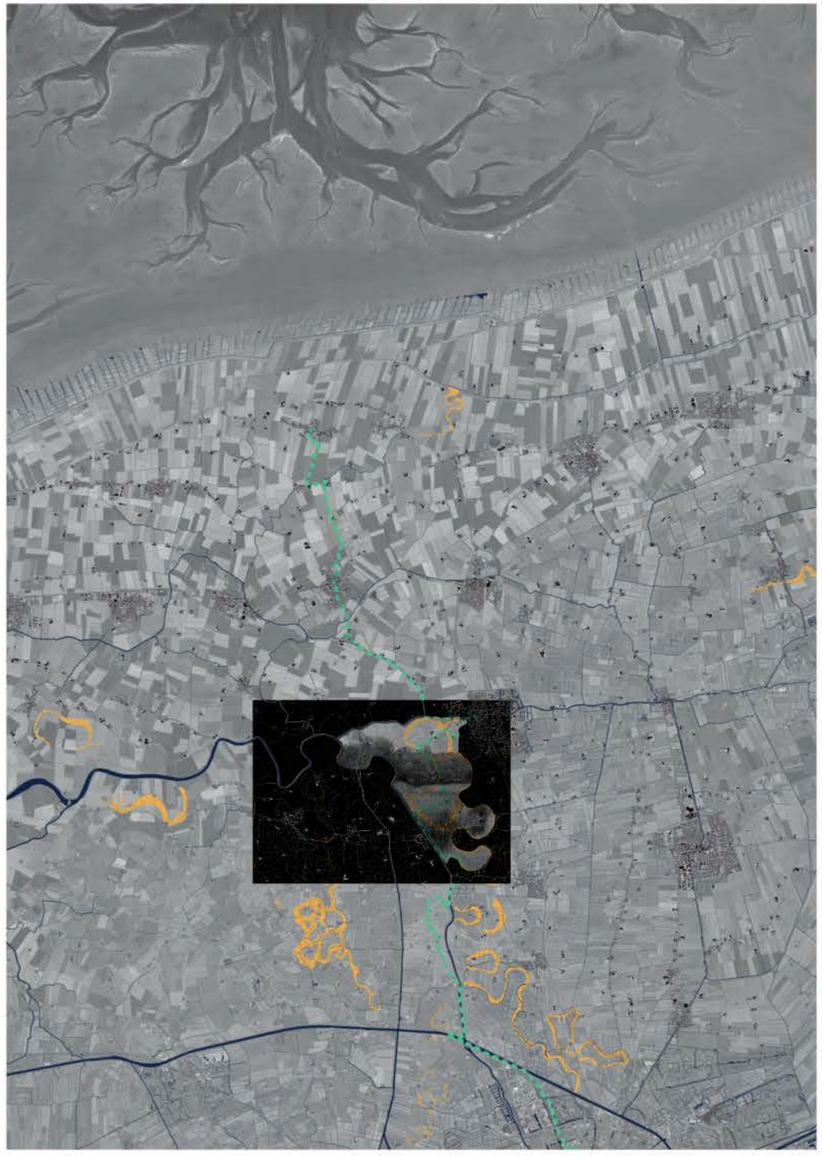
Groningen & Winsum
through the lens of the tourist
Legend:
Groningen Map
Train
Roads
Pieterpad
Radial distances
Wadden sea
Reitdiep river:
main fresh water connection
main fresh water distributor zones
Future water network
Current water network
Polder Landscape
Reitdiep future landscape
Winsum Map
Pieterpad
Faster route
Ideal route
Extended ideal route
Boat to Norway
Zenscape
Naturescape
Cityscape
Mudflat hiking
3 hours
Pieterpad
HUB
1
2
3
4
5
6
7
8
9
10











current Pieterpad

envisioned Pieterpad

Your Journey starts in Winsum!

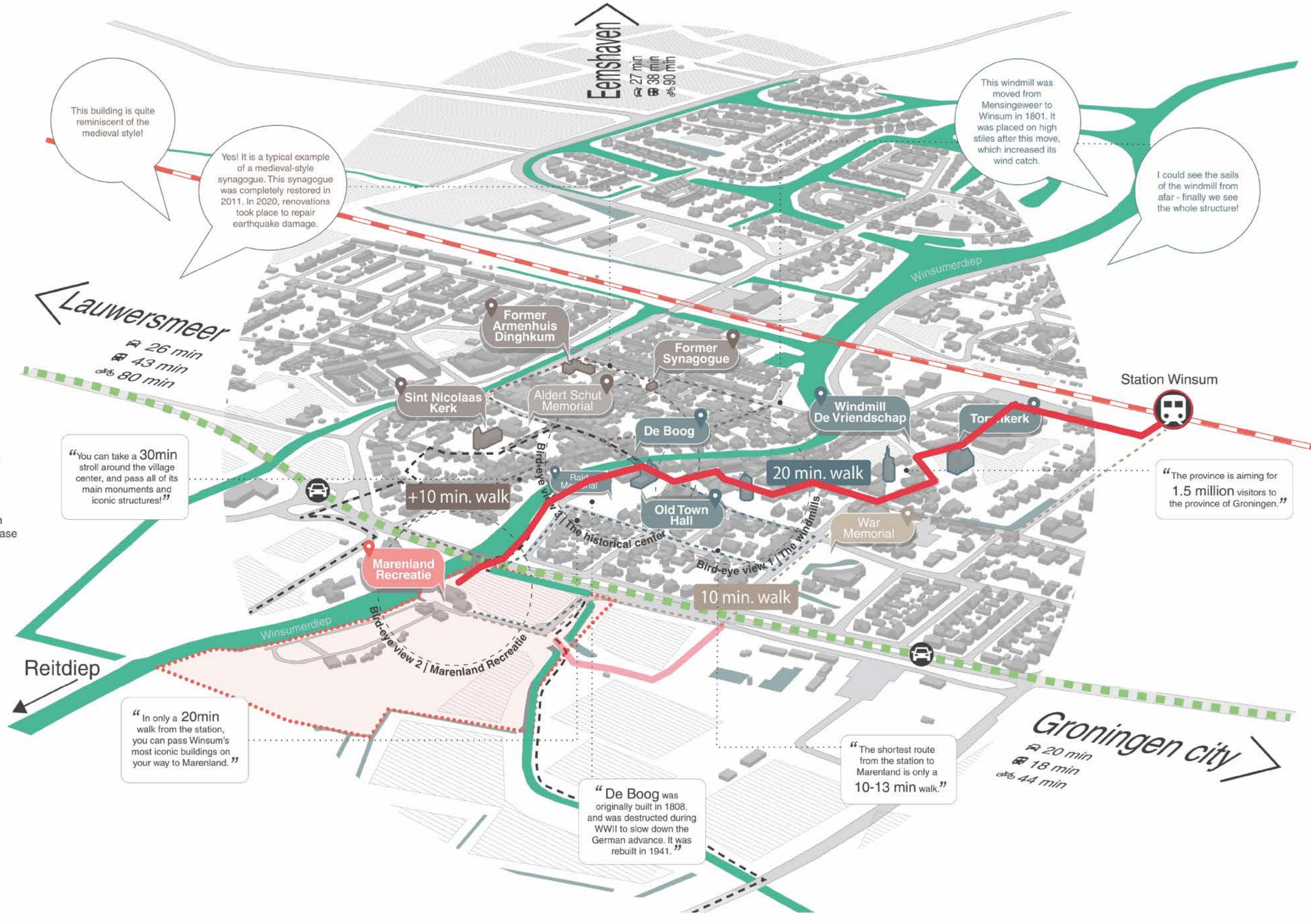
Your journey starts in Winsum!: Winsum is the place to discover Unesco Lauwers-meer, party city Groningen and its variety in heritage landscape in just a few days. It is just the place to be to discover the North!

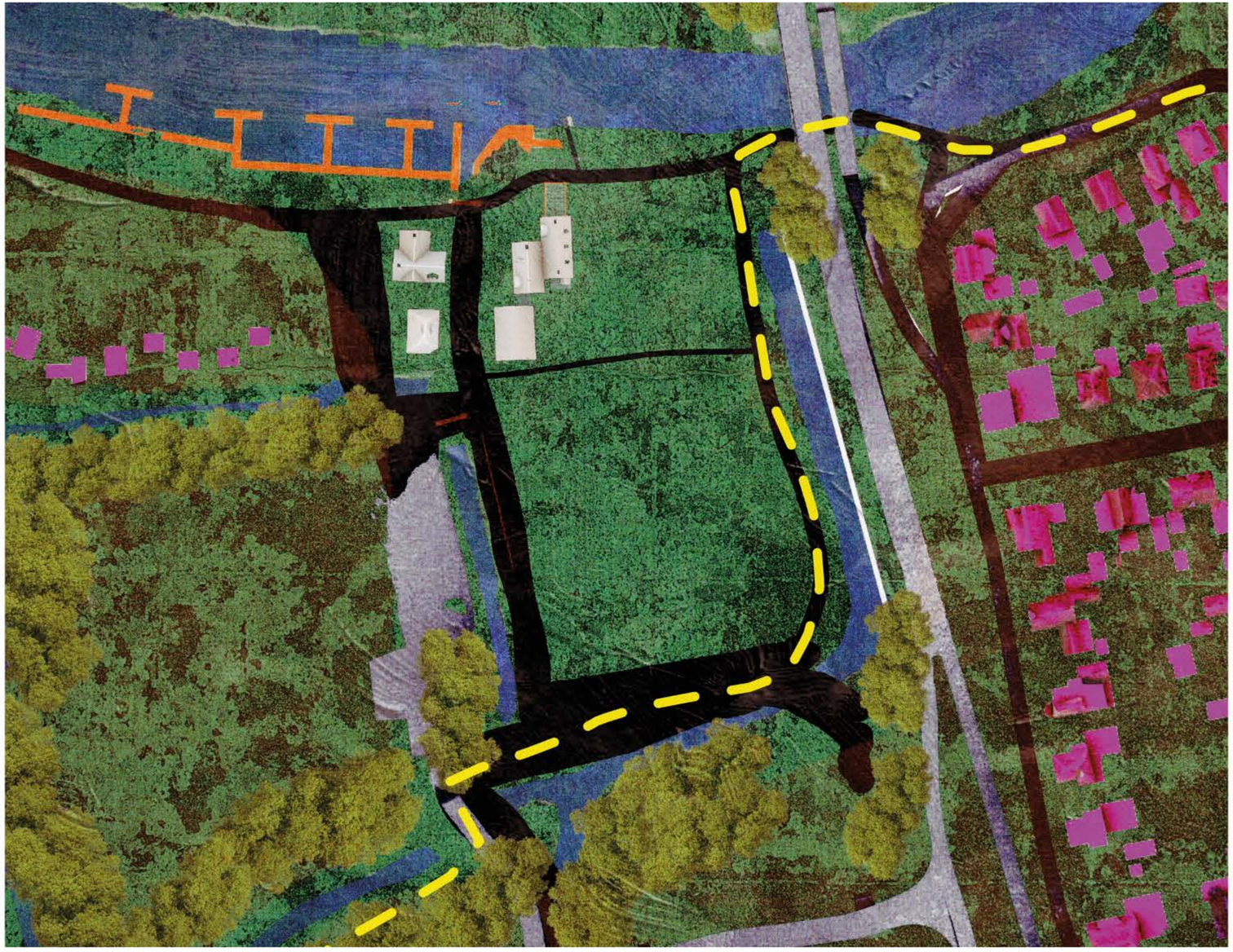
1.8 **days** — The average length of stay in Winsum

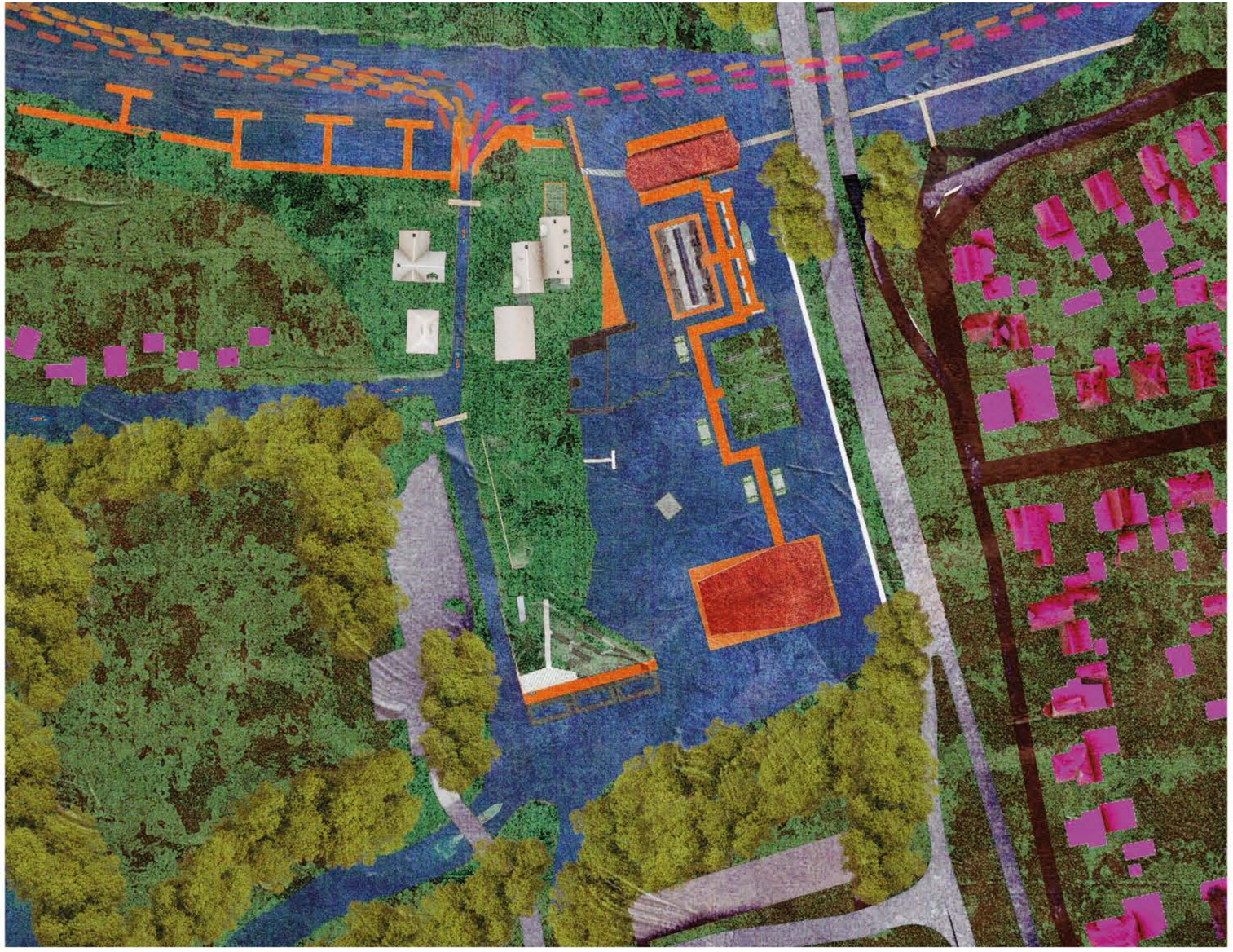
7525 **residents** — The population of Winsum

11% **growth** — The Province of Groningen recorded the highest increase in overnight visitors in the Netherlands in 2024

1.5 **million** — The ambition to increase visitors annually



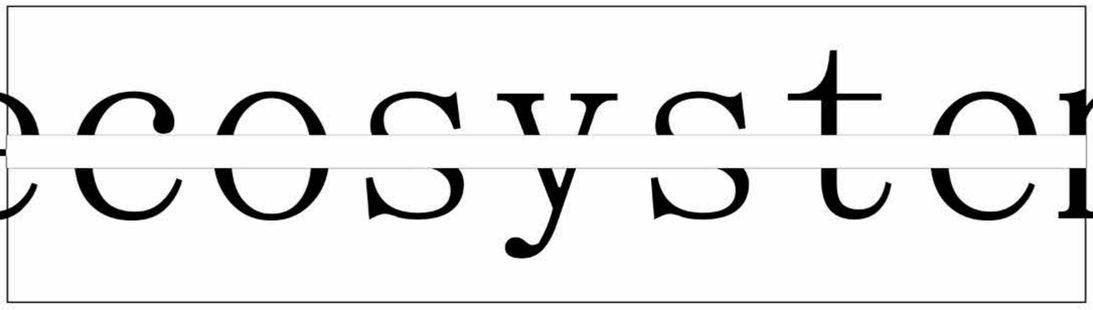




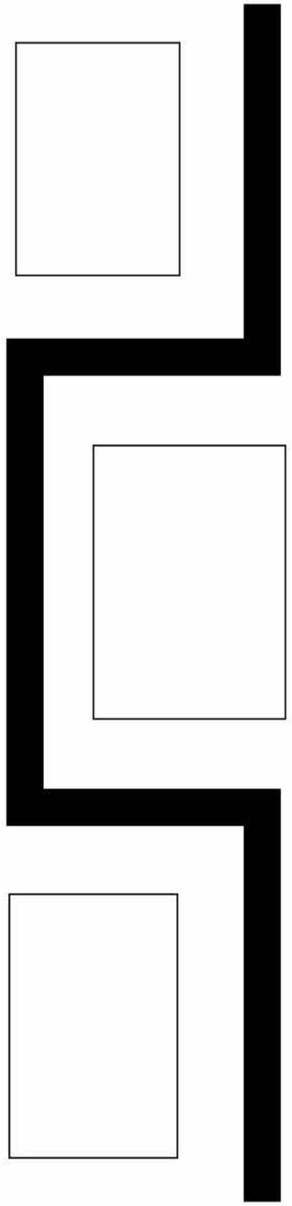
goal

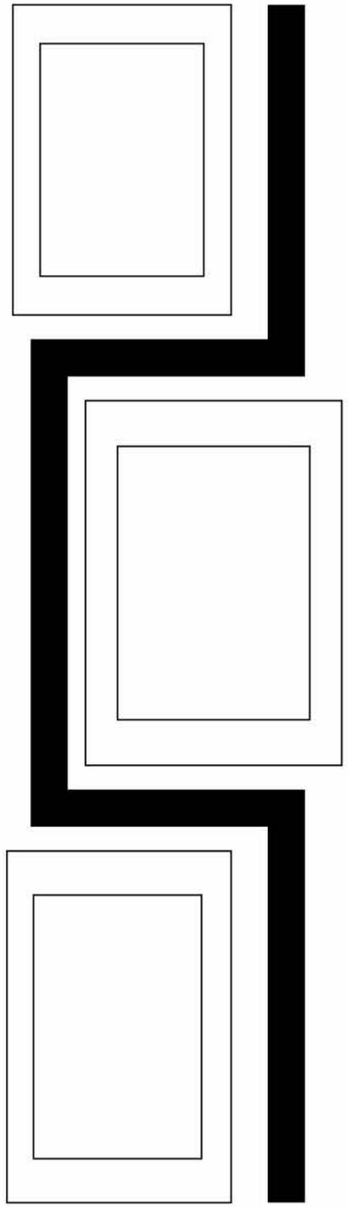
attract tourists to Winsum while giving back
to the locals and the surrounding ecosystem

tourists



locals





welcome to Marenland!

entrance

cafe

shop

workshops

canoe rental

saltwater pool

auditorium

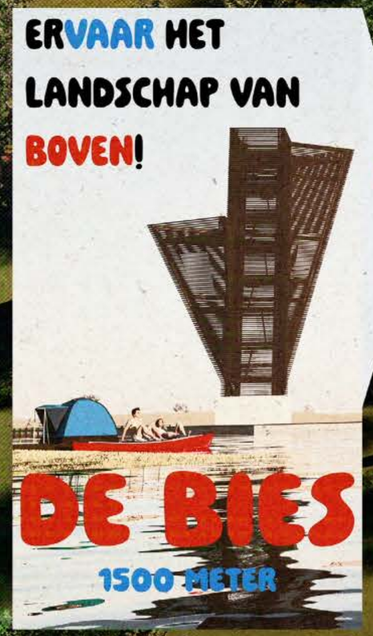
changing rooms / lockers

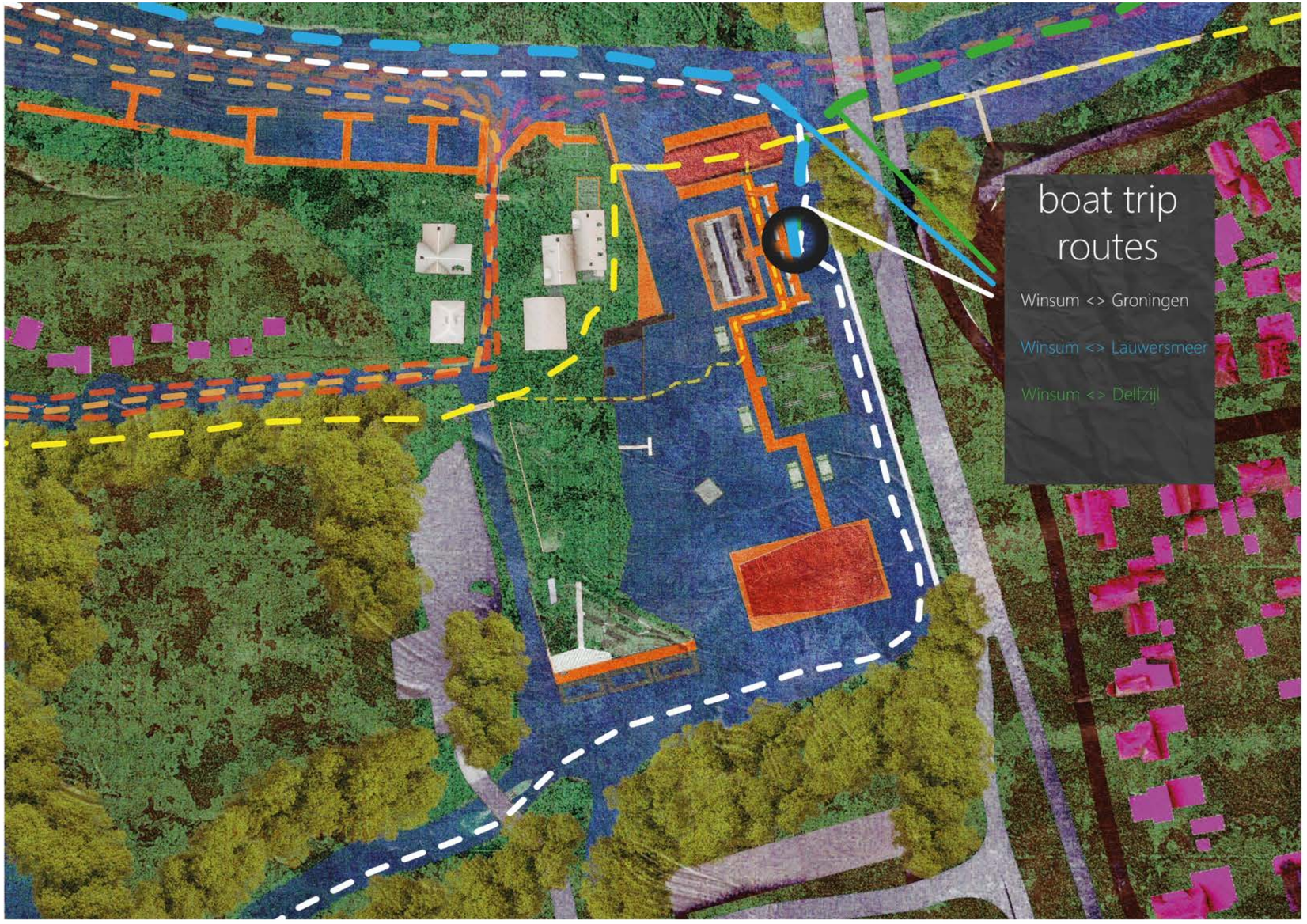
accomodations

wellness

boat trips from Marenland

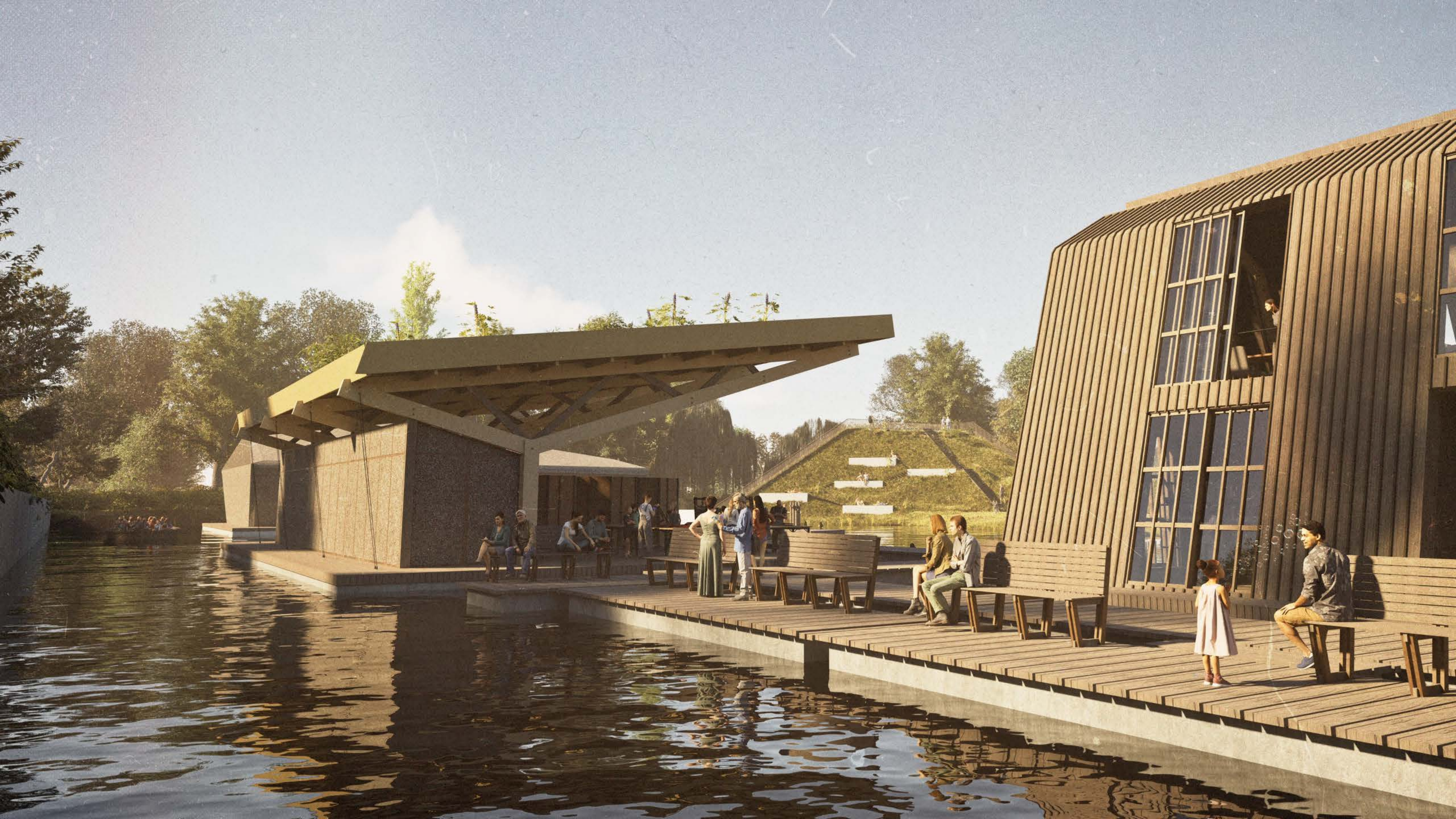
Groningen Lauwersoog Delfzijl

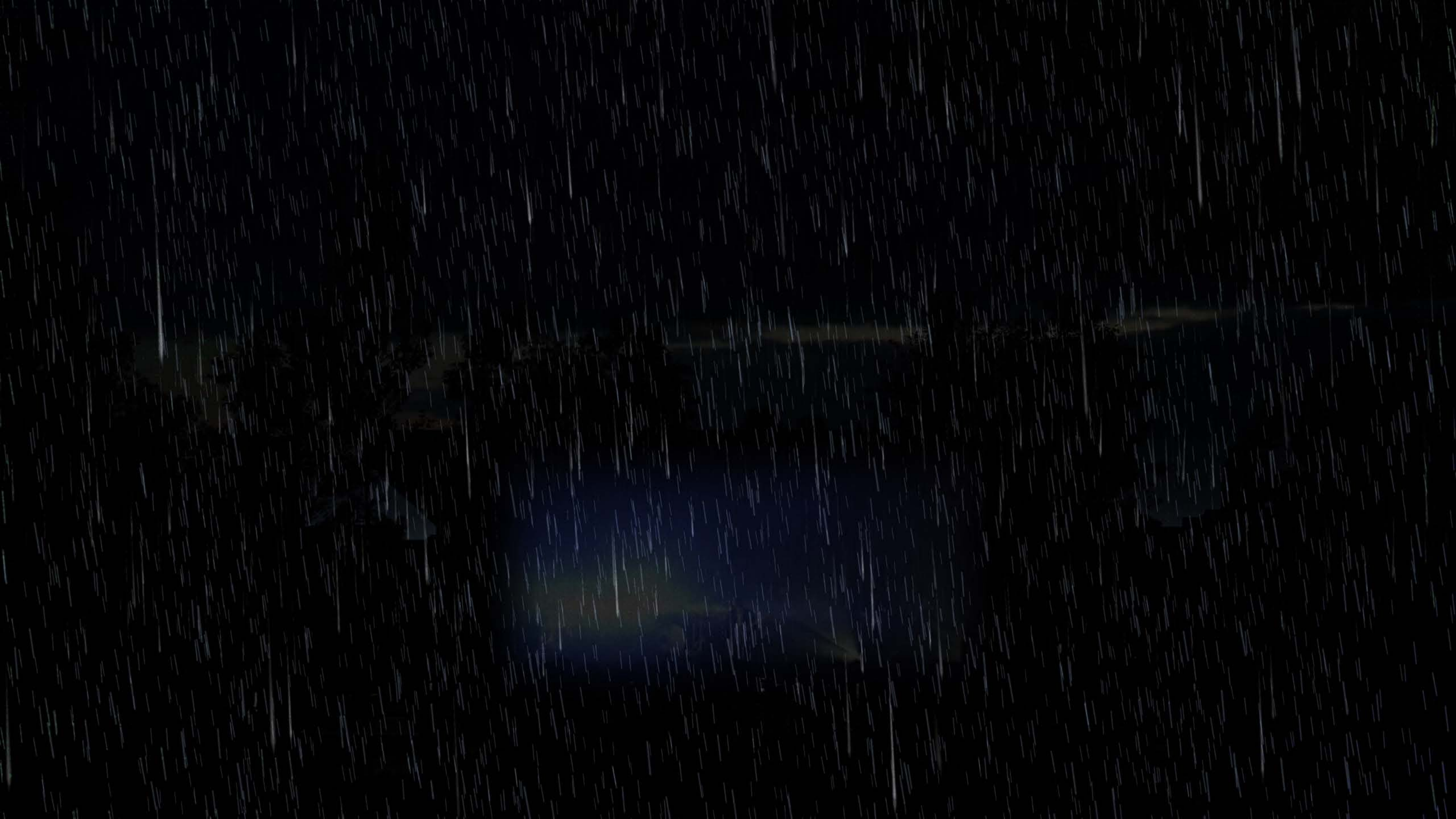



boat trip routes
Winsum <> Groningen
Winsum <> Lauwersmeer
Winsum <> Delfzijl

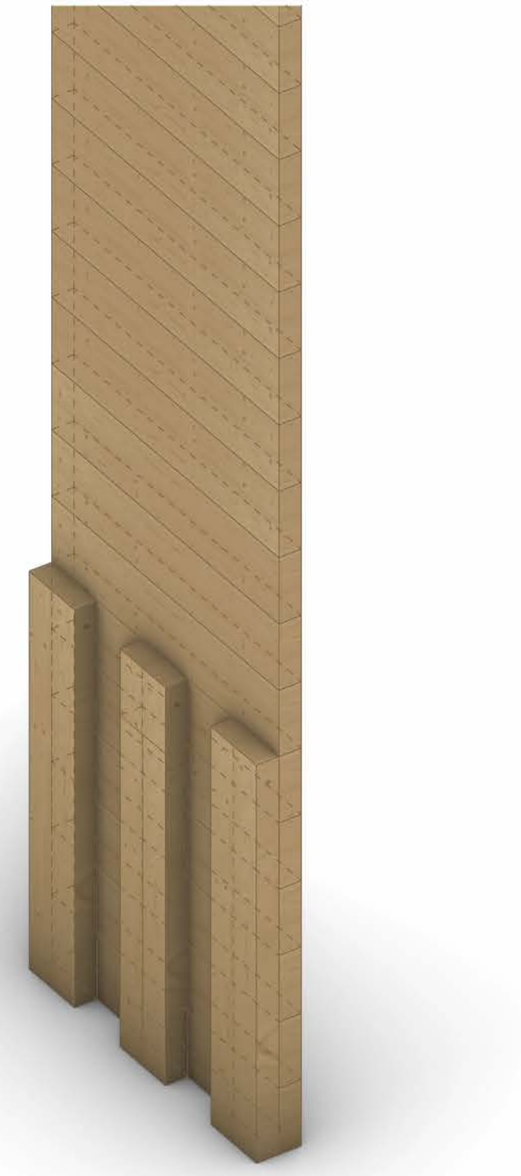

ERVAAR HET
LANDSCHAP VAN
BOVEN!
DE BIES
FISHMANS
11 JUNI
19:00
MASSADA
ARUBA
11 JUNI
22:00

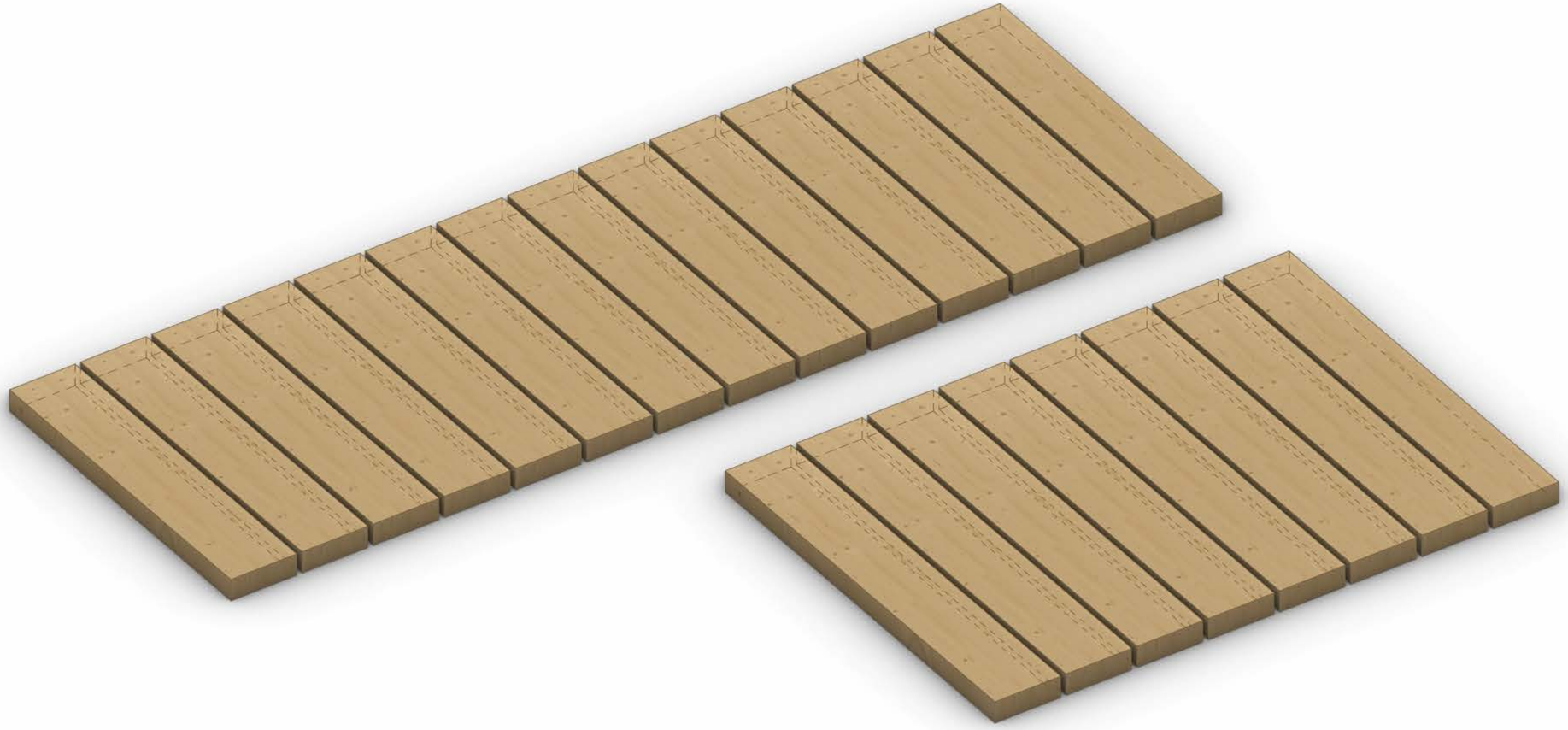

ERVAAR HET
LANDSCHAP VAN
BOVEN!
DE BIES
FISHMANS
11 JUNI
19:00
MASSADA
11 JUNI
22:00

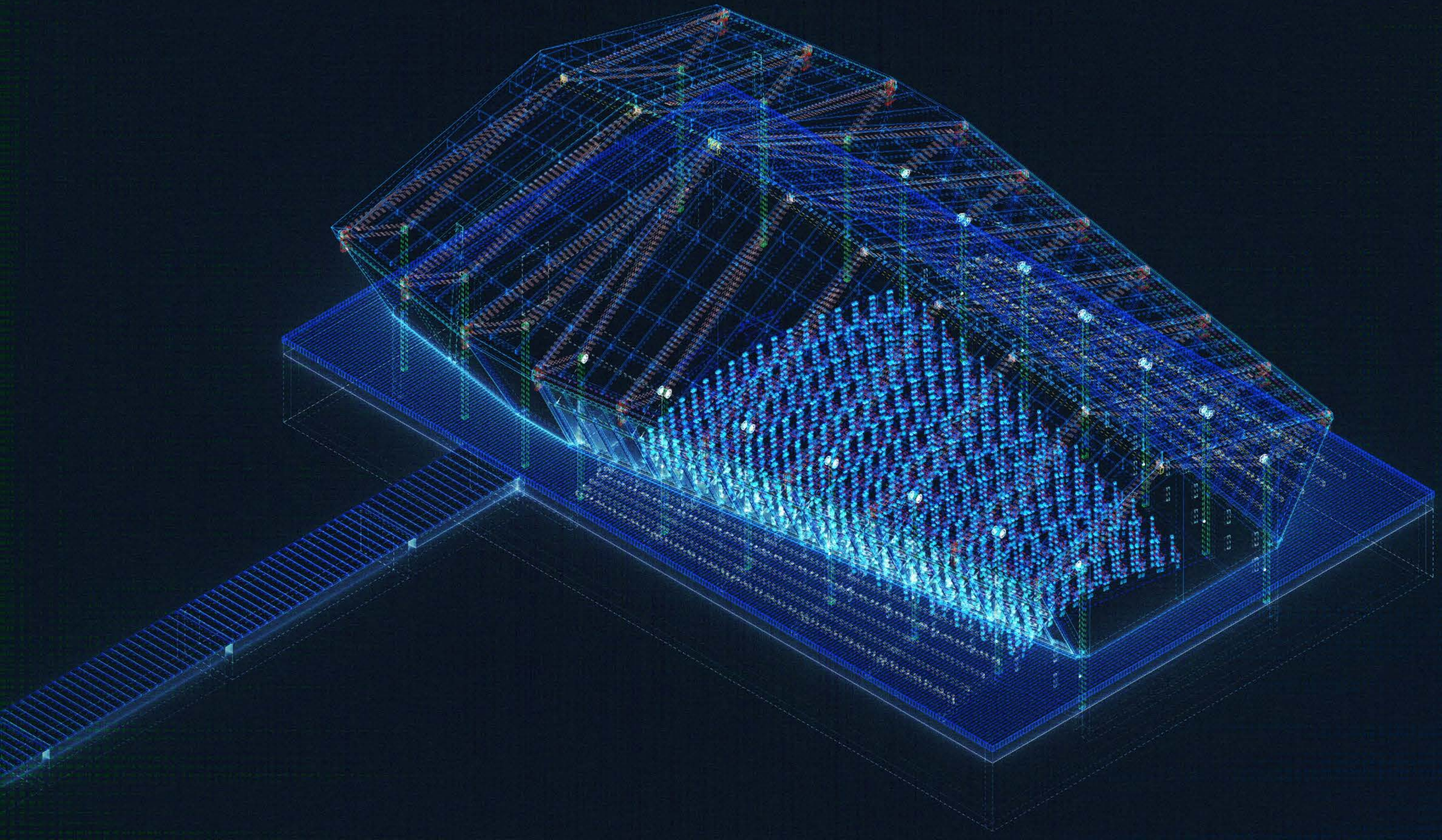


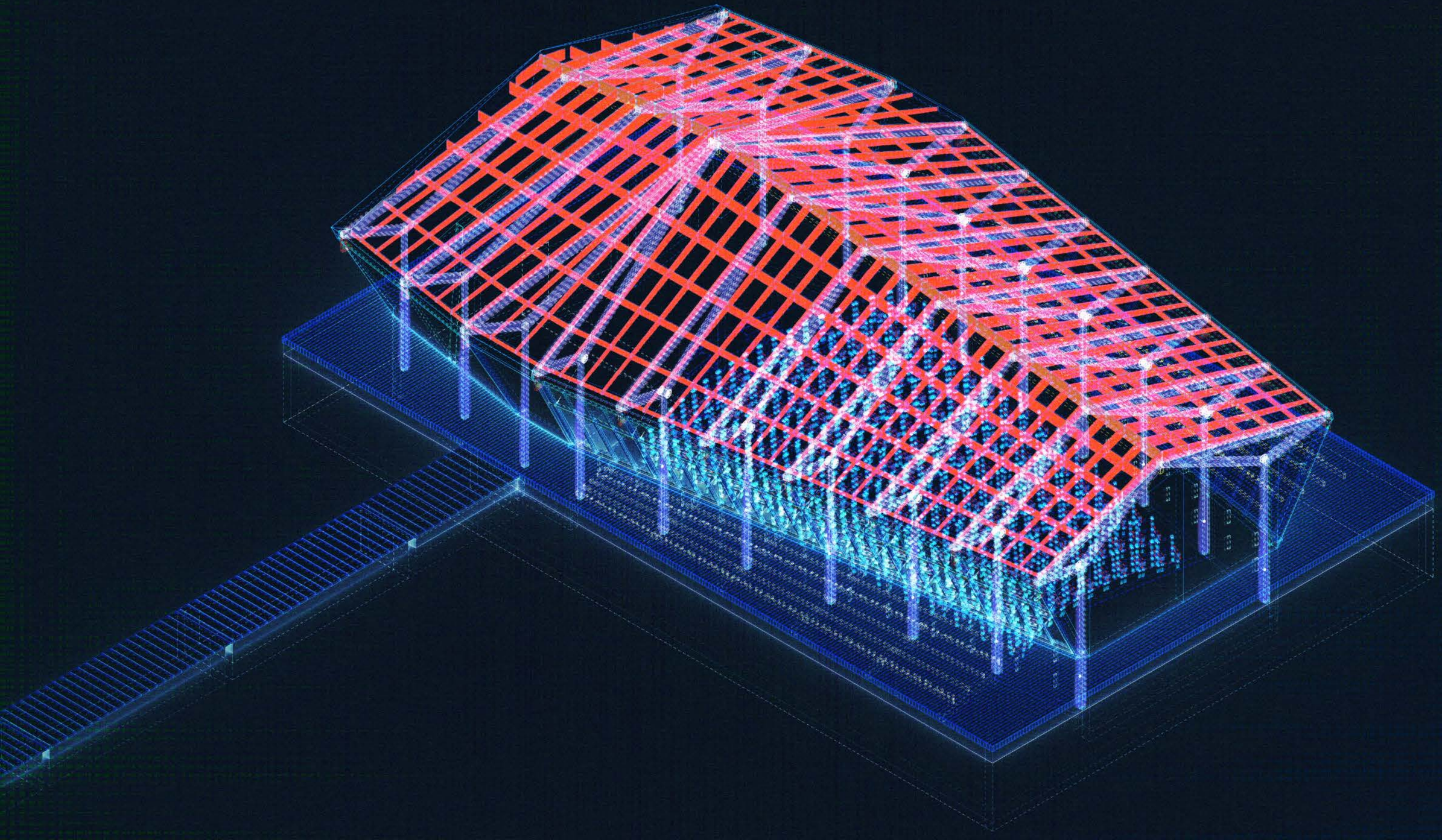


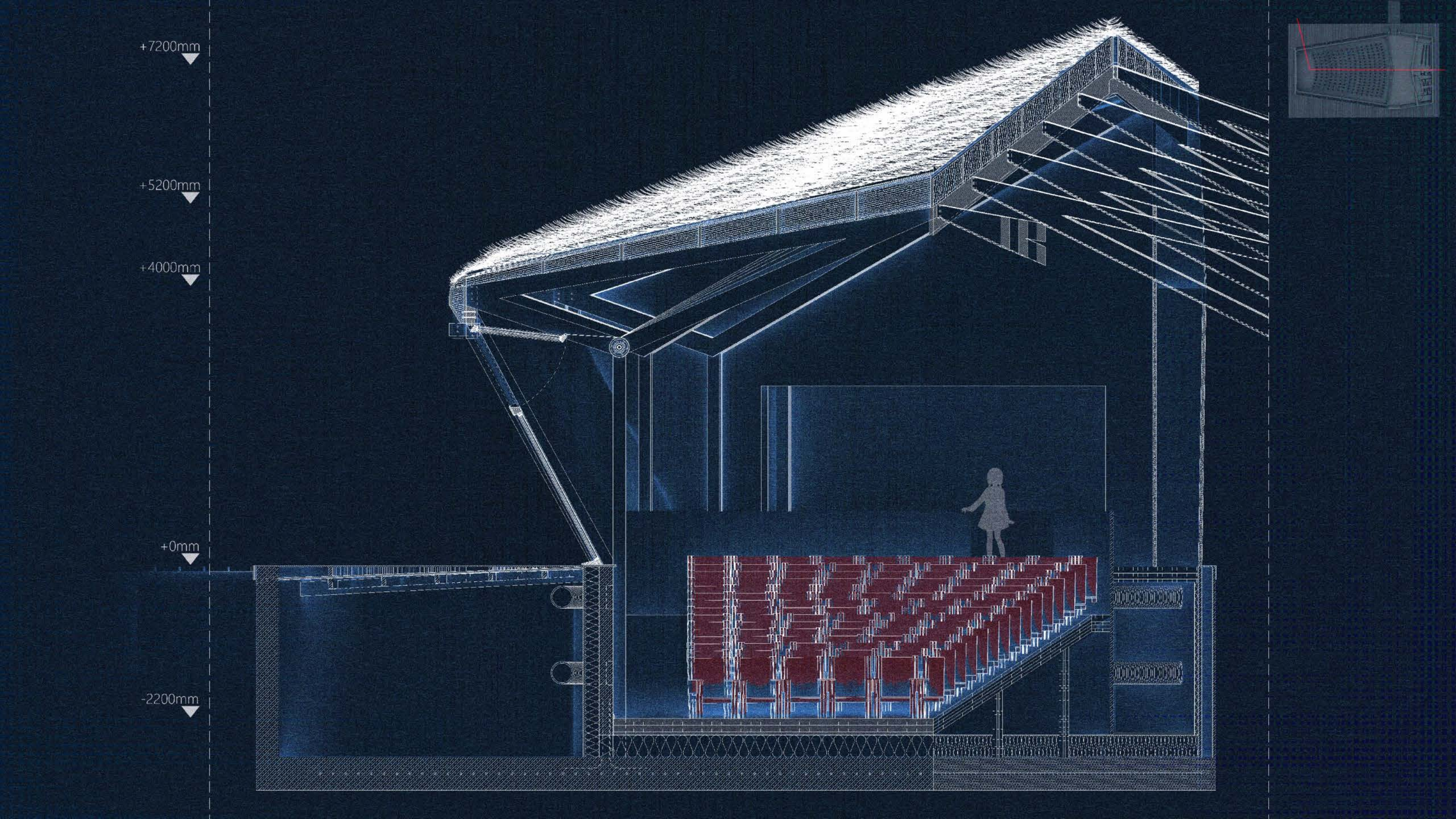

Unlock
your
potential.

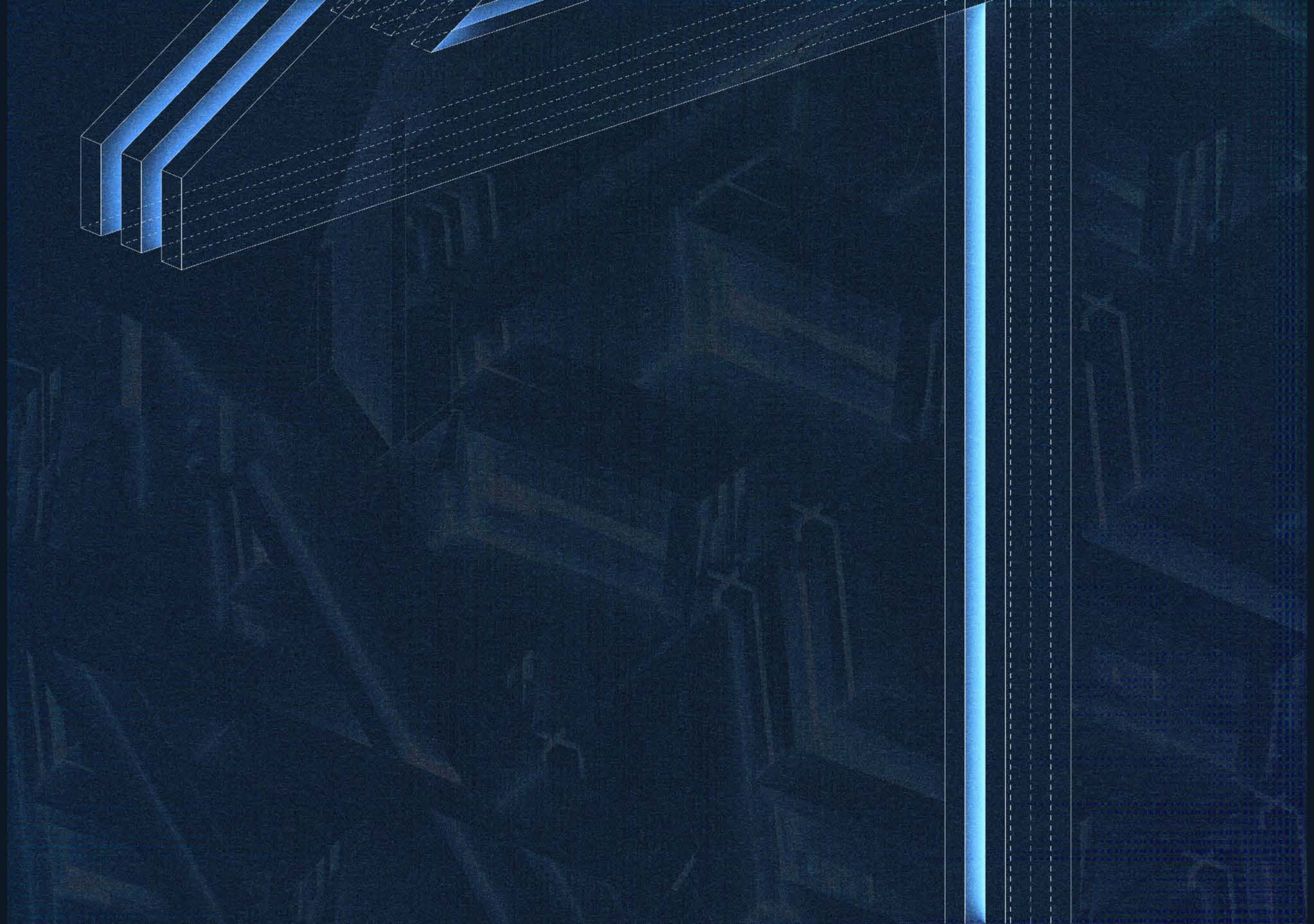


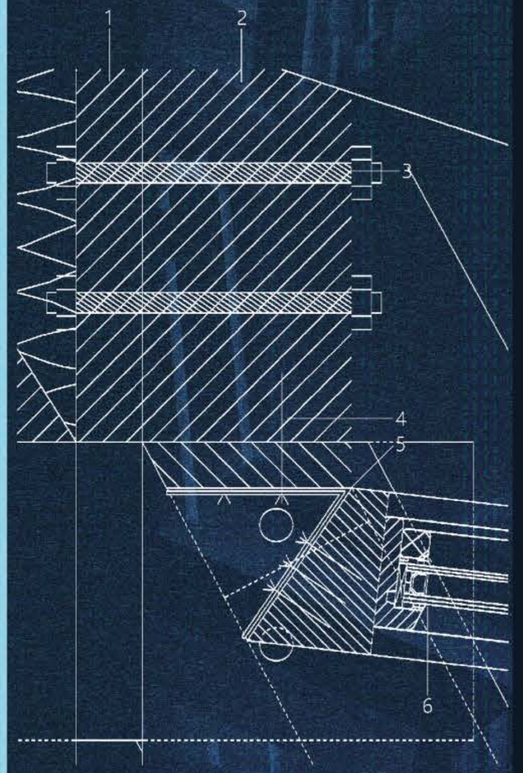




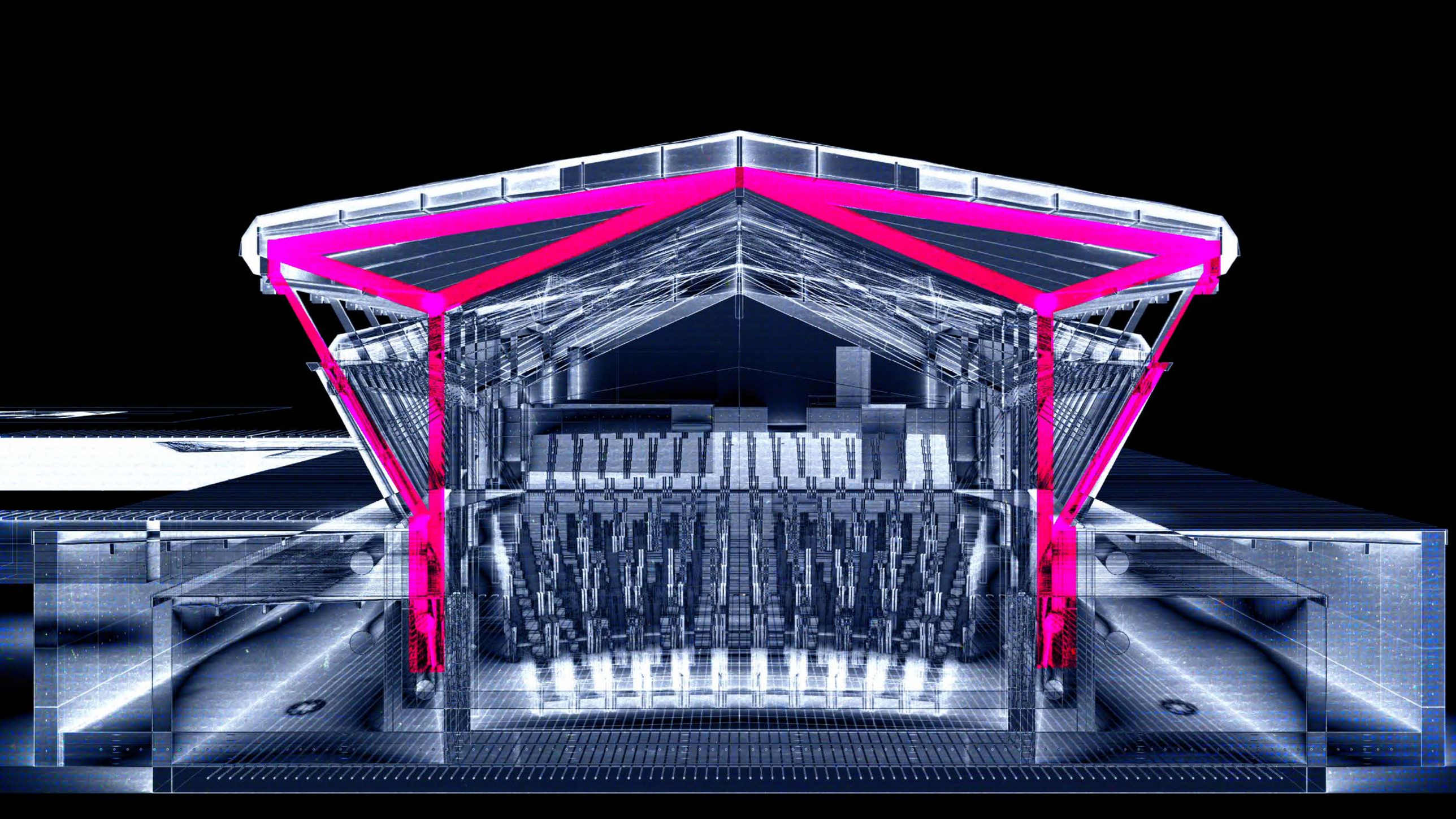



+7200mm
+5200mm
+4000mm
+0mm
-2200mm



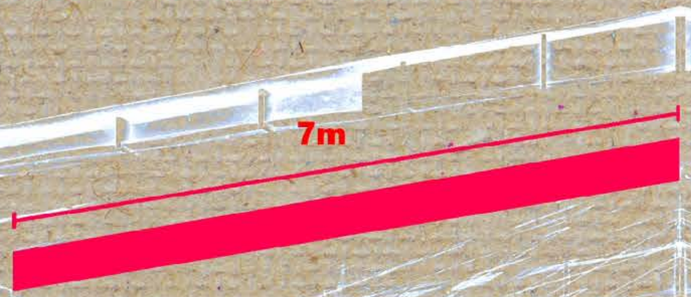


1 hardwood beam
42x260mm
2 hardwood beam
120x260mm
3 stainless steel hexbolt
Ø12 × 160 mm
4 timber screw
Ø5 × 70 mm
5 stainless steel hinge
6 hr++ double glazing
U-value: 1.0 W/m²·K



beam calculation

Effective span = 7.0 m
The design load perpendicular to the beam is: w=5.67 kN/m



M= (wxL^2)/8
M= (5,67×7^2)/8
≈ 34,7 kNm
M_{max}≈ 34,7 kNm

Bending stress

Section modulus:
W=5175000 mm^3

Bending stress:
σm= (34.7×10^6)/5175000
≈6,7 N/mm^2

Design bending strength for GL28h:

$f_{m,d}$= 17,9 N/mm^2

Utilisation:

η= 6,7/17,9
≈0.37

37% utilisation

column calculation

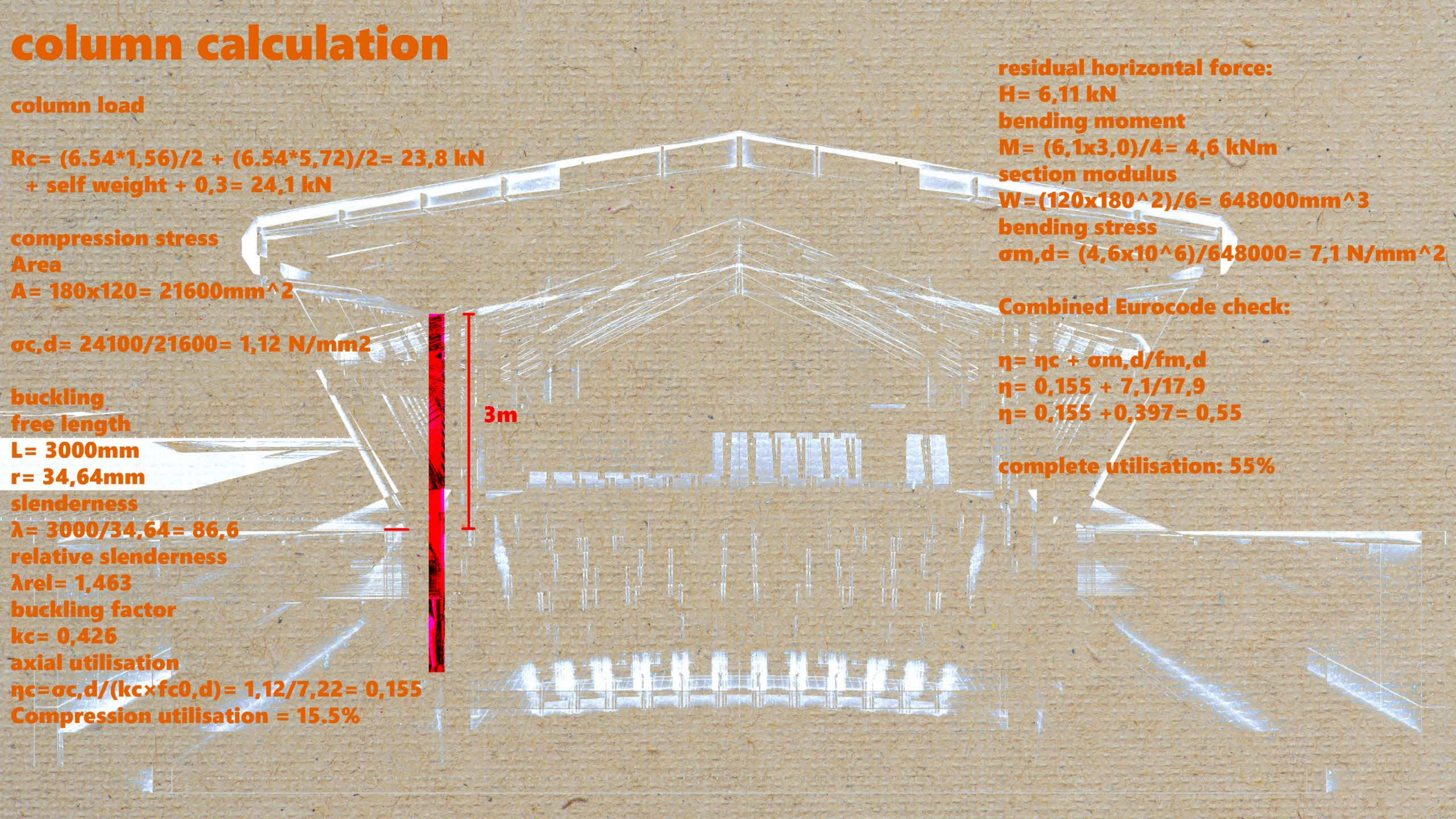
column load

Rc= (6.54*1,56)/2 + (6.54*5,72)/2= 23,8 kN
+ self weight + 0,3= 24,1 kN

compression stress
Area
A= 180x120= 21600mm^2

σc,d= 24100/21600= 1,12 N/mm2

buckling
free length
L= 3000mm
r= 34,64mm
slenderness
λ= 3000/34,64= 86,6
relative slenderness
λrel= 1,463
buckling factor
kc= 0,426
axial utilisation
ηc=σc,d/(kc×fc0,d)= 1,12/7,22= 0,155
Compression utilisation = 15.5%

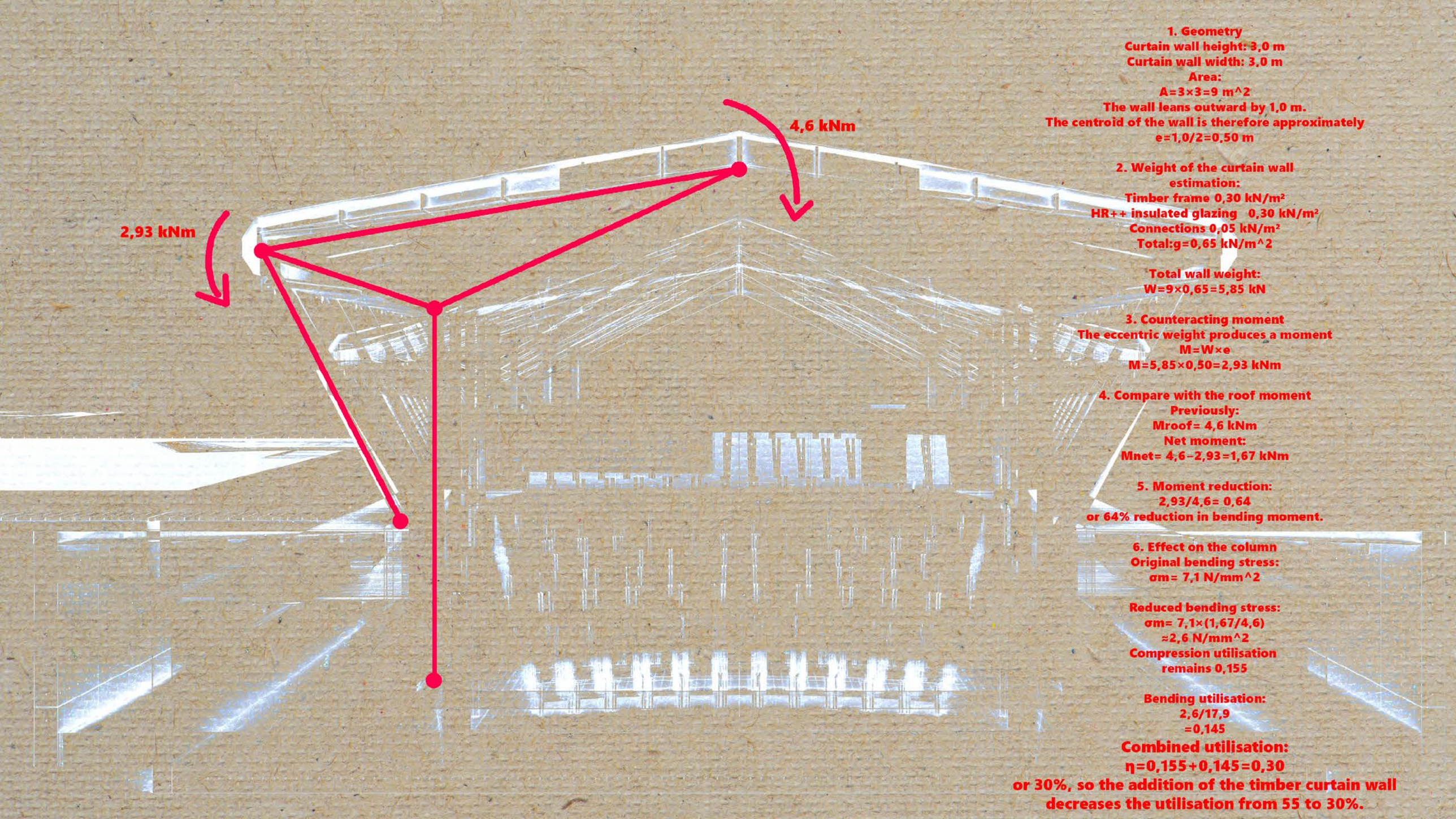


residual horizontal force:
H= 6,11 kN
bending moment
M= (6,1x3,0)/4= 4,6 kNm
section modulus
W=(120x180^2)/6= 648000mm^3
bending stress
σm,d= (4,6x10^6)/648000= 7,1 N/mm^2

Combined Eurocode check:

η= ηc + σm,d/fm,d
η= 0,155 + 7,1/17,9
η= 0,155 +0,397= 0,55

complete utilisation: 55%



1. Geometry
Curtain wall height: 3,0 m
Curtain wall width: 3,0 m
Area:
A=3×3=9 m^2
The wall leans outward by 1,0 m.
The centroid of the wall is therefore approximately
e=1,0/2=0,50 m

2. Weight of the curtain wall estimation:
Timber frame 0,30 kN/m²
HR++ insulated glazing 0,30 kN/m²
Connections 0,05 kN/m²
Total:g=0,65 kN/m^2

Total wall weight:
W=9×0,65=5,85 kN

3. Counteracting moment
The eccentric weight produces a moment
M=W×e
M=5,85×0,50=2,93 kNm

4. Compare with the roof moment
Previously:
Mroof= 4,6 kNm
Net moment:
Mnet= 4,6−2,93=1,67 kNm

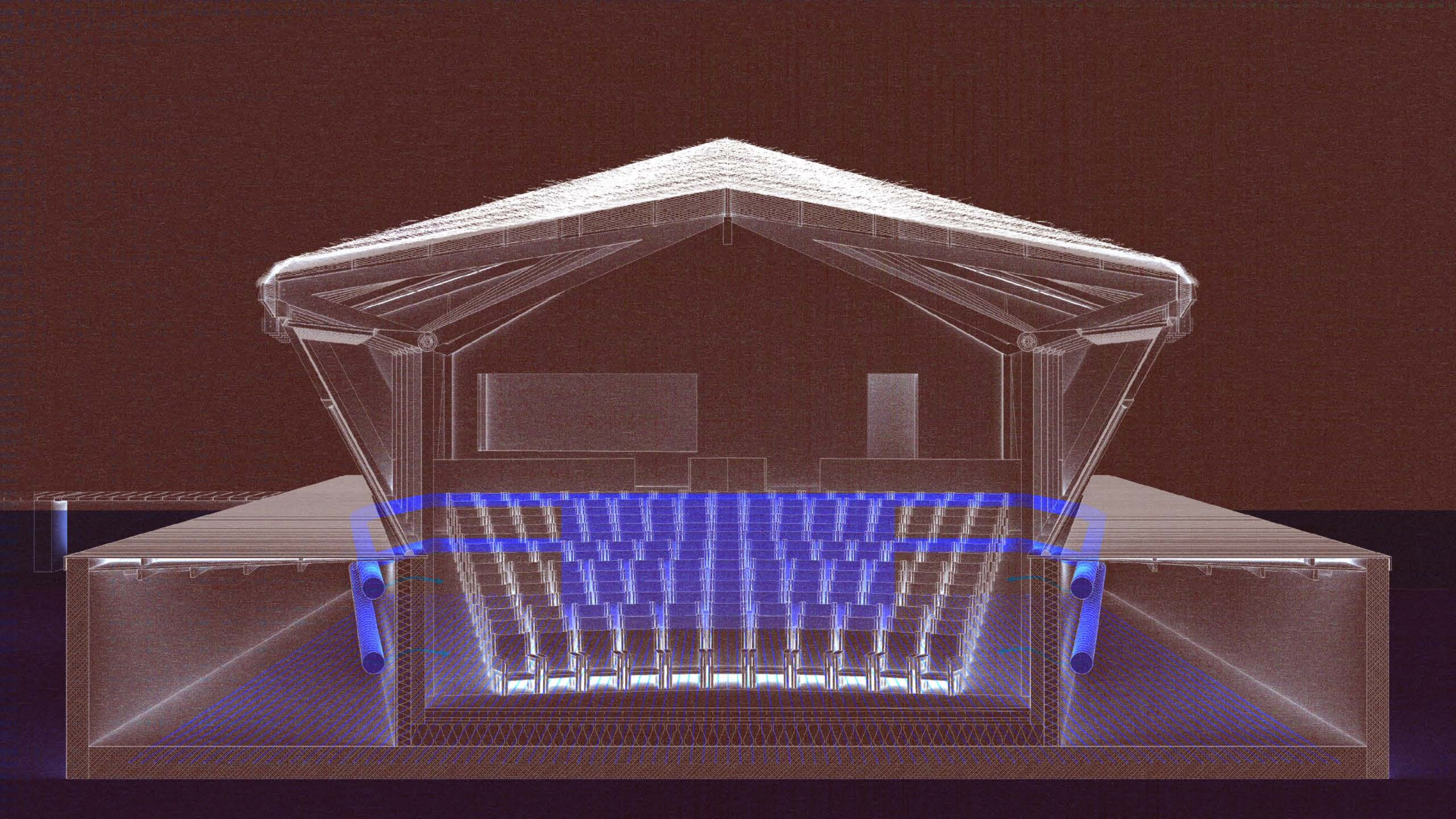
5. Moment reduction:
2,93/4,6= 0,64
or 64% reduction in bending moment.

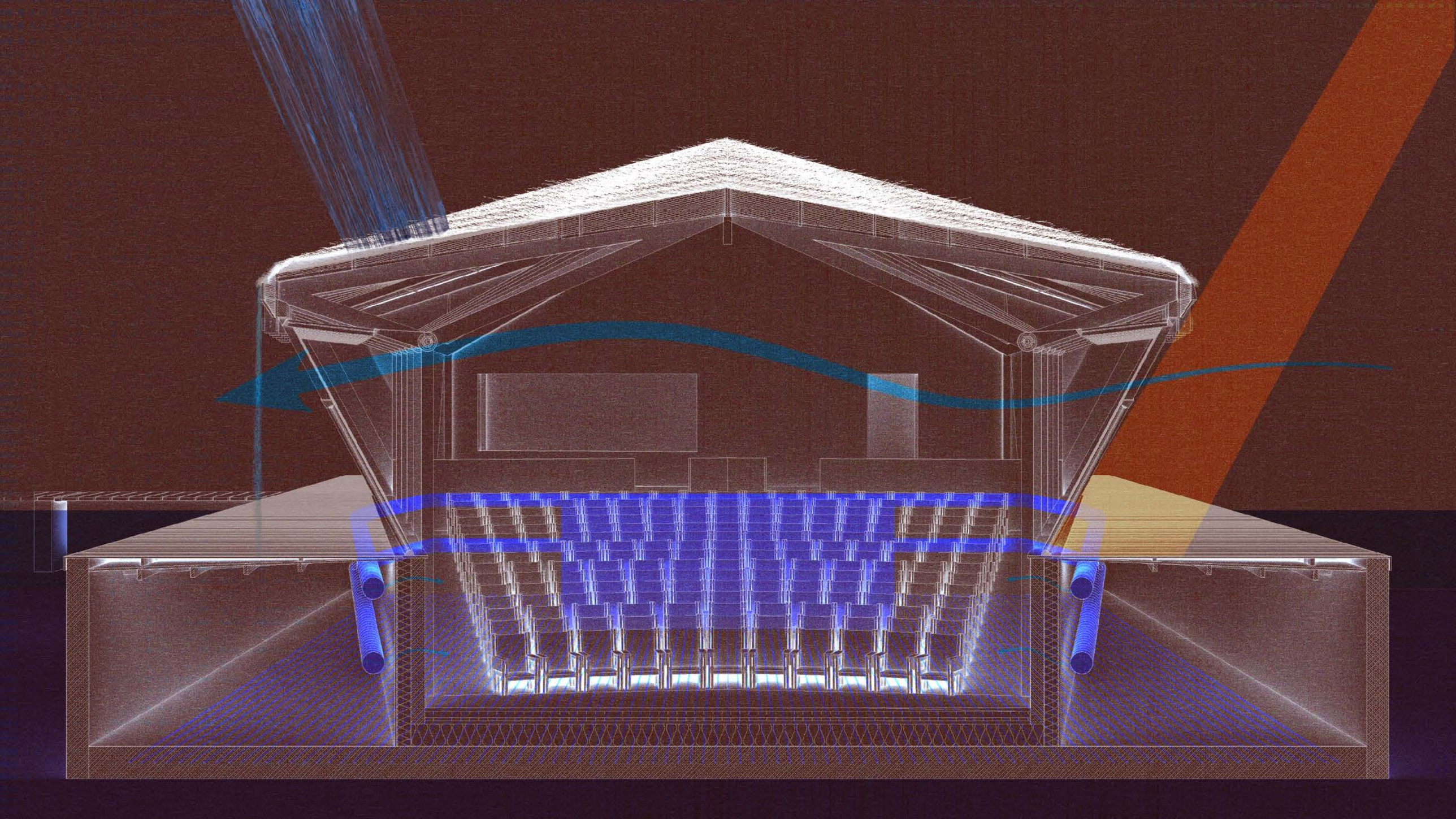
6. Effect on the column
Original bending stress:
σm= 7,1 N/mm^2

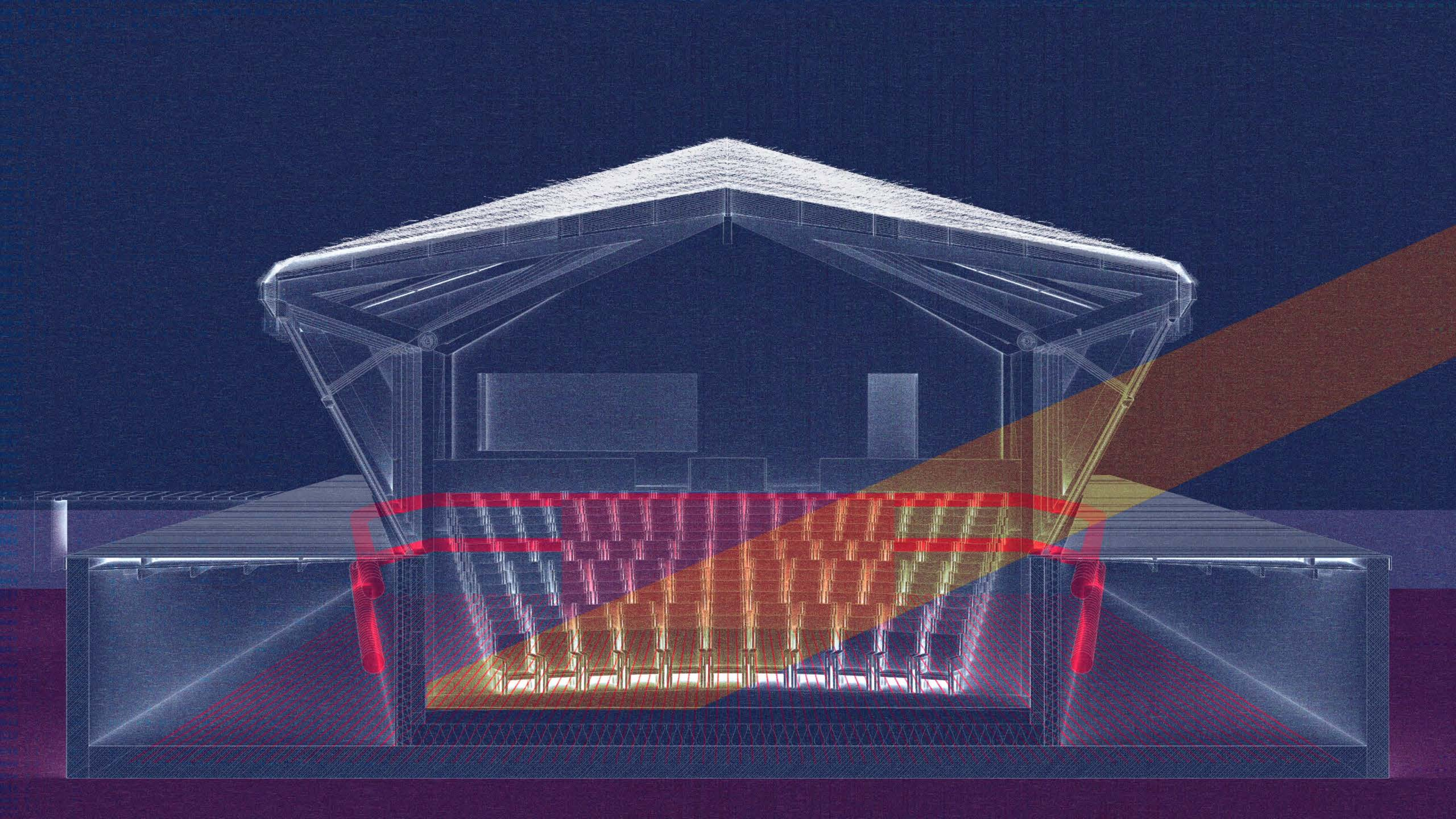
Reduced bending stress:
σm= 7,1×(1,67/4,6)
≈2,6 N/mm^2
Compression utilisation
remains 0,155

Bending utilisation:
2,6/17,9
=0,145

Combined utilisation:
η=0,155+0,145=0,30
or 30%, so the addition of the timber curtain wall decreases the utilisation from 55 to 30%.

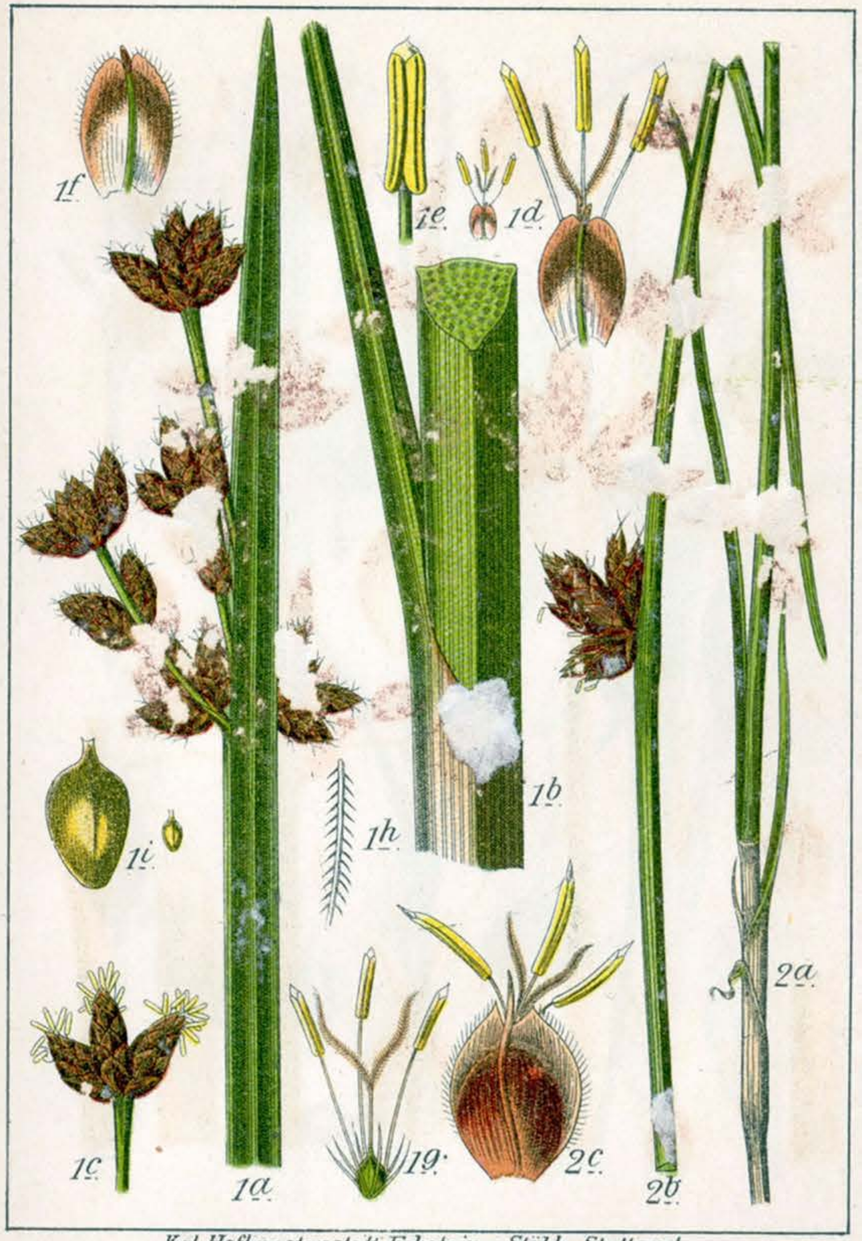






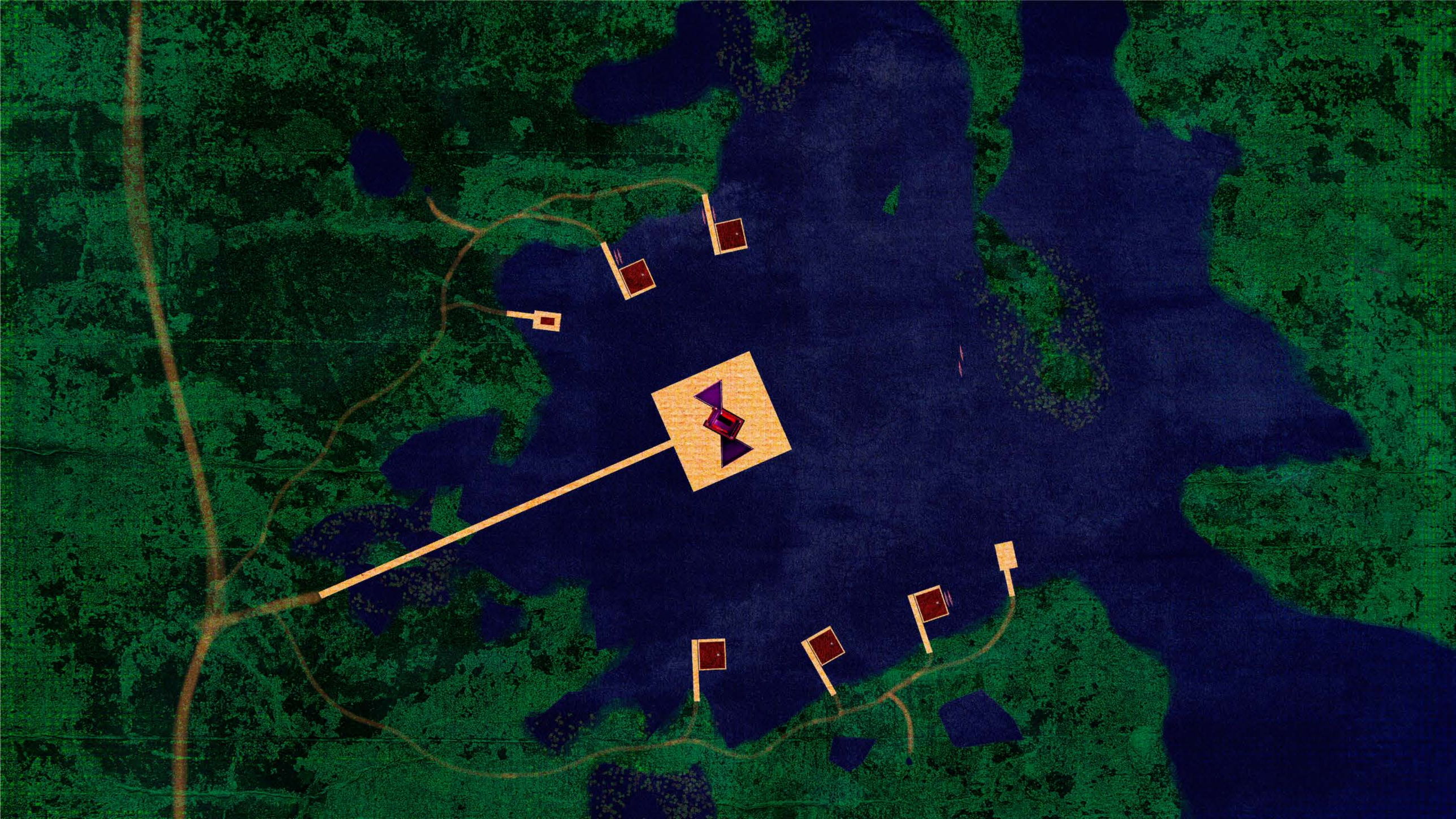
MARIS GERMANICI
PARS
GRONINGA
DOMINIVM.
Auctore
Bartholdo Wicheringe.
Borcum
Busch
Gronninger Watt
Watt
NORDEN
FRISIÆ
TRANSAMASANÆ PARS
NOTARVM EXPLICATIO.
Pagi
Monasteria
Nobilium sedes
EMDEN
Marnenses
Halueampt
Oosterampt
Hummerzij
Ruigewaert
Langewoldij
Fredewoldij
Innerdijken
Duurswoldij
Vbbega
GRONNINGEN
Anno 1277 Maris inundatione
triginta tres pagi hoc
in loco periere.
DOL
LERT
REI DER LAND
WESTERWOLDIÆ PARS
AMSTELODAMI
Guiljelmus Blaeuw
excudit.
Milliaria Germanica communia
Milliaria Gallica communia

Tafel 11.



Kgl. Hofkunstanstalt, Eckstein u. Stähle, Stuttgart.

1. Kanten-Simse, Cyperus triqueter.
2. Stechende Simse, C. pungens.

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PARS
Vbbega
Langewoldt
Innerdijken
Fredewoldt
GRONNINGEN
Duurswoldt


thank you for listening!