ECSN
European Concrete Societies Network

The European Concrete Award 2018

Helsinki 01/11/2018

Michael Pauser
Secretary ECSN

ECSN
European Concrete Societies Network

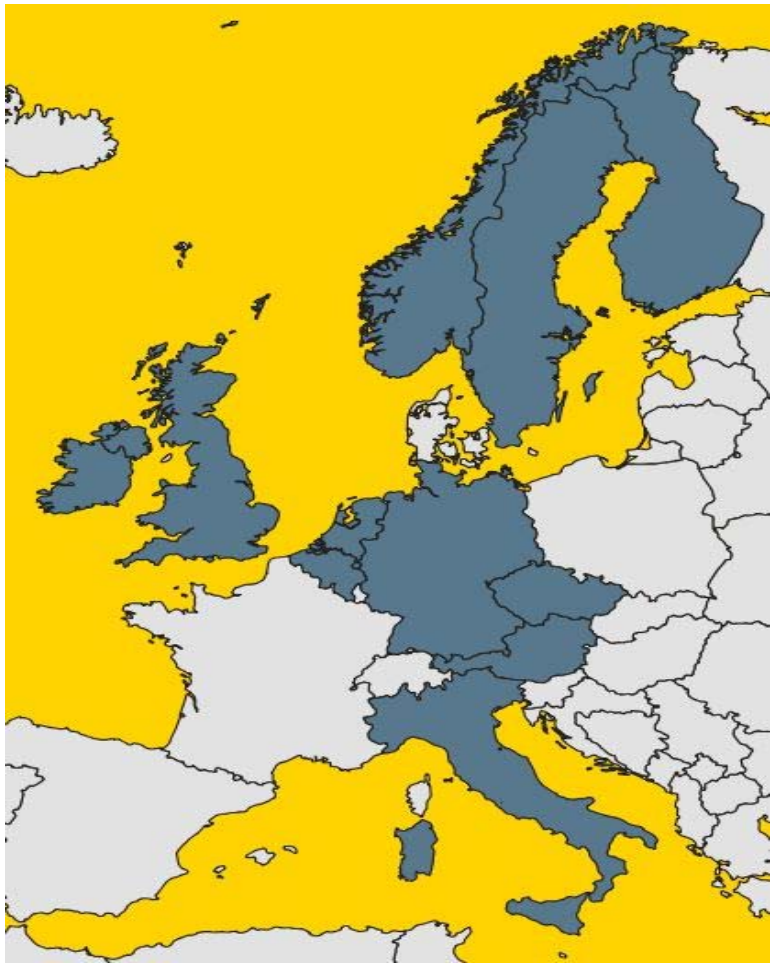
About ECSN

Formation

1995

Members

Austria, Belgium, Czech Republic, Finland, Germany, Ireland, Italy, Netherlands, Norway, Sweden, United Kingdom



ECSN
European Concrete Societies Network

The object:

to encourage coorperation between the members and thereby promote the development of concrete technology and use of concrete in Europe

ECSN
European Concrete Societies Network

The ECSN Awards for Excellence in Concrete

2002 Vienna
2004 Stockholm
2006 Prague
2008 Hradec Kralove
2010 Rotterdam
2012 Oslo
2014 Vienna
2016 Rome
2018 Helsinki

ECSN
European Concrete Societies Network

Winners 2016:

Buildings:

OV Terminal Arnhem, Netherlands

Civil engineering:

Täby C Roundabouts, Sweden

ECSN
European Concrete Societies Network

2018:
18 entries from 9 countries

- Building category
- Civil Engineering category

ECSN
European Concrete Societies Network

Jury 2018

Michel Denayer	Belgium
Ole H. Krokstrand	Norway
Tarja Merikallio	Finland
Lars Meyer	Germany
Michael Pauser	Austria

ECSN
European Concrete Societies Network

The Building category

12 projects from 9 countries

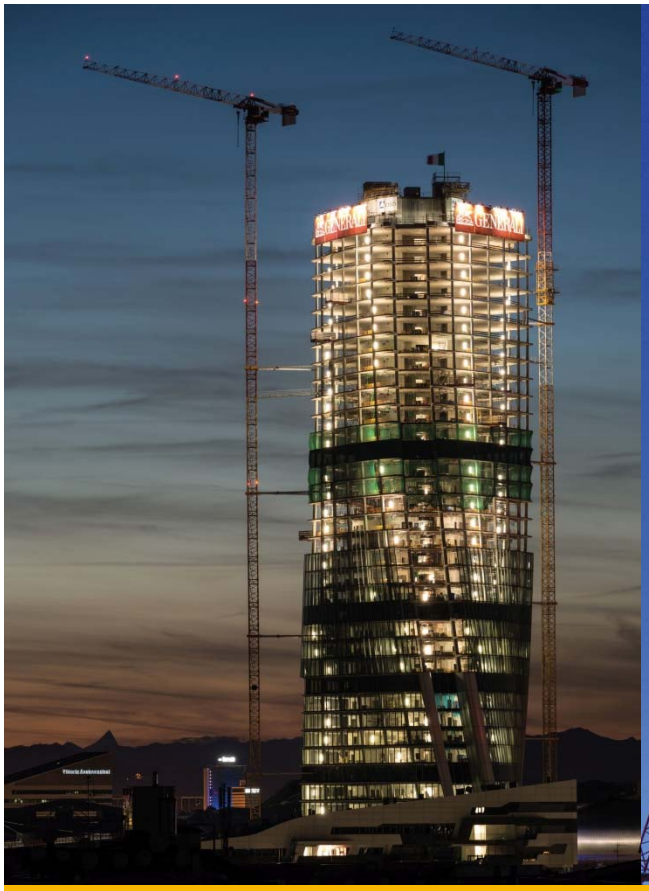
Criteria:

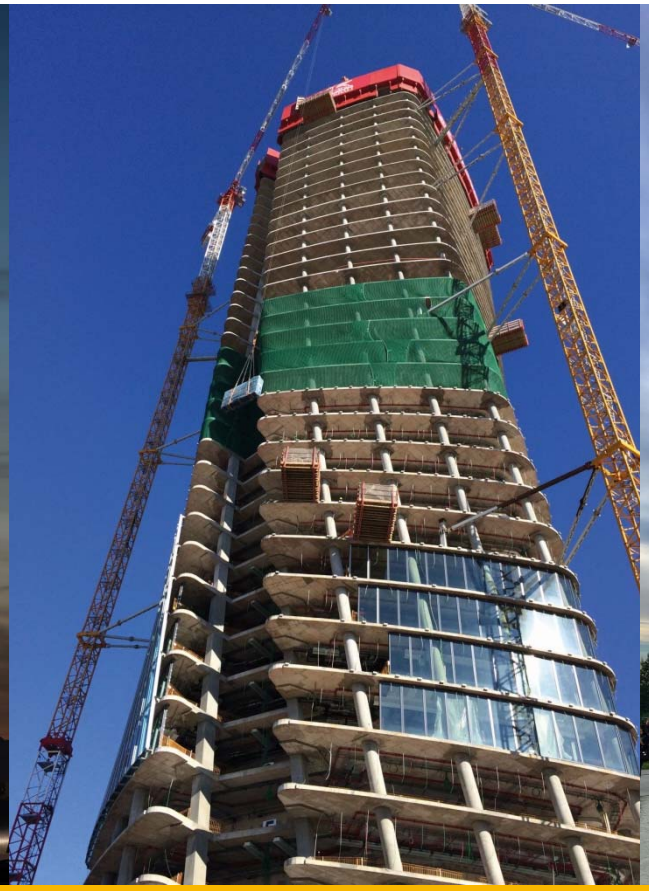
- Design,
- Construction,
- Execution
- Innovation

ECSN
European Concrete Societies Network

Building

Generali Tower
ITALY





ōbv austrian society for construction technology

European Concrete Award 2018

ECSN
European Concrete Societies Network

Building

The World's Biggest Bicycle Parking
NETHERLANDS

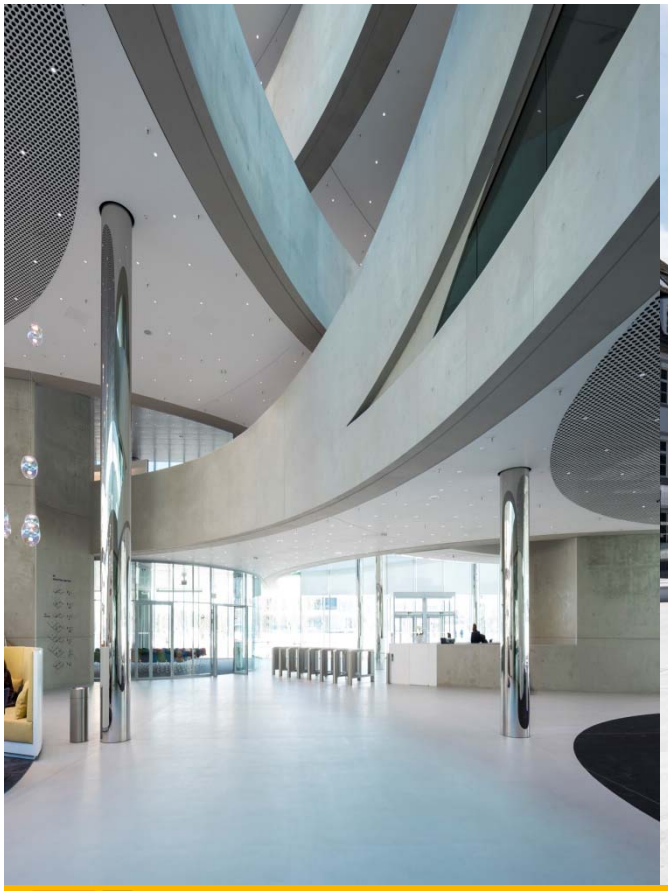
ōbv austrian society for construction technology

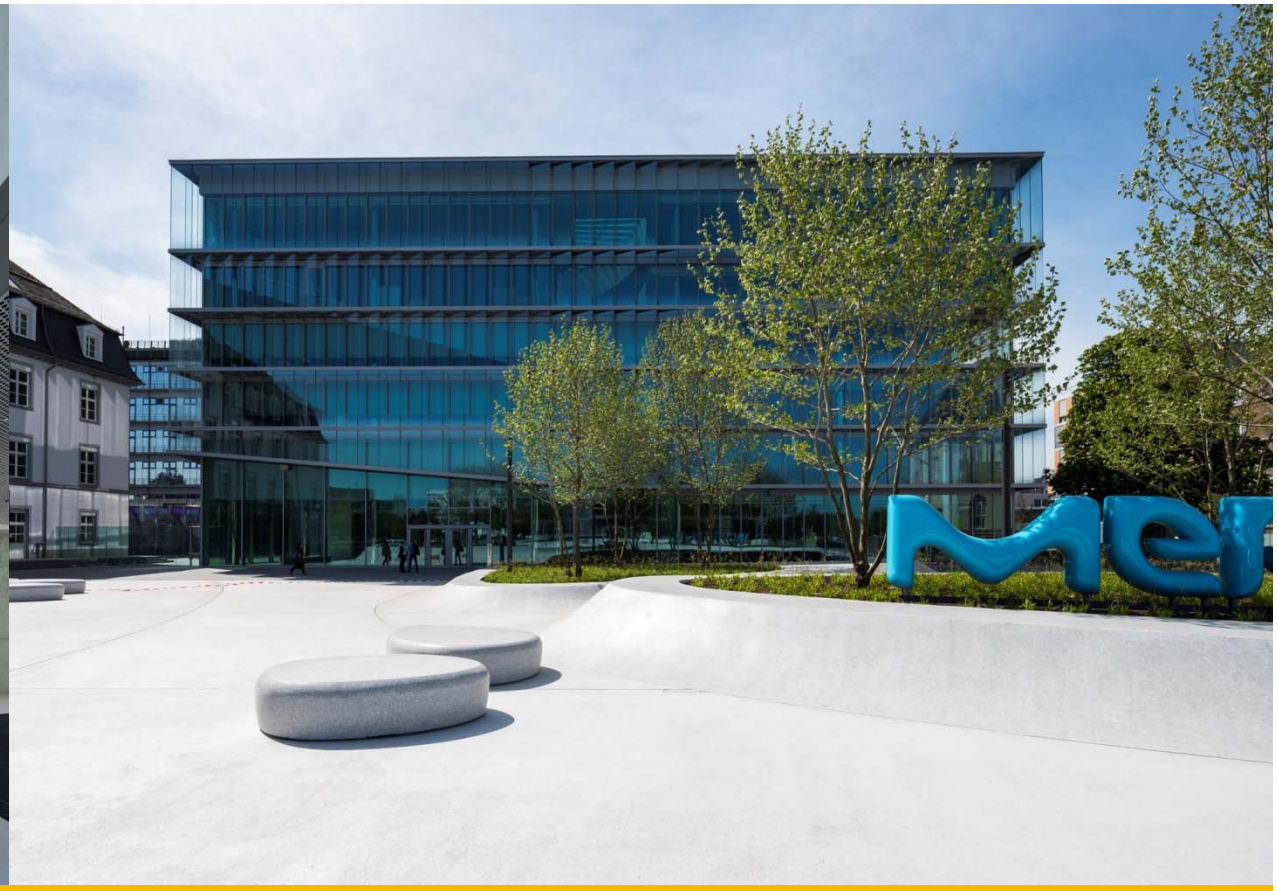
European Concrete Award 2018

ECSN
European Concrete Societies Network

Building

Innovation Center Merck
GERMANY





ōbv austrian society for construction technology

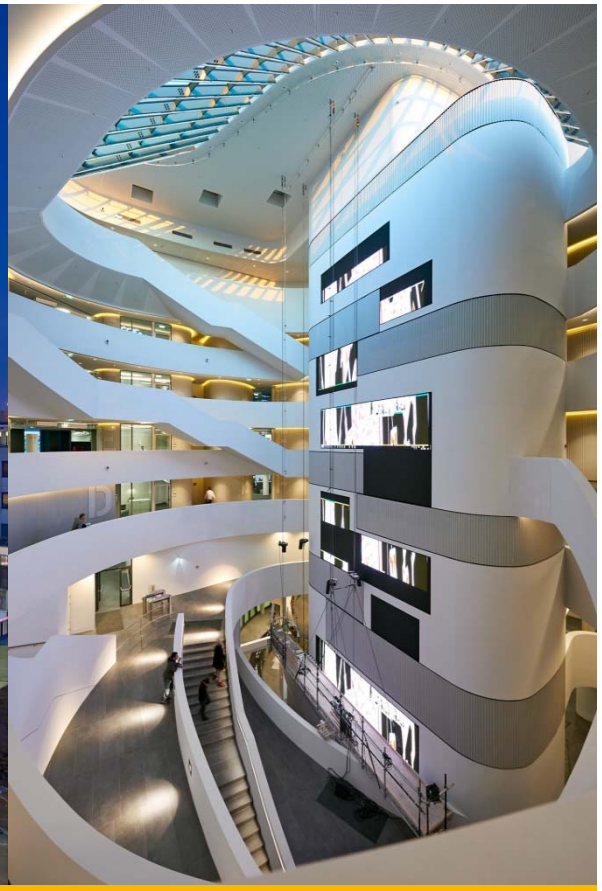
European Concrete Award 2018

ECSN

European Concrete Societies Network

Building

ÖAMTC Mobility Centre
AUSTRIA



ÖBV austrian society for construction technology

European Concrete Award 2018

ECSN
European Concrete Societies Network

Building

Kvarteret Forskningen, student housing at KTH Campus SWEDEN

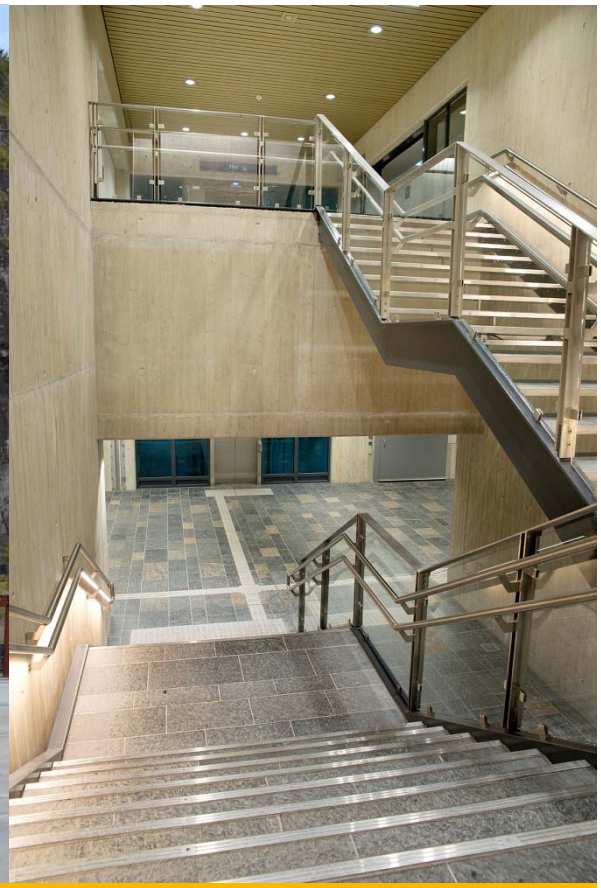
ōbv austrian society for construction technology

European Concrete Award 2018

ECSN
European Concrete Societies Network

Building

Holmestrand Station
NORWAY



öbv austrian society for construction technology

European Concrete Award 2018

ECSN
European Concrete Societies Network

Building

Knapphullet
NORWAY

ōbv austrian society for construction technology

European Concrete Award 2018

ECSN
European Concrete Societies Network

Building

St. Angelas College
IRELAND

öbv austrian society for construction technology

European Concrete Award 2018

ECSN
European Concrete Societies Network

Building

Kruunuvuorenranta waste transfer station
FINLAND

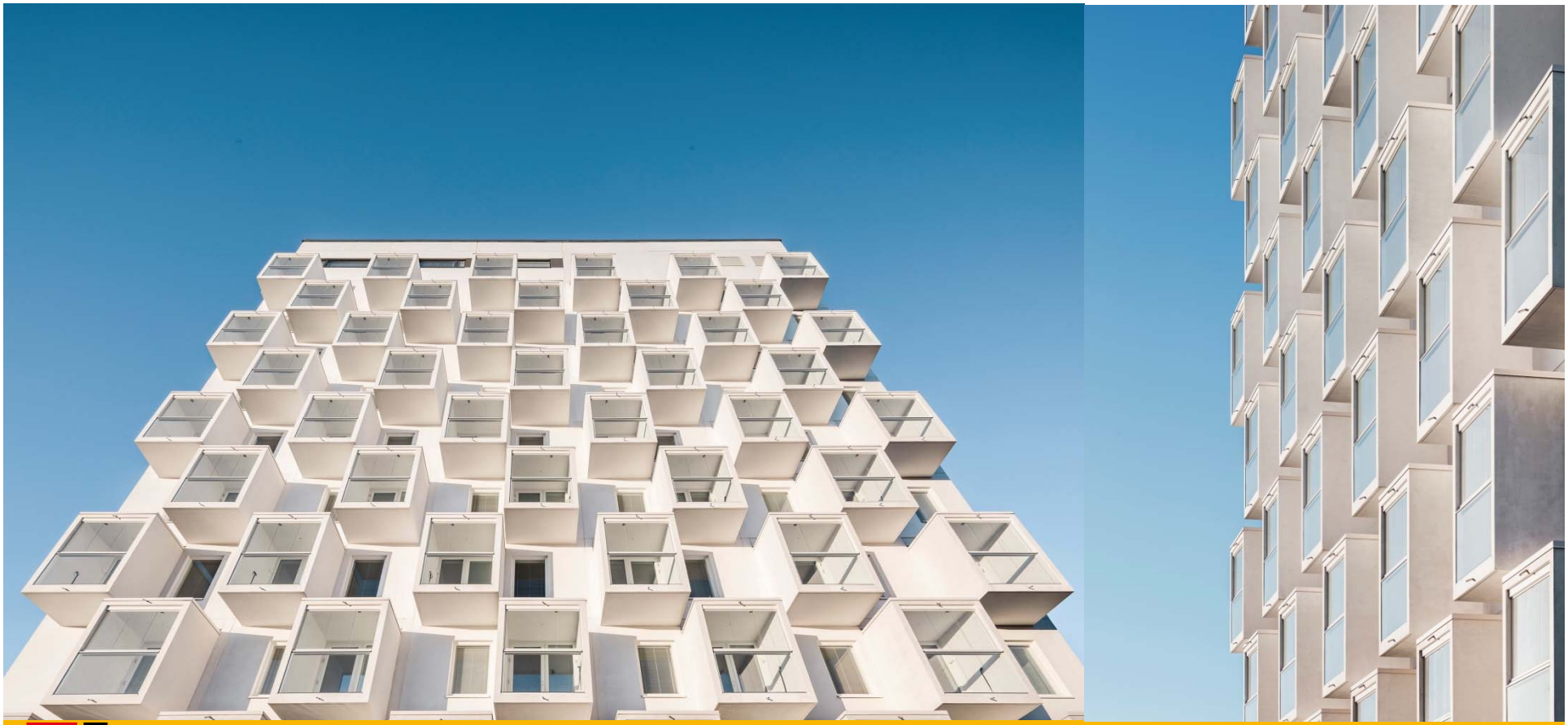
ōbv austrian society for construction technology

European Concrete Award 2018

ECSN
European Concrete Societies Network

Building

Housing Management Company As Oy Helsingin Viuhka
FINLAD



öbv austrian society for construction technology

European Concrete Award 2018

ECSN
European Concrete Societies Network

Building

New Terminal Amerigo Vespucci
ITALY

ÖBV austrian society for construction technology

European Concrete Award 2018

ECSN
European Concrete Societies Network

Building

DRN Palac Narodni
CZECH REPUBLIC

ōbv austrian society for construction technology

European Concrete Award 2018

ECSN
European Concrete Societies Network

Building Category

Honourable mention

ECSN
European Concrete Societies Network

Building Category

Honourable mention

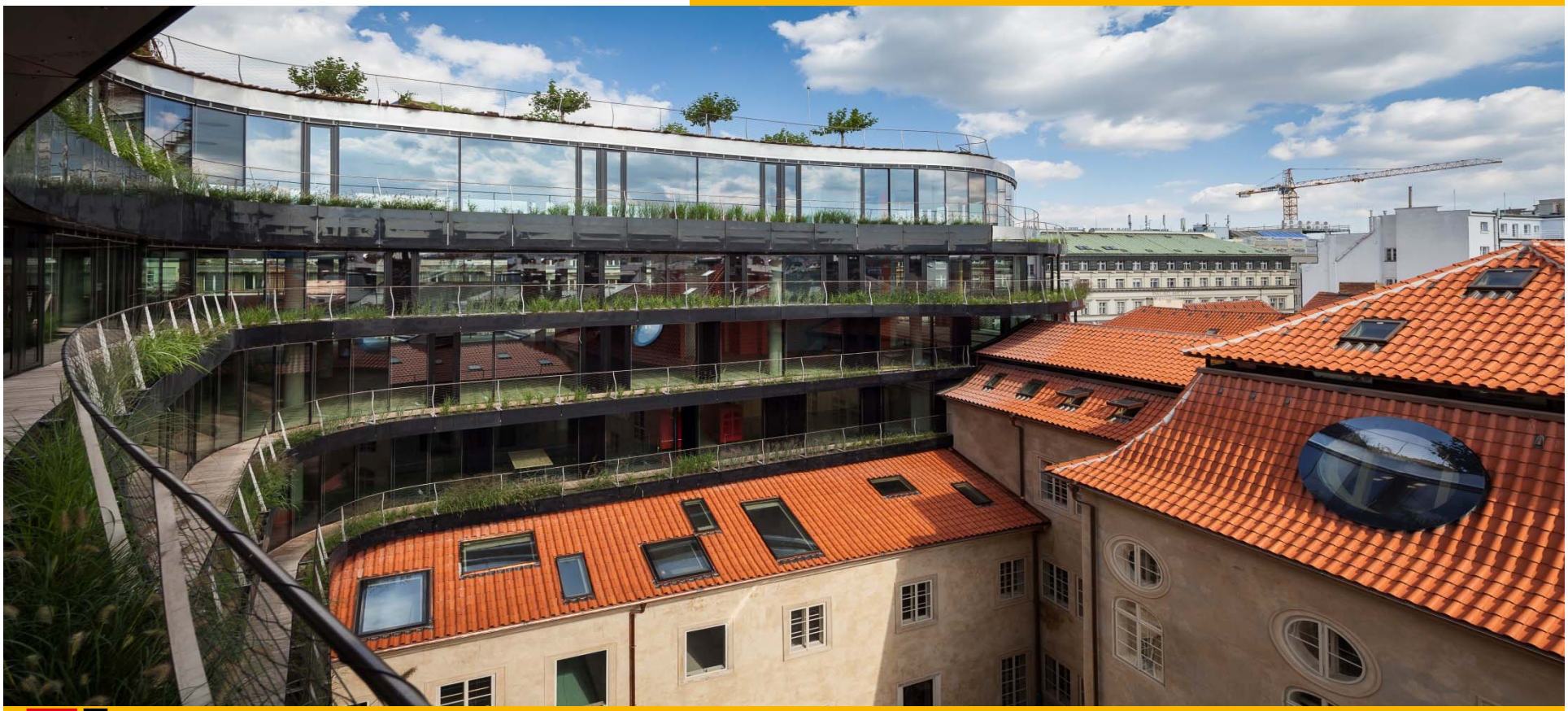
DRN Palac Narodni

CZECH REPUBLIC

ECSN
European Concrete Societies Network

DRN Palac Narodni
CZECH REPUBLIC

Owner: SEBRE a.s.
Architect: Fiala + Nemec s.r.o.
Structural Engineer: NEMEC POLAK spol. s r. o.
Contractor: Hinton a.s.



ōbv austrian society for construction technology

European Concrete Award 2018

ECSN
European Concrete Societies Network

Building Category

Honourable mention

ECSN
European Concrete Societies Network

Building Category

Honourable mention

Innovation Center Merck

GERMANY

ECSN
European Concrete Societies Network

Innovation Center Merck
GERMANY

Owner: Merck KGaA, Darmstadt
Architect: Henn Architects, Berlin
Structural Engineer: Bollinger und Grohmann GmbH, Berlin &
Brunnsteiner ZT GmbH, Natters
Contractor: Ed. Züblin AG, Frankfurt

ōbv austrian society for construction technology

European Concrete Award 2018

ECSN
European Concrete Societies Network

Building Category

WINNER

ECSN
European Concrete Societies Network

Building Category

WINNER

ÖAMTC Mobility Centre AUSTRIA

ECSN
European Concrete Societies Network

ÖAMTC Mobility Centre AUSTRIA

Owner: ÖAMTC, Vienna
Architect: Pichler & Traupmann Architekten ZT GmbH, Vienna
Structural Engineer: FCP Fritsch, Chiari & Partner ZT GmbH, Vienna
Contractor: Bauunternehmung Granit Gesellschaft m. b. H, Graz

öbv austrian society for construction technology

European Concrete Award 2018

ECSN
European Concrete Societies Network

The Civil Engineering category

6 projects from 5 countries

Criteria:

- Design,
- Construction,
- Execution
- Innovation

ECSN
European Concrete Societies Network

Civil Engineering

Catharina bridge
NETHERLANDS

ōbv austrian society for construction technology

European Concrete Award 2018

ECSN
European Concrete Societies Network

Civil Engineering

Utsikten (The Viewpoint)
NORWAY

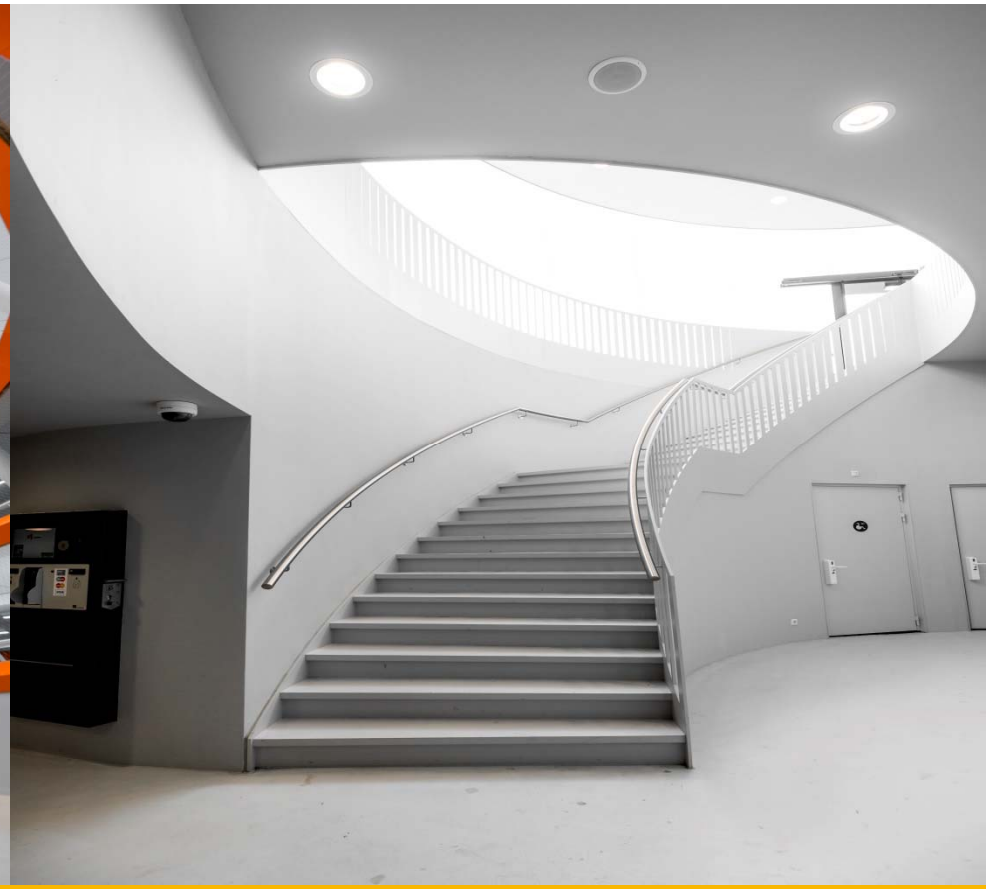
öbv austrian society for construction technology

European Concrete Award 2018

ECSN
European Concrete Societies Network

Civil Engineering

Parking garage Lammermarkt
NETHERLANDS



ōbv austrian society for construction technology

European Concrete Award 2018

ECSN
European Concrete Societies Network

Civil Engineering

Ponte Ennio Flaiano Sul Fiume Pescara
ITALY

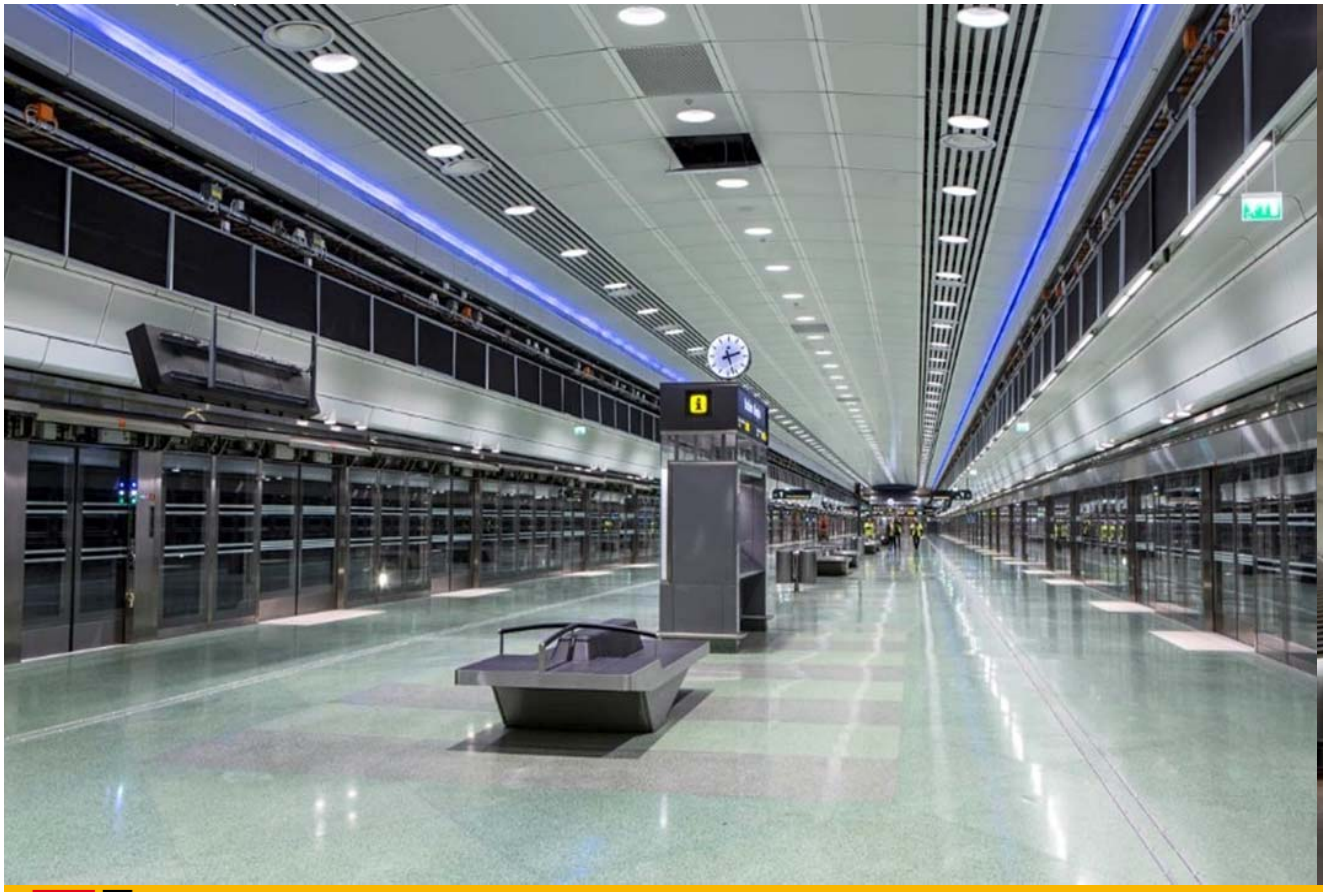
ōbv austrian society for construction technology

European Concrete Award 2018

ECSN
European Concrete Societies Network

Civil Engineering

Project Line City
SWEDEN



obv austrian society for construction technology

European Concrete Award 2018

ECSN
European Concrete Societies Network

Civil Engineering

Reconstruction Intersection Prater
AUSTRIA

ōbv austrian society for construction technology

European Concrete Award 2018

ECSN
European Concrete Societies Network

Civil Engineering Category

Honourable mention

ECSN
European Concrete Societies Network

Civil Engineering Category

Honourable mention

Reconstruction Intersection Prater

AUSTRIA

ECSN
European Concrete Societies Network

Reconstruction Intersection Prater AUSTRIA

Owner: ASFINAG BMG
Architect: Wallmann Architekten
Structural Engineer: ARGE Step/Öhlinger/PCD
Contractor: ARGE Porr/Habau

ōbv austrian society for construction technology

European Concrete Award 2018

ECSN
European Concrete Societies Network

Civil Engineering Category

Honourable mention

ECSN
European Concrete Societies Network

Civil Engineering Category

Honourable mention

Utsikten (The Viewpoint)

NORWAY

ECSN
European Concrete Societies Network

Utsikten (The Viewpoint)
NORWAY

Owner: Norwegian Public Roads Administration
Architect: code: arkitektur as
Structural Engineer: B-consult AS and Dipl.- Ing. Florian Kosche AS
Contractor: Veidekke Entreprenør AS, Sogn og Fjordane avd. Sandane

ōbv austrian society for construction technology

European Concrete Award 2018

ECSN
European Concrete Societies Network

Civil Engineering Category

WINNER

ECSN
European Concrete Societies Network

Civil Engineering Category

WINNER

Catharina bridge
NETHERLANDS

ECSN
European Concrete Societies Network

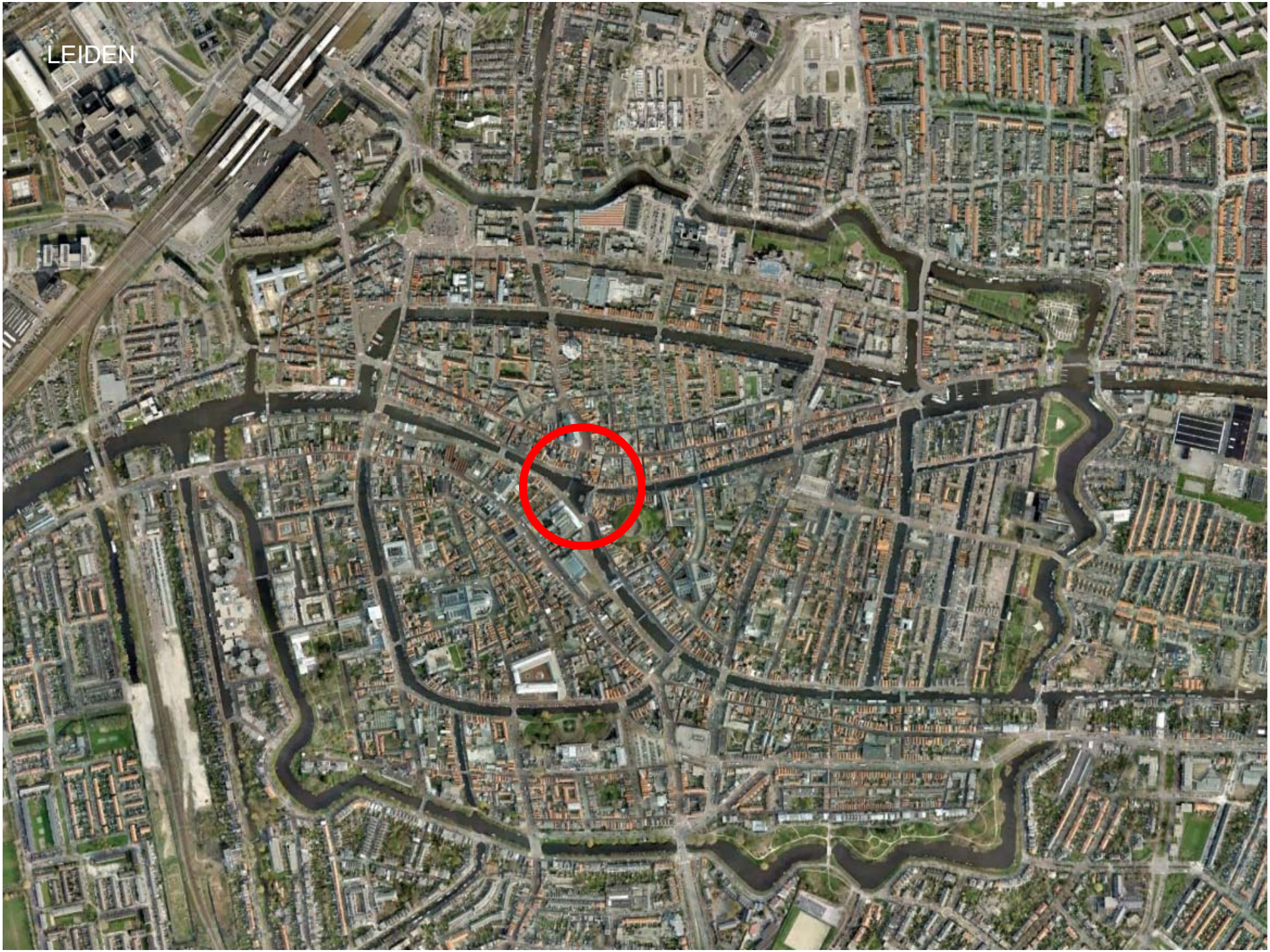
Catharina bridge
NETHERLANDS

Owner: Gemeente Leiden
Architect: DP6 architectuurstudio
Structural Engineer: Pieters Bouwtechniek
Contractor: Gebr. Schouls

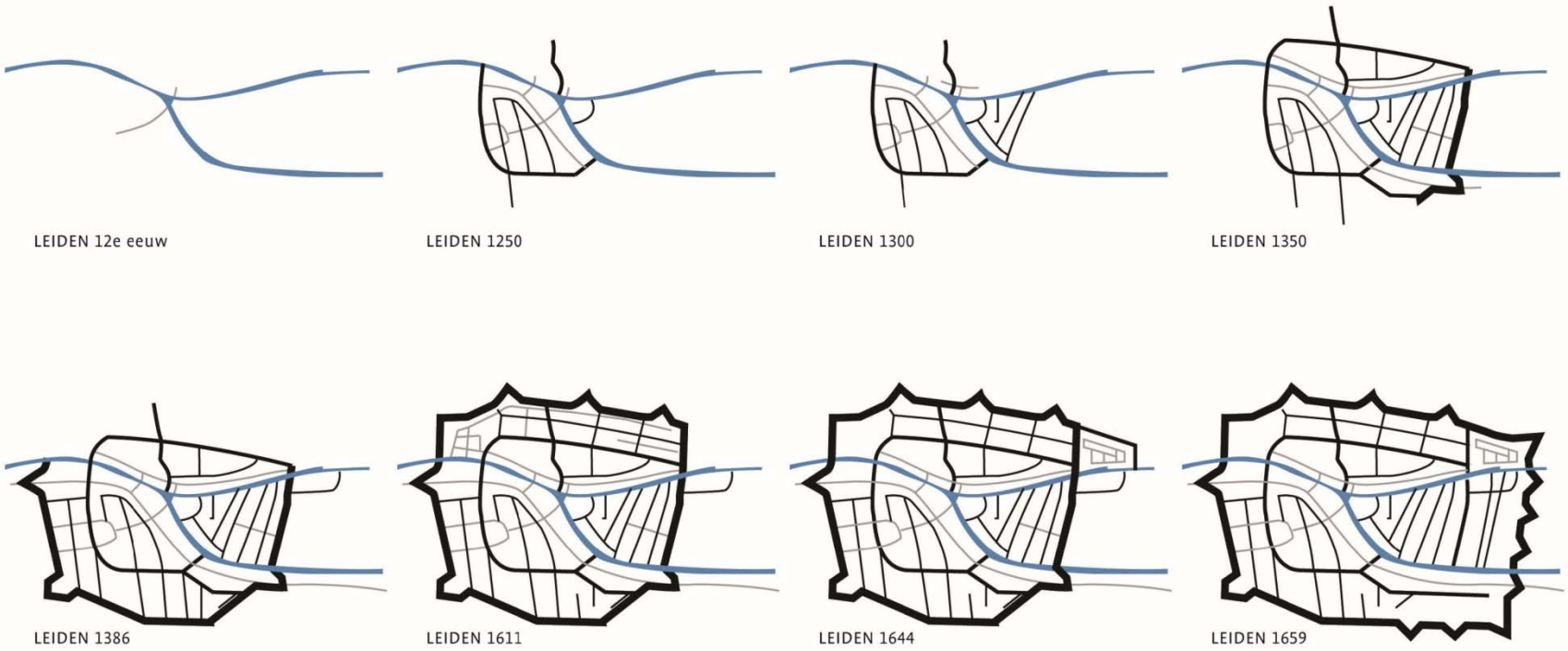
ōbv austrian society for construction technology

European Concrete Award 2018


CATHARINABRUG LEIDEN, 1 NOVEMBER 2018


LEIDEN

HISTORIC AND GEOGRAPHIC HART OF LEIDEN




LEIDEN

LOCATION; A SPOT FILLED WITH HISTORY AND TRADE

THE OLD BRIDGE

URBAN PLAN PRECONDITIONS

- Connection to new shopping street, to create a shopping route
- Connect Haarlemmerstraat with Breestraat
- New alley “Rijnboutt’. Restore historic quay line and ‘waaghoofd’
- New bridge is needed; the Catharina bridge

THE ASSIGNMENT

DEMANDS FROM THE CITY OF LEIDEN FOR THE NEW BRIDGE

Fit in a slow traffic bridge with a maximum width of 6 meters in a very cultural historical sensitive environment:

- *Respect existing quays*
- *Contrast with environment*
- *Narrowing it visually*
- *Emphasize horizontality*

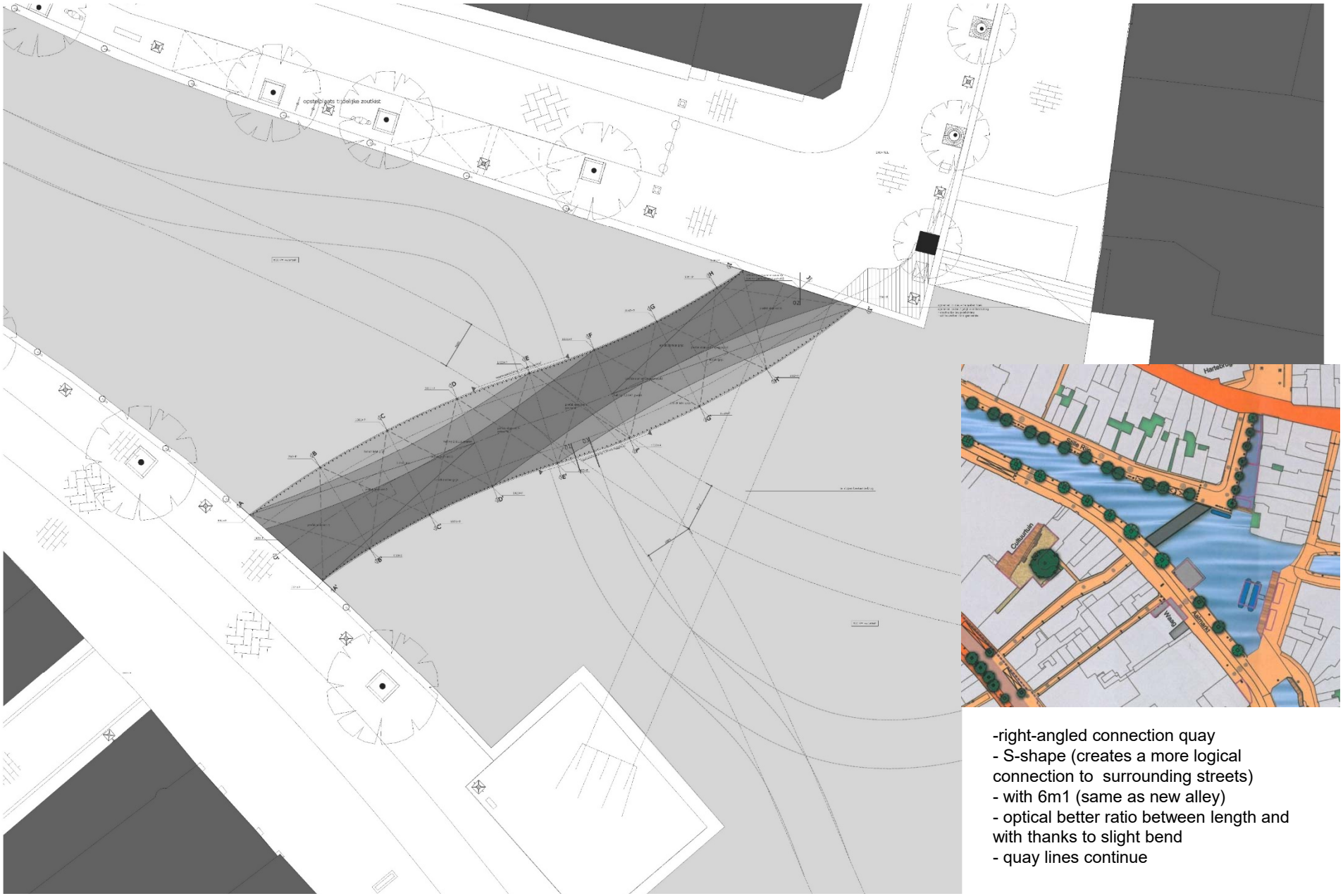
Transit route – transit height 1,75 meters high

Slope percentage – max. 1:12 for the benefit of disabled people

Budget – within budget achievable

Schedule – on time to realize shopping route

INTEGRATION ENVIRONMENT, SHAPE, PASSABILITY AND BOAT TRANSIT



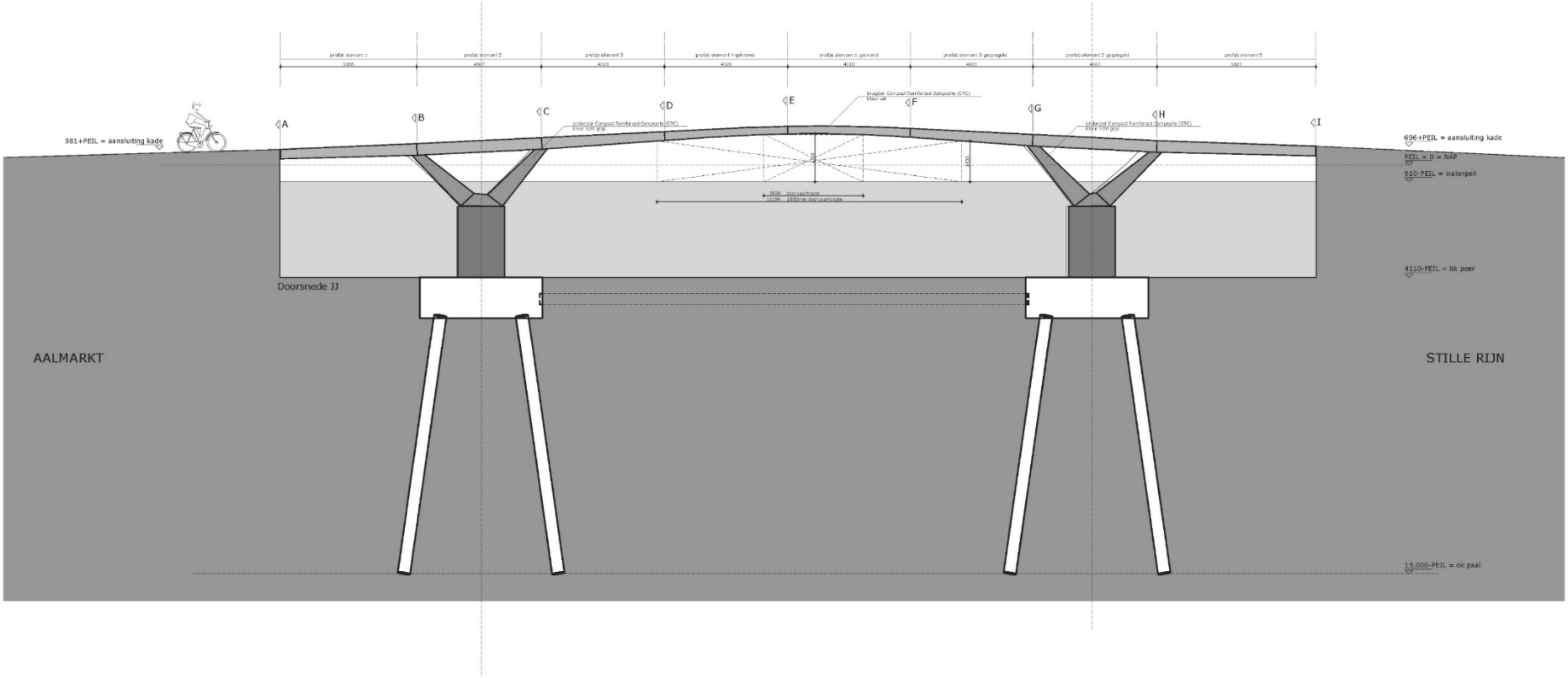
-right-angled connection quay
- S-shape (creates a more logical connection to surrounding streets)
- with 6m1 (same as new alley)
- optical better ratio between length and with thanks to slight bend
- quay lines continue


H&M

PASSABILITY AND TRANSIT HEIGHT

- meet demands of Clientenbelang Utrecht (interest organization for disabled people) (slope 1:12)
- transit height 1,75 mtr (future proof, current need 1,50 mtr.)
- challenge dimensioning bridge
- curve creates more length, thus lower slope
- bridge deck as slim as possible

- ‘disconnected’ from quays
- 2 supports to maintain slenderness bridge
- minimal influence on surrounding

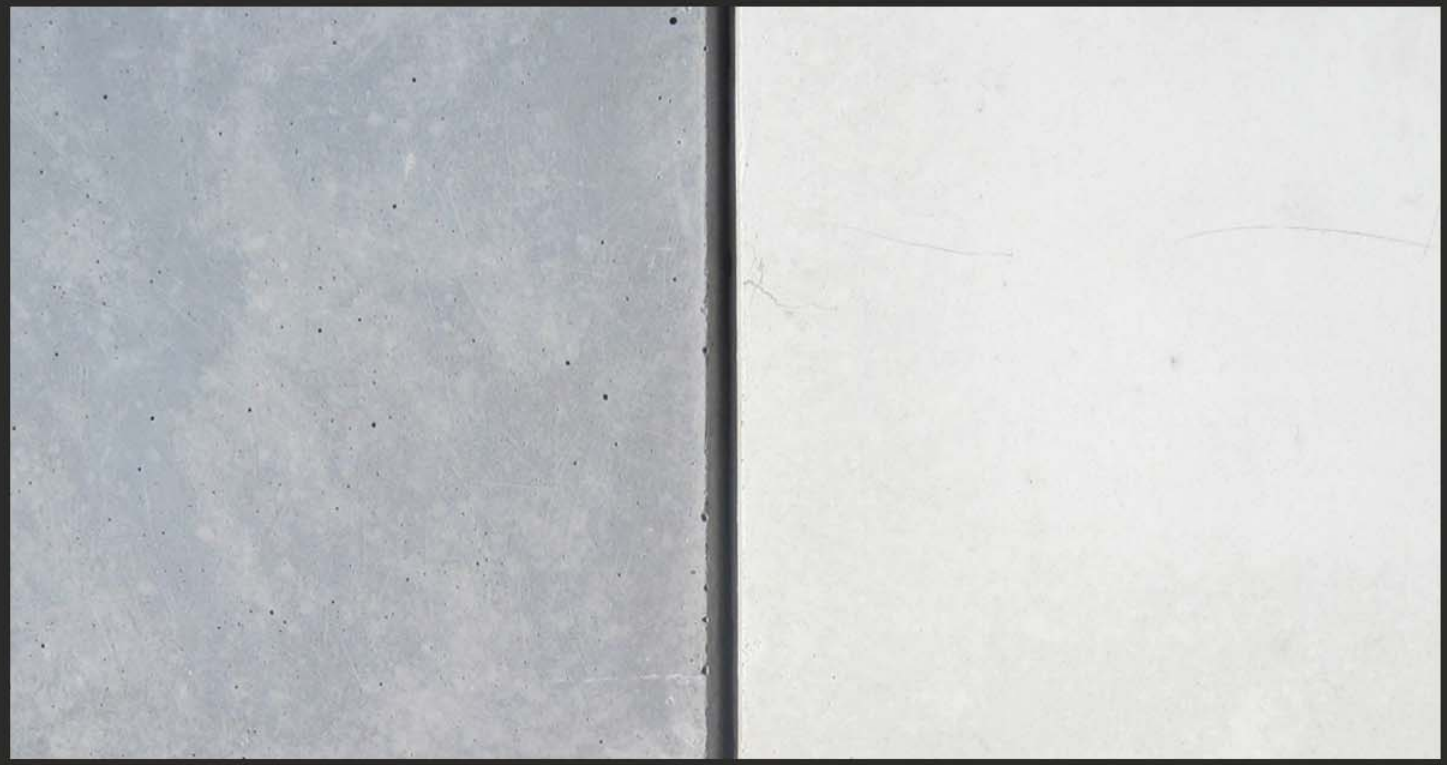


PASSABILITY AND TRANSIT HEIGHT – CHOICE OF MATERIAL

MAINTENANCE ASPECTS MATERIAL

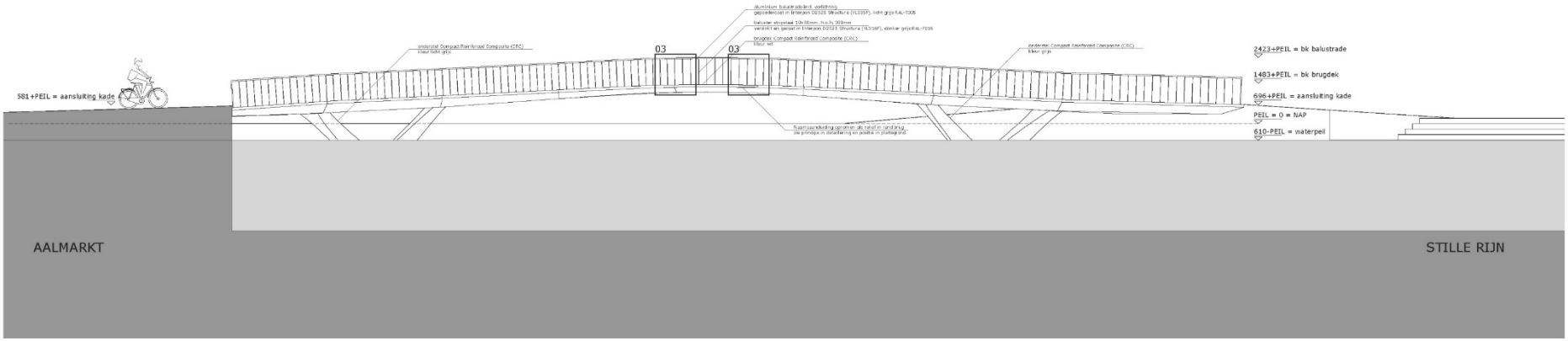
MINIMALISE MAINTENANCE COSTS FOR TOTAL LIFESPAN
(CONSTRUCTION BRIDGE, PROTECTION LAYER, RAILING)

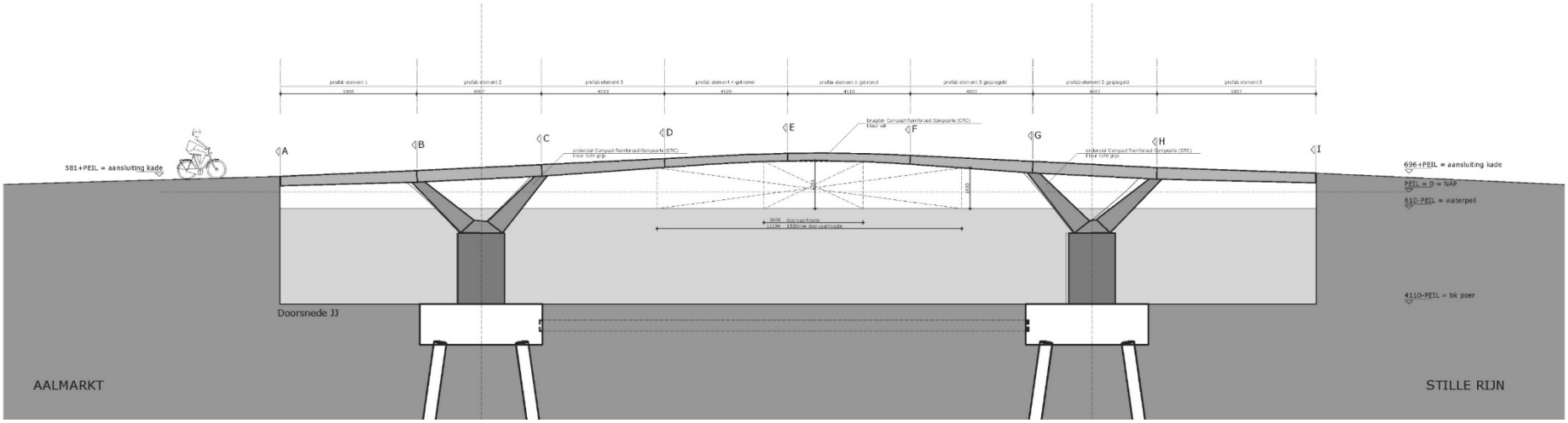
Compact Reinforced Composite (CRC)



grijs tbv onderstel **wit tbv brugdek**

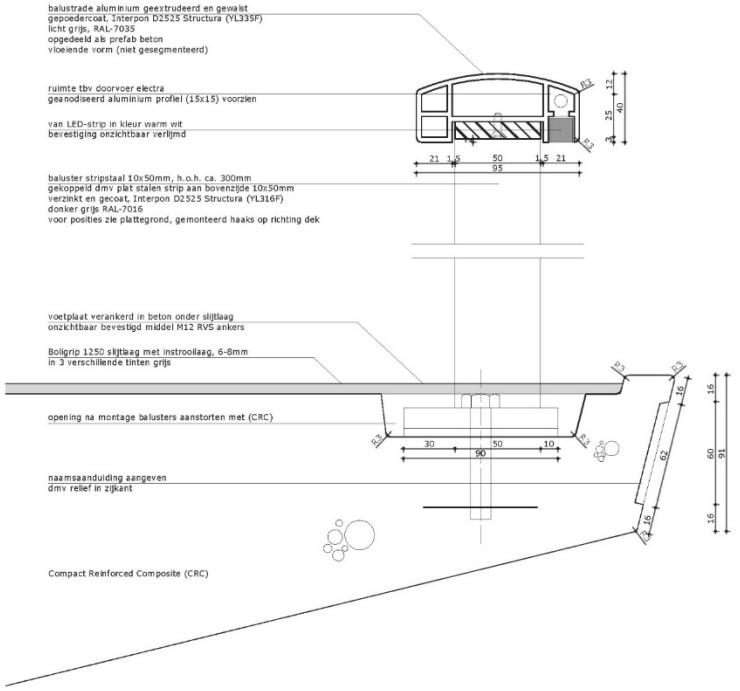
- Surface texture like porcelain
- little to no attachment of dirt
- very long lifespan

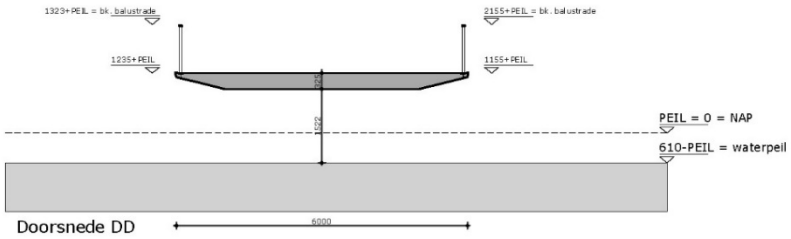


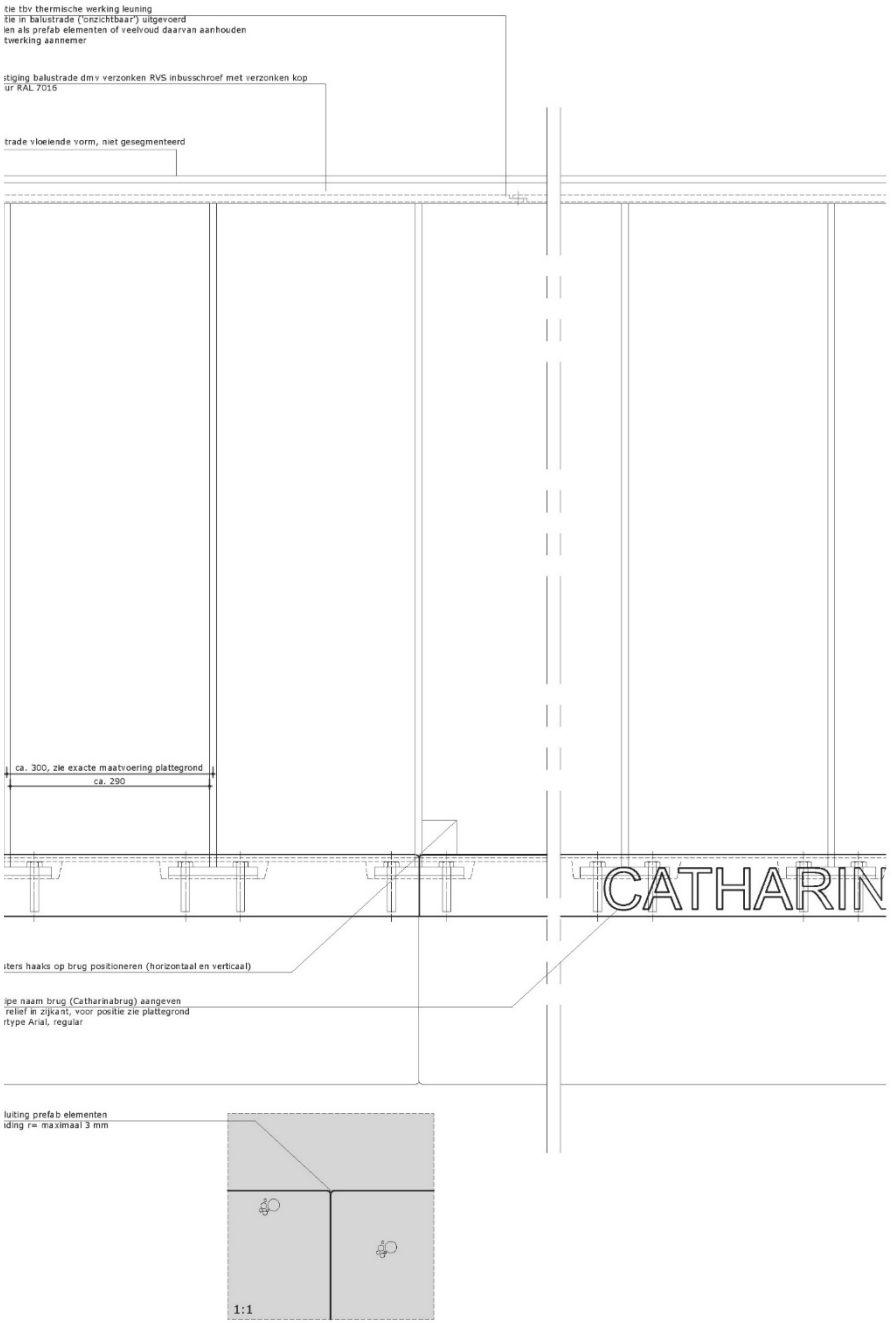


275 mm thick at thinnest point


SLENDERNESS BRIDGE


balustrade aluminium geextrudeerd en gewalst
gepoedercoat, Interpon D2525 Structura (YL335F)
licht grijs, RAL-7035
opgedeeld als prefab beton
vloeiende vorm (niet gesegmenteerd)
ruimte tbv doorvoer electra
geanodiseerd aluminium profiel (15x15) voorzien
van LED-strip in kleur warm wit
bevestiging onzichtbaar verlijmd
baluster stripstaal 10x50mm, h.o.h. ca. 300mm
gekoppeld dmv plat stalen strip aan bovenzijde 10x50mm
verzinkt en gecoat, Interpon D2525 Structura (YL316F)
donker grijs RAL-7016
voor posities zie plattegrond, gemonteerd haaks op richting dek
voetplaat verankerd in beton onder slijtlaag
onzichtbaar bevestigd middel M12 RVS ankers
Boligrip 1250 slijtlaag met instrooilaag, 6-8mm
in 3 verschillende tinten grijs
opening na montage balusters aanstorten met (CRC)
naamsaanduiding aangeven
dmv reliëf in zijkant
Compact Reinforced Composite (CRC)


1323+PEIL = bk. balustrade
2155+PEIL = bk. balustrade
1235+PEIL
1155+PEIL
PEIL = 0 = NAP
610-PEIL = waterpeil
6000
Doorsnede DD

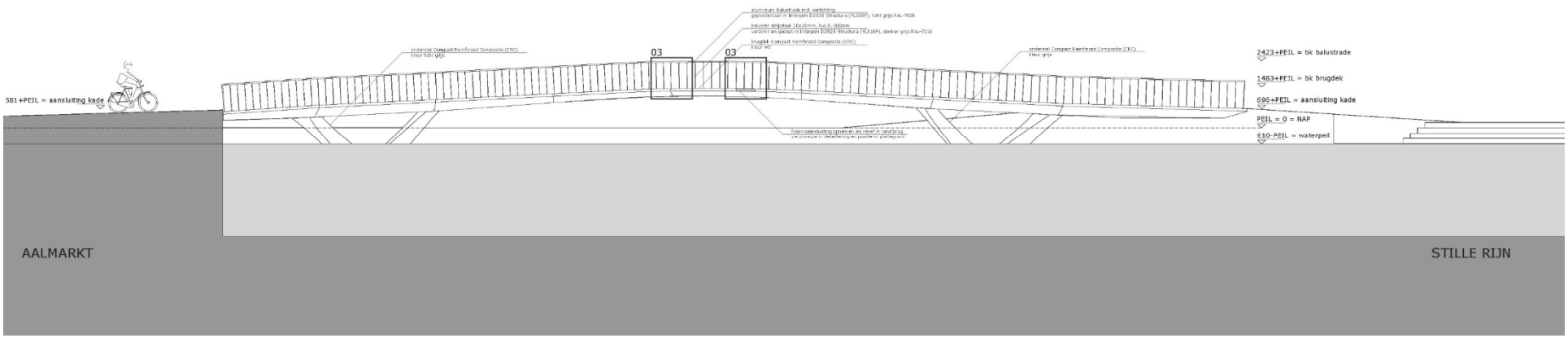

tie tbv thermische werking leuning
tie in balustrade ('onzichtbaar') uitgevoerd
len als prefab elementen of veelvoud daarvan aanhouden
twerking aannemer
stiging balustrade dmv verzonken RVS inbusschroef met verzonken kop
ur RAL 7016
trade vloeiende vorm, niet gesegmenteerd
ca. 300, zie exacte maatvoering plattegrond
ca. 290
CATHARIN
iters haaks op brug positioneren (horizontaal en verticaal)
ipe naam brug (Catharinabrug) aangeven
relief in zijkant, voor positie zie plattegrond
rtype Arial, regular
luiting prefab elementen
ding r= maximaal 3 mm
1:1


CATHARINABRUG


CATHARINABRUG

BALUSTRADE, EMPHASZIE HORIZONTALITY

WITH SHAPE AND COLORS RAILING



RAL 7035

baluster stripstaal 10x50

RAL 7016

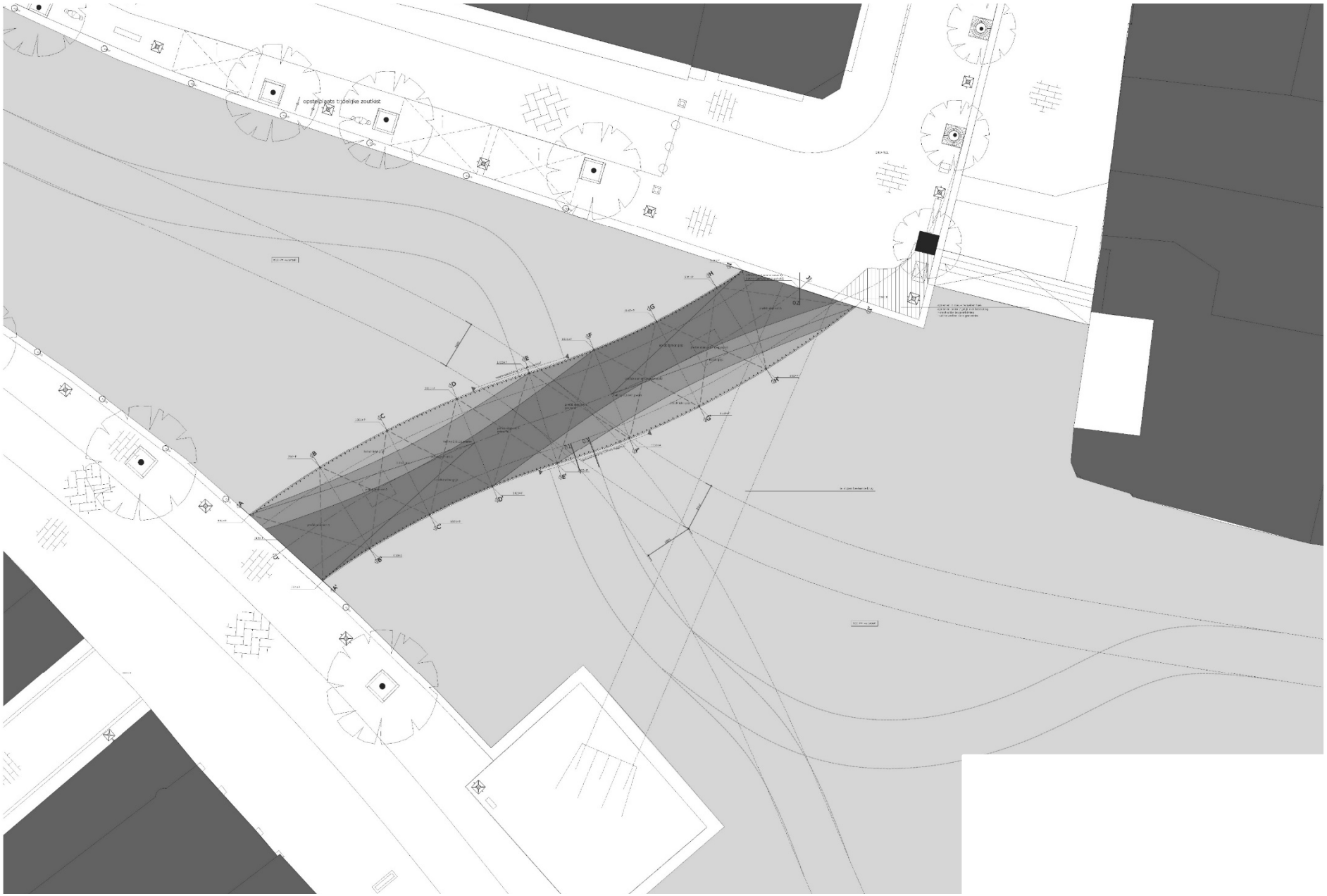
stalen balustrade

CONTEMPORARY TECHNIQUES

WITH RESPECT FOR THE ENVIRONMENT

- Held back in terms of color and design
- UHSB and slenderness deck
- Recognizable, but not allowed to draw the attention
- Reveal secrets slowly

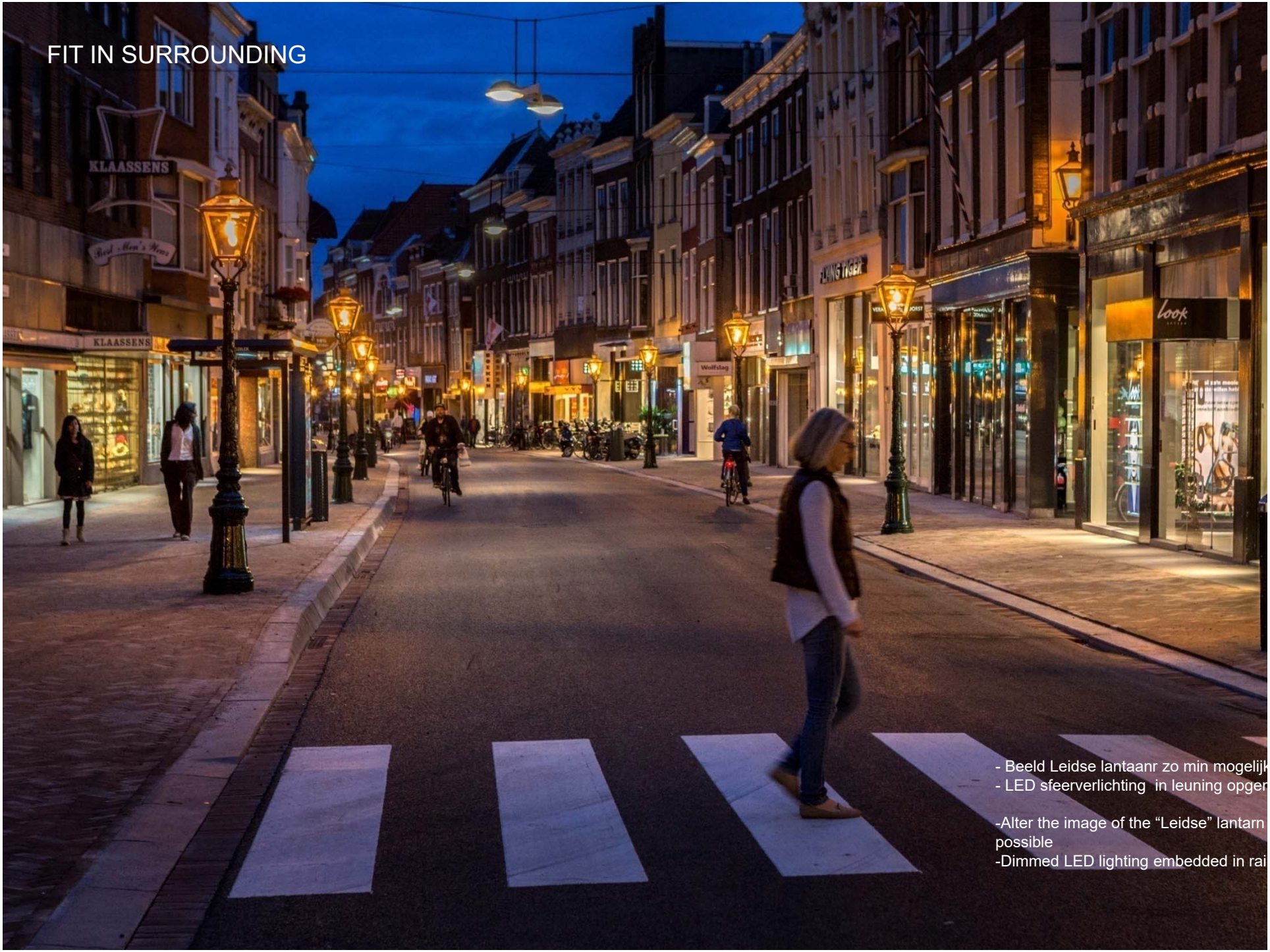
NAROWING BRIDGE VISUALLY, 6 MTR. WIDE BRIDGE



DECK FINISH

Boligrip 1250

FIT IN SURROUNDING

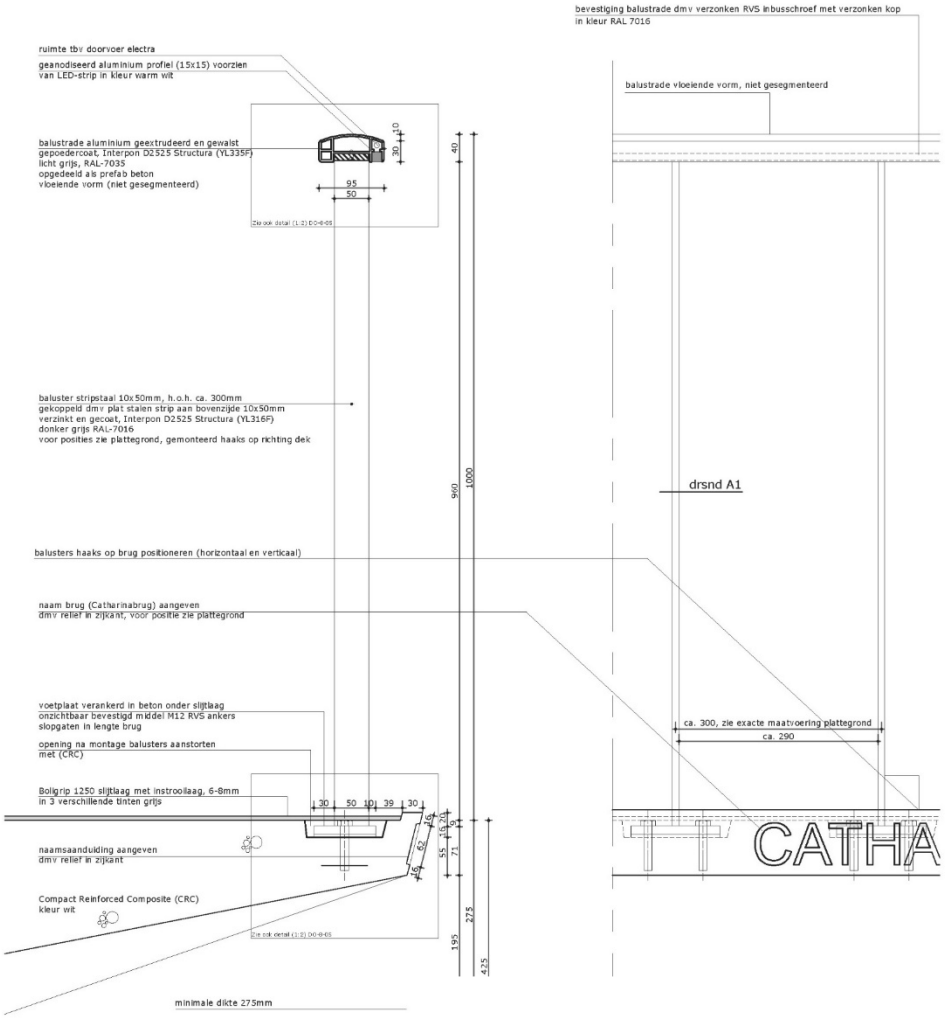


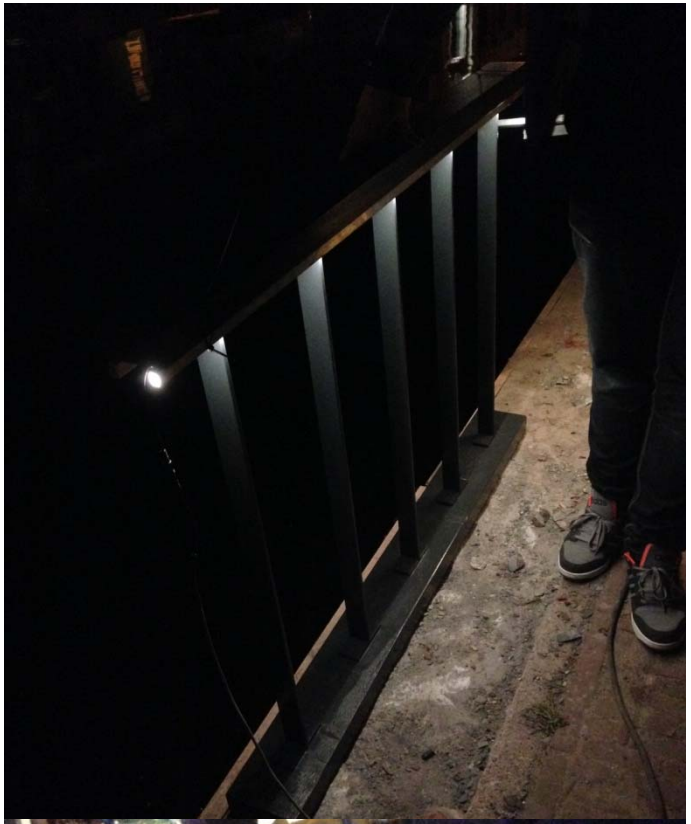
- Beeld Leidse lantaanr zo min mogelijk
- LED sfeerverlichting in leuning opger

-Alter the image of the “Leidse” lantarn
possible
-Dimmed LED lighting embedded in rai

LED, DIMMED LIGHTING

EMPHASIZE HORIZONTALITY

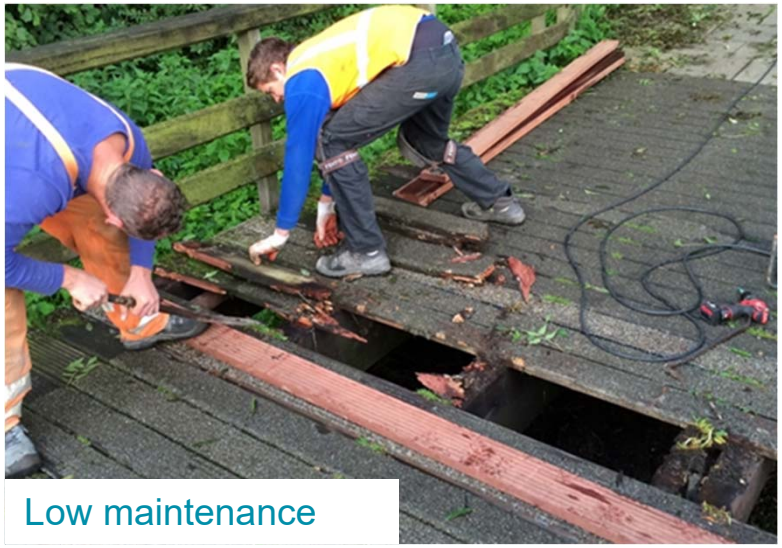




DEMANDS FROM THE CITY OF LEIDEN FOR THE NEW BRIDGE

Small slope

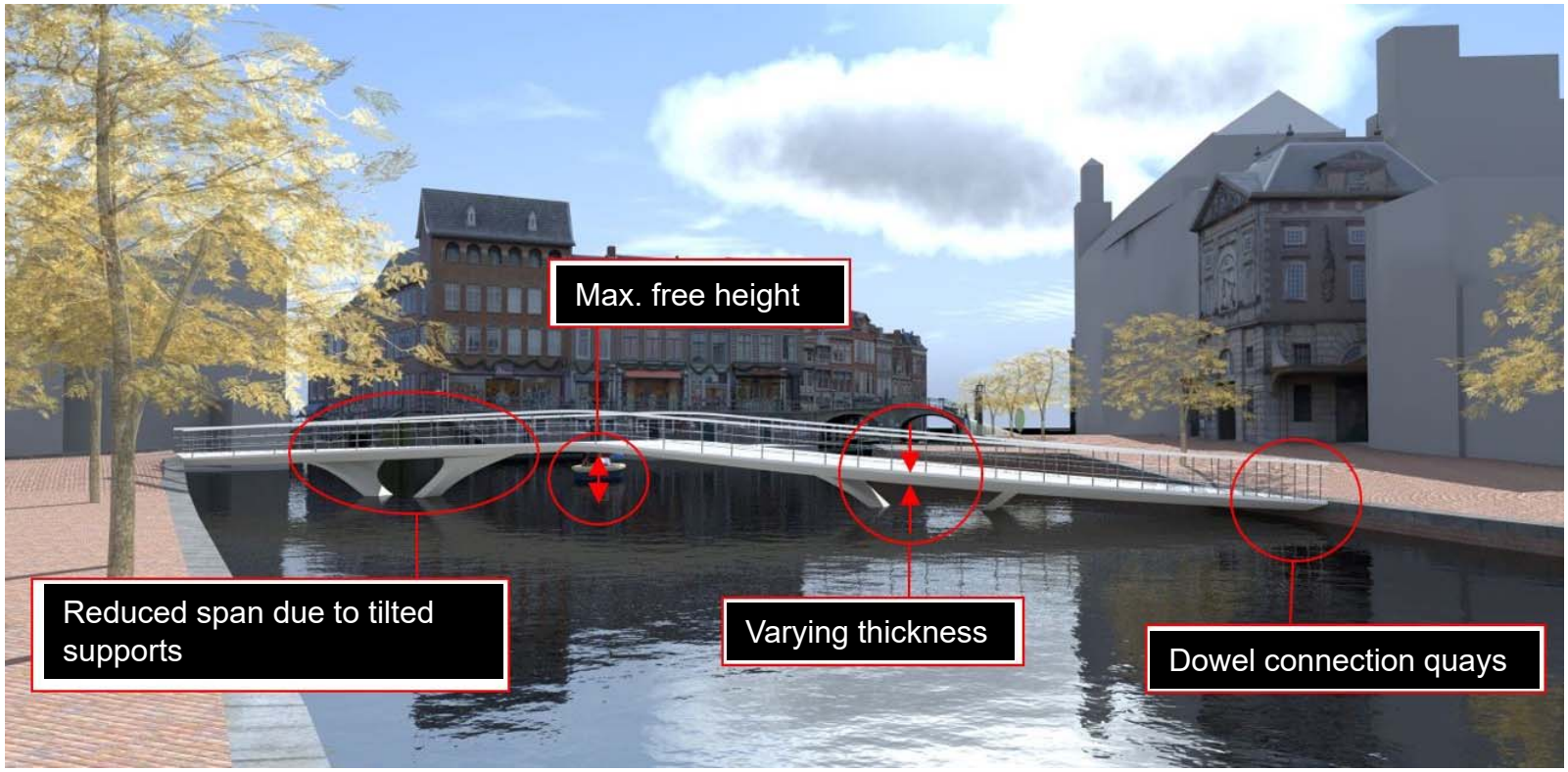
Large passage



Low maintenance

High city-loads

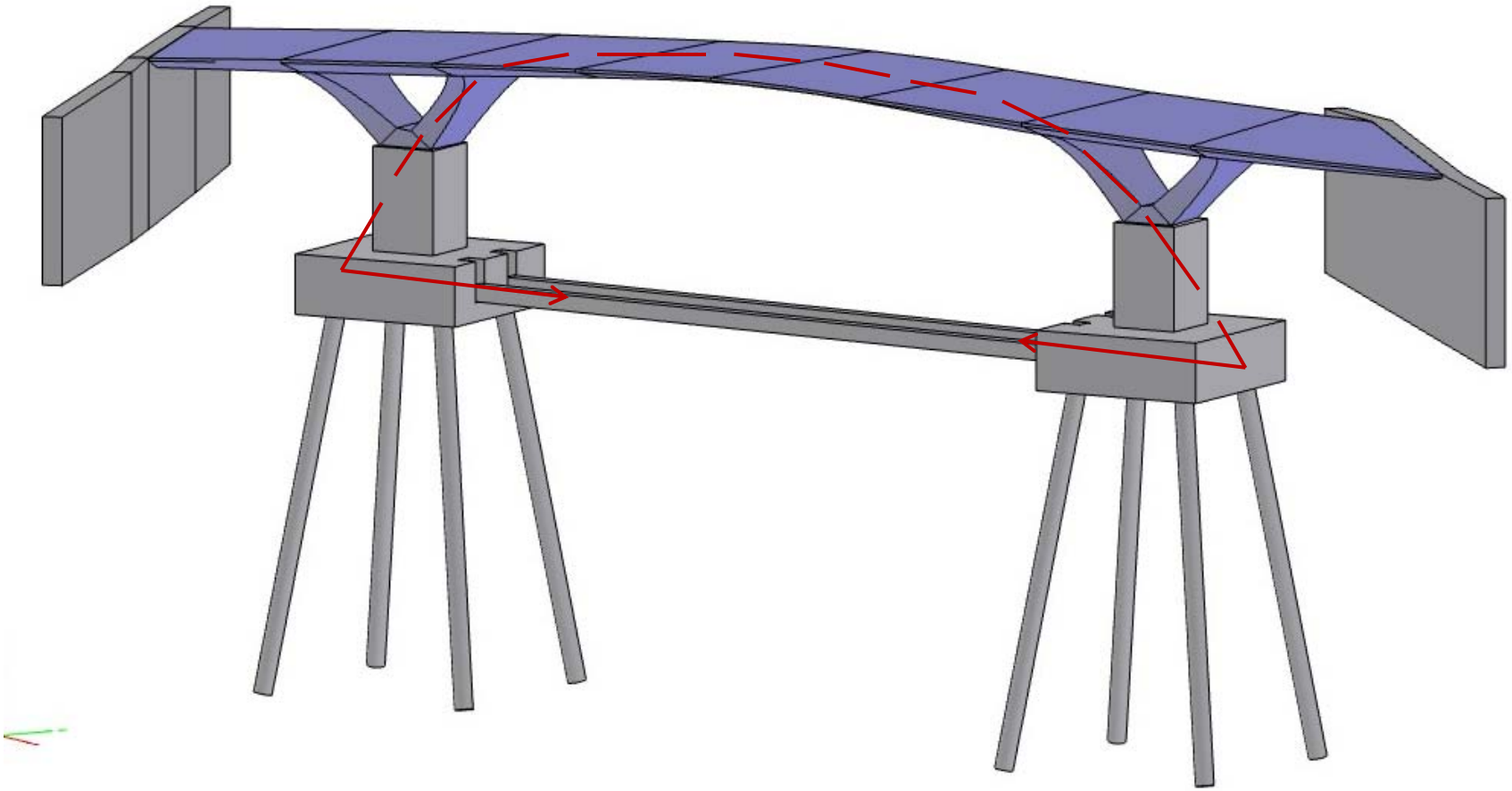
THE DESIGN



- Made from UHPC -

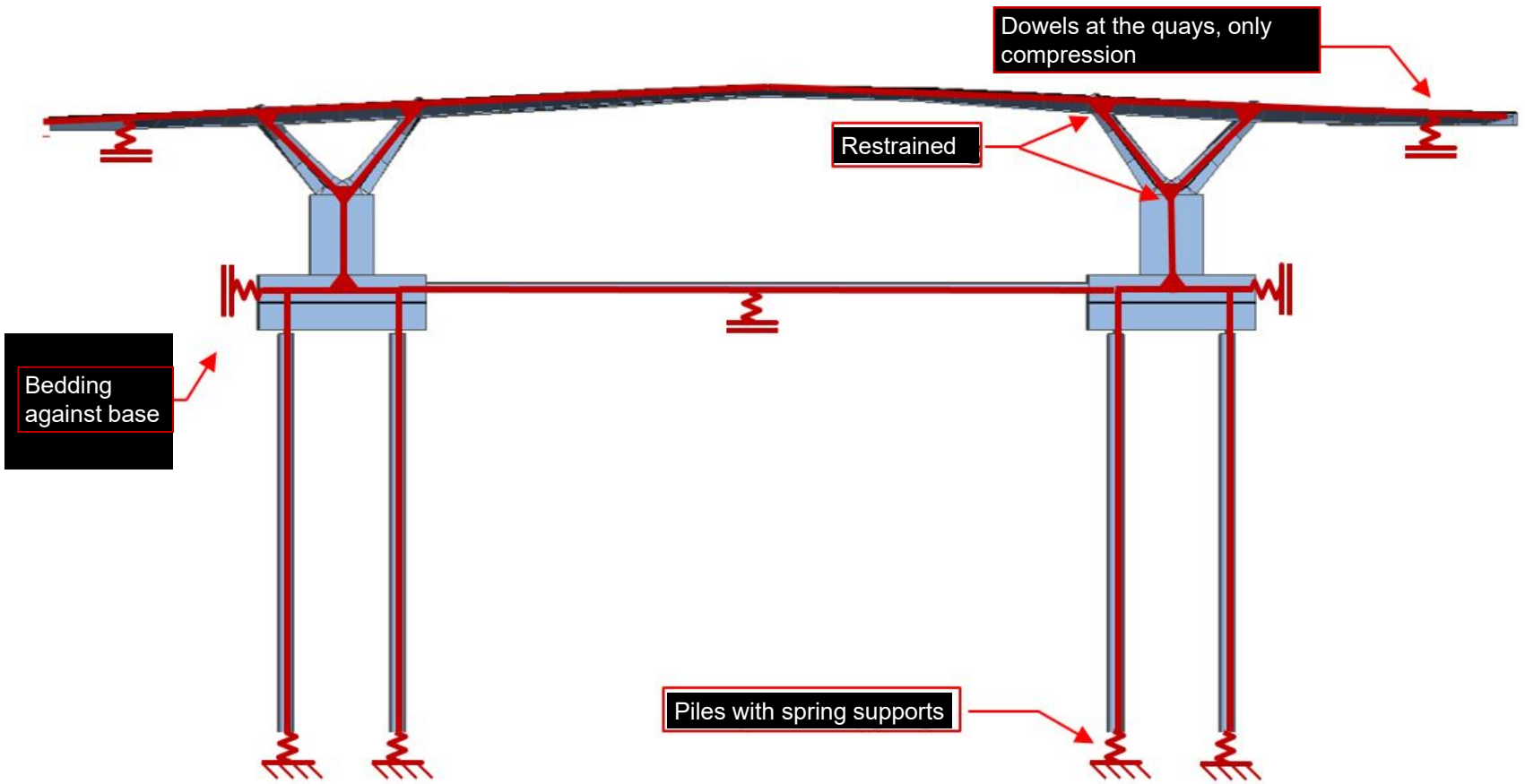



THE DESIGN PRINCIPLE



THE DESIGN

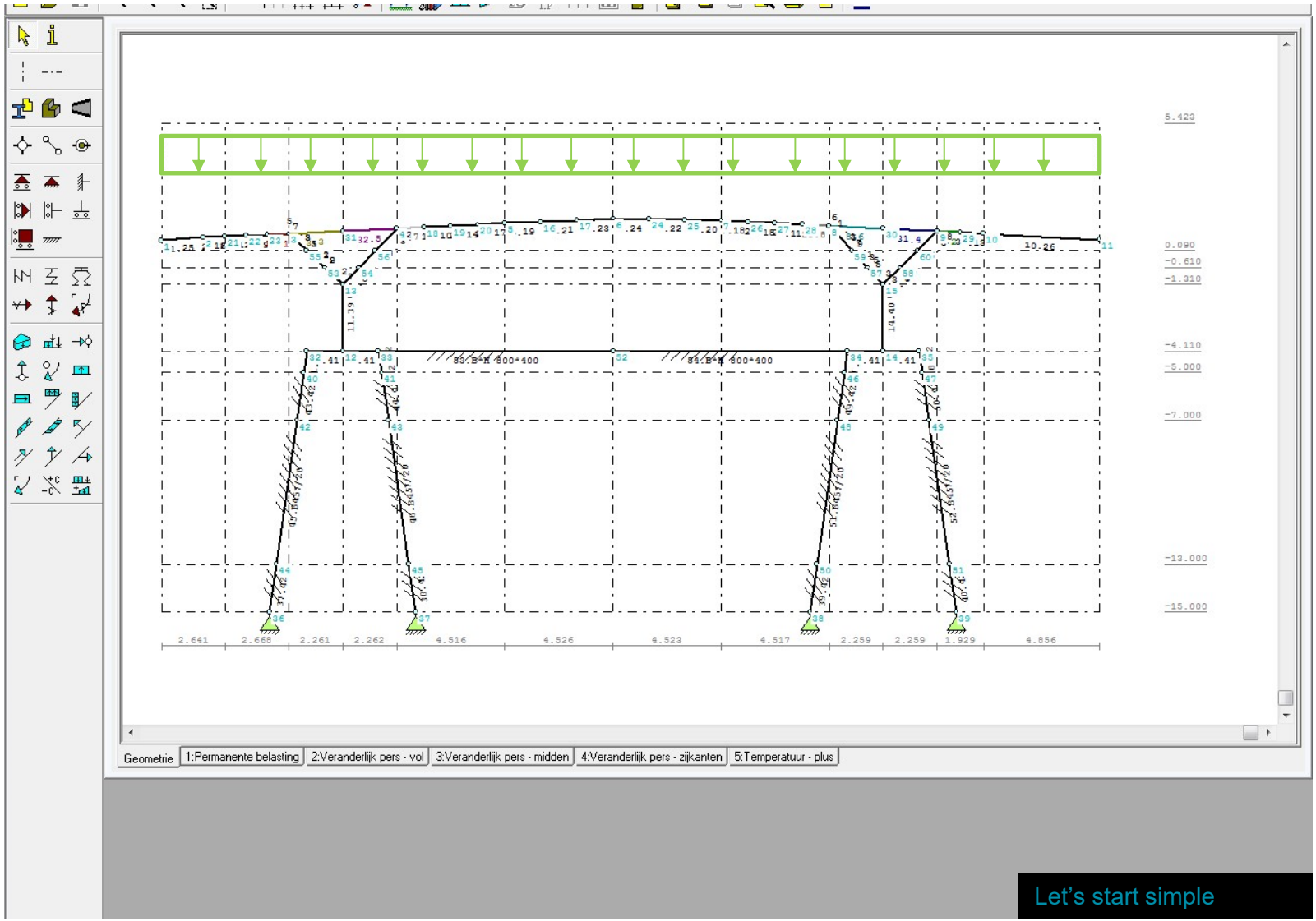
How was it calculated?



Mechanics scheme

THE DESIGN

How was it calculated?



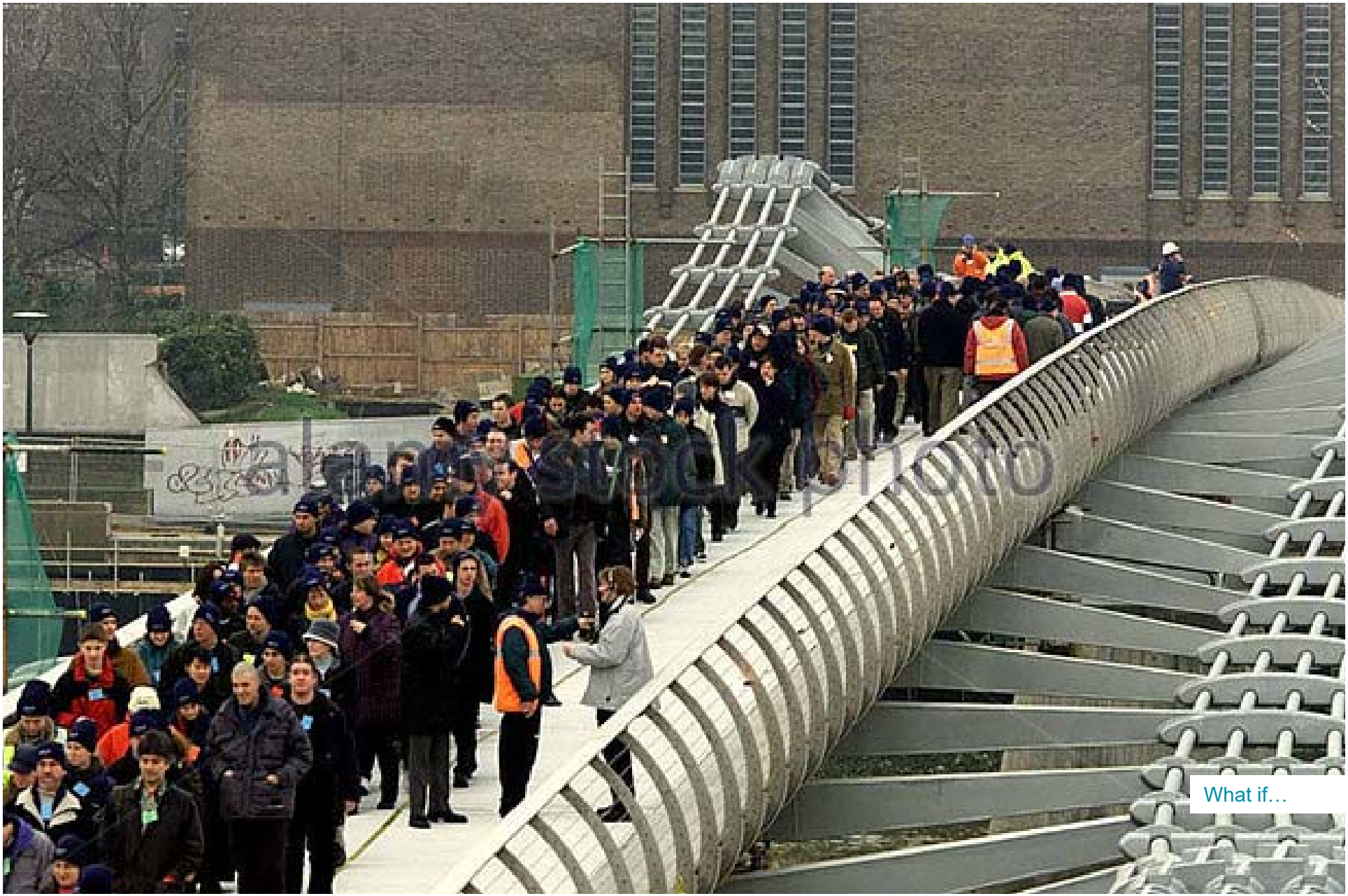
Let's start simple

THE DESIGN

How was it calculated?

THE DESIGN

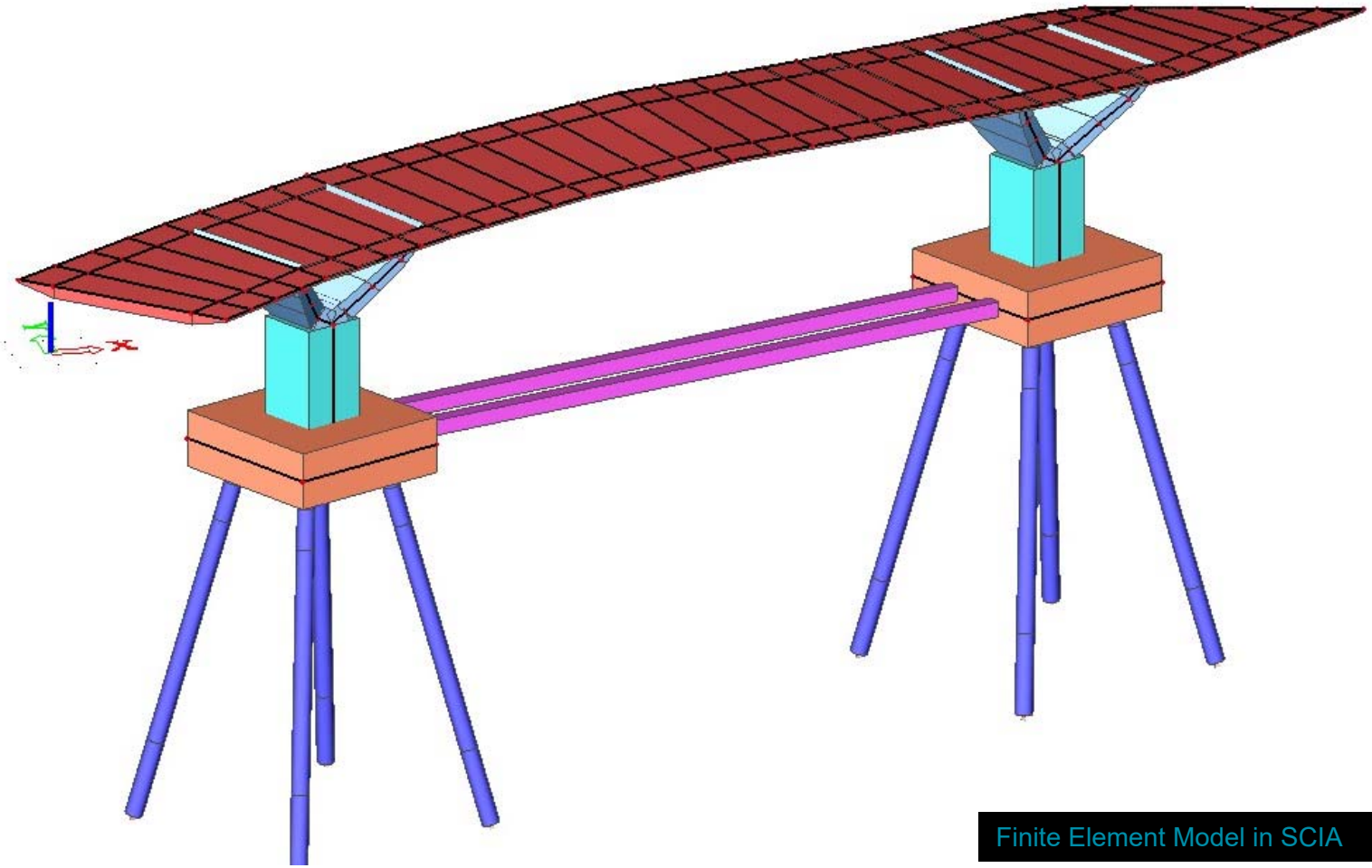
How was it calculated?



What if…

THE DESIGN

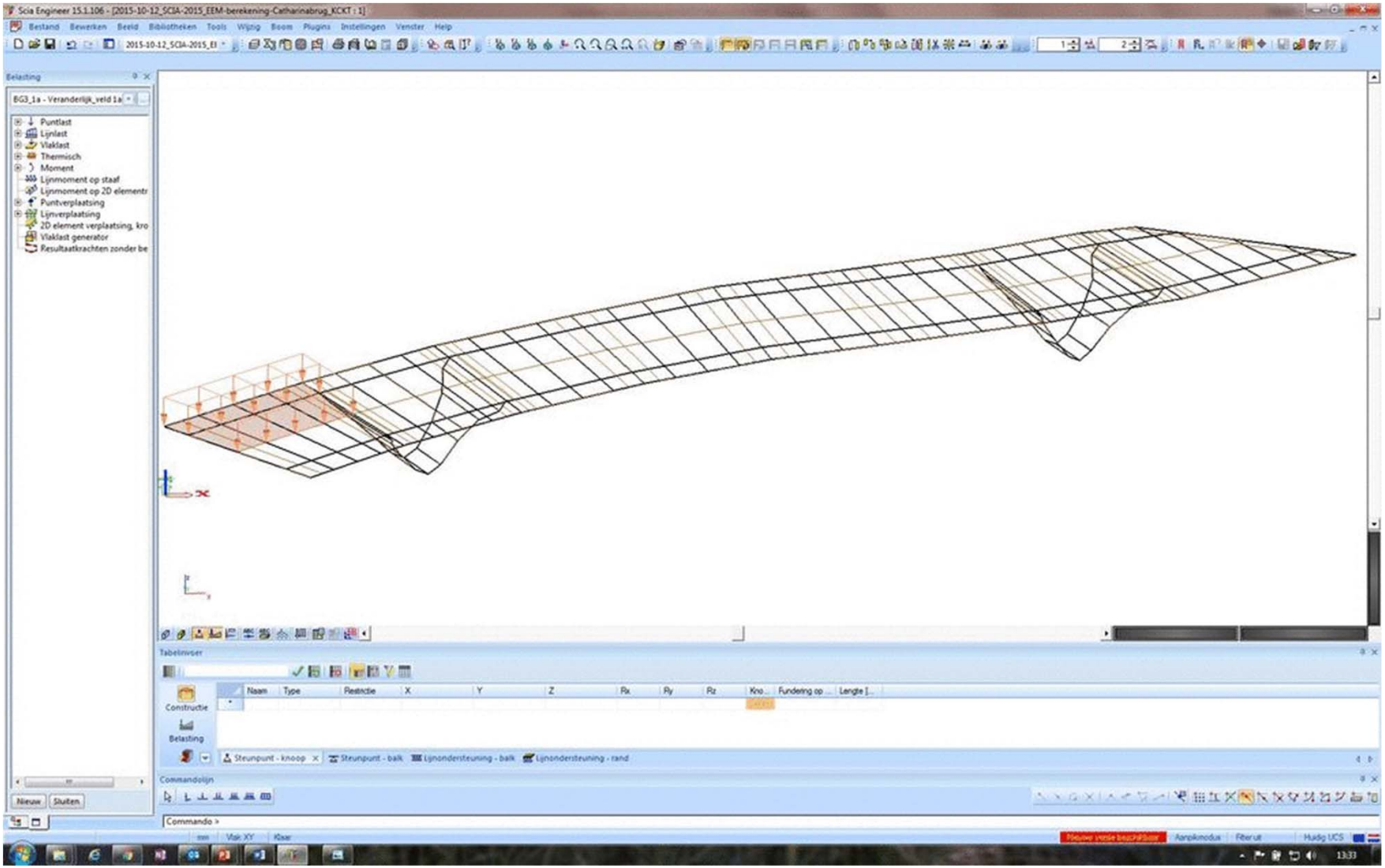
How was it calculated?



Finite Element Model in SCIA

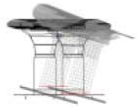
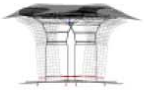
THE DESIGN

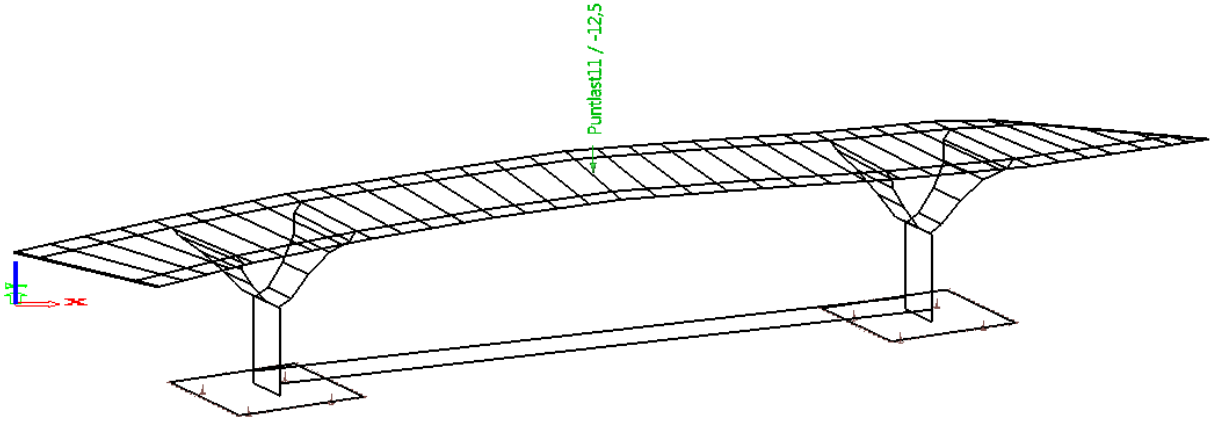
How was it calculated?

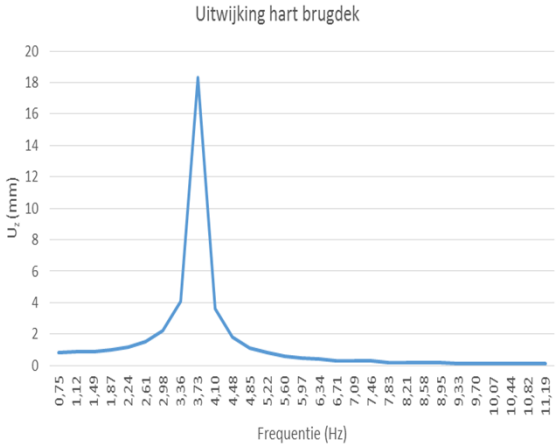


THE DESIGN

How was it calculated?

		Frequentie (Hz)			
					
Varianten		**Modus 1 - verticaal**	**Modus 2 - verticaal**	**Modus 3 - horizontaal**	**Modus 4 - horizontaal**
1	**Basismodel**	3,73	**3,62**	**3,59**	3,90
2	**Basis + kade**	**3,73**	4,09	**3,73**	4,04
3	**Volledig vast**	**4,07**	5,69	**6,83**	8,62



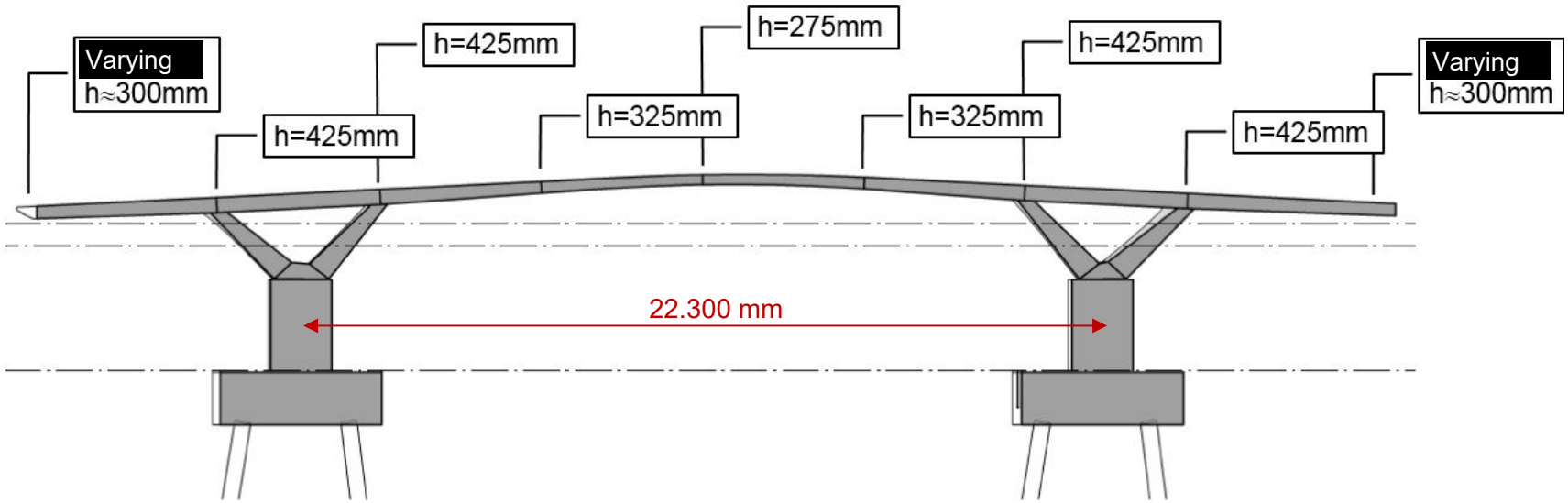


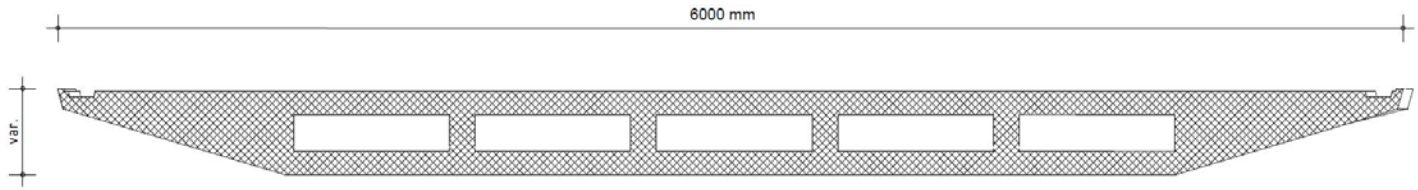
Eigenfrequency

THE DESIGN

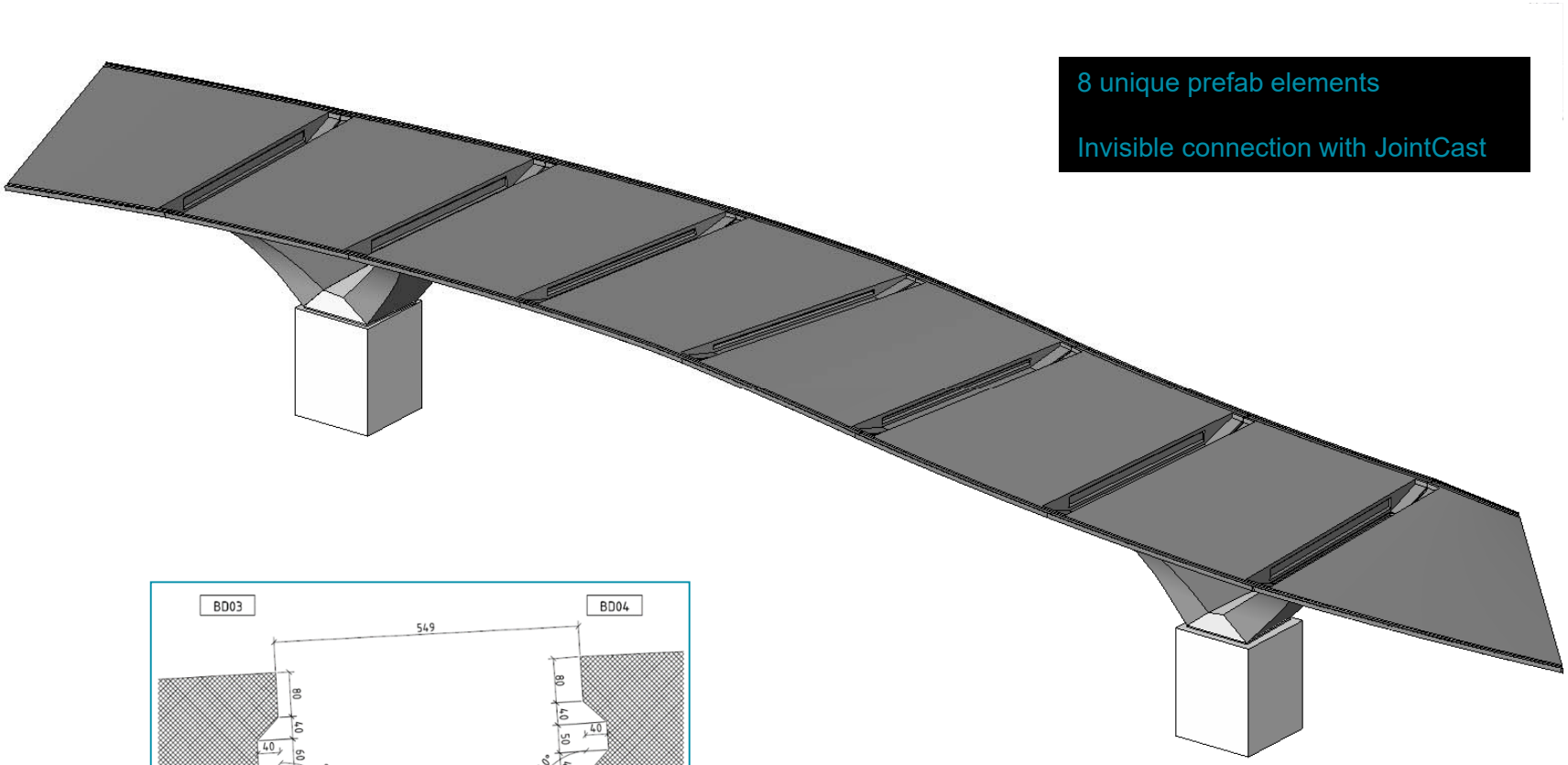

SUBWAY
Catharinabrug locatie 1
Z acceleration
Y acceleration
X acceleration
Acceleration [m/s²]
1.4
1.2
1
0.8
0.6
0.4
0.2
0
08:48
08:50
08:52
08:54
08:56
08:58
Ca. 5 Hz
Eigenfrequency

THE DESIGN


Varying
h≈300mm
h=425mm
h=425mm
h=275mm
h=325mm
h=325mm
h=425mm
h=425mm
Varying
h≈300mm
22.300 mm

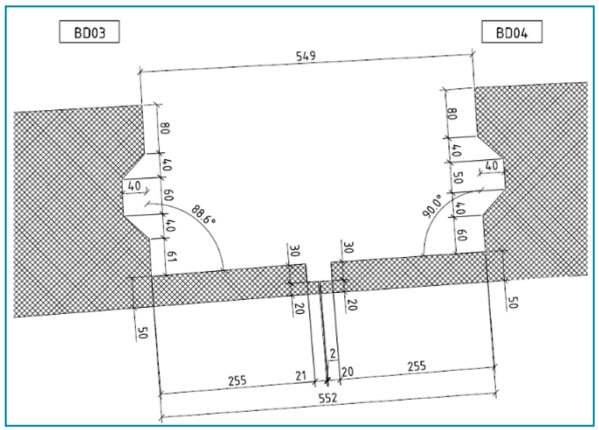

6000 mm
var.

THE DESIGN

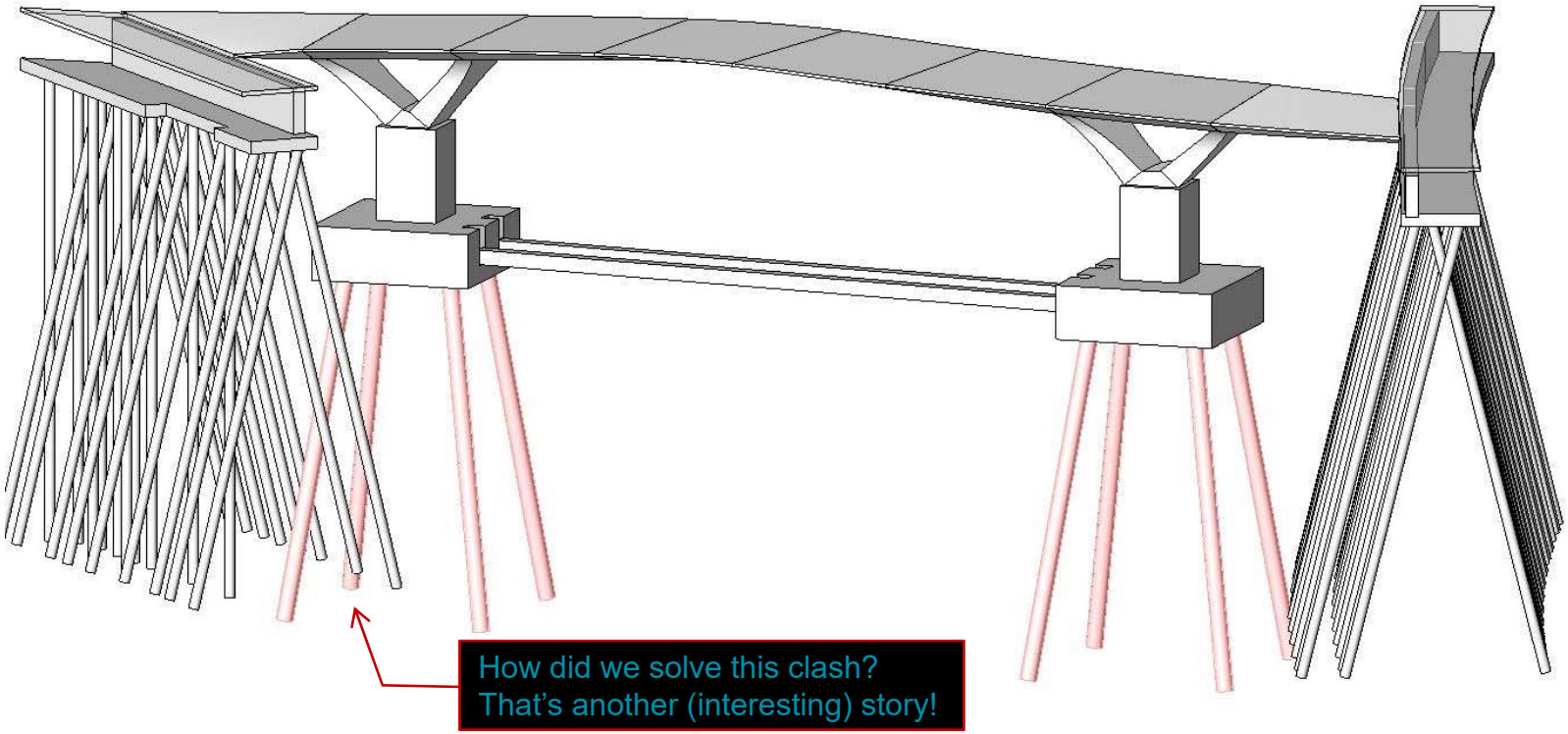


8 unique prefab elements

Invisible connection with JointCast



THE DESIGN


How did we solve this clash?
That's another (interesting) story!

PREFABRICATION

Complex formwork

PREFABRICATION

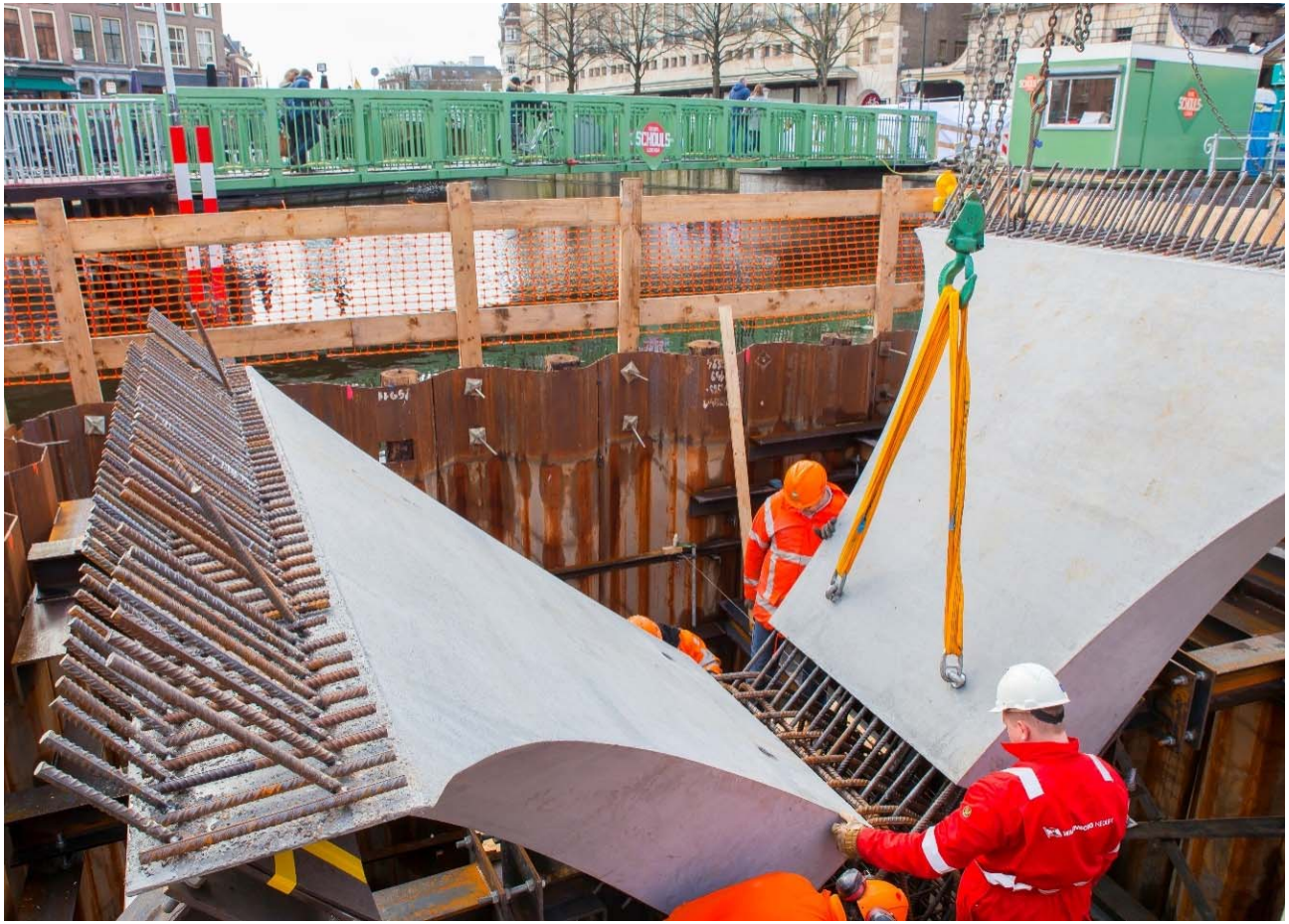
Complex formwork

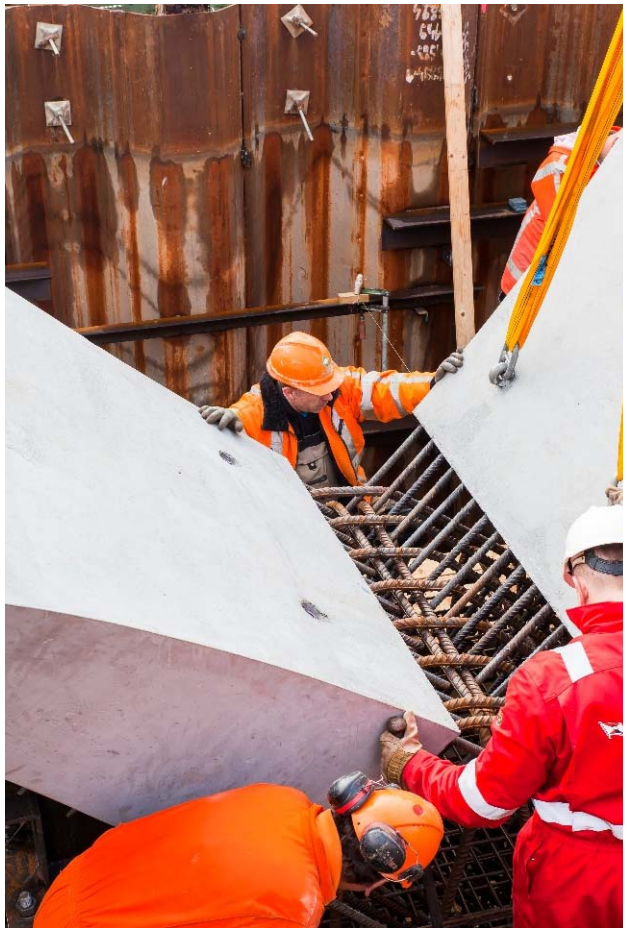
QUALITY CONTROL

CONSTRUCTION

CONSTRUCTION

CONSTRUCTION



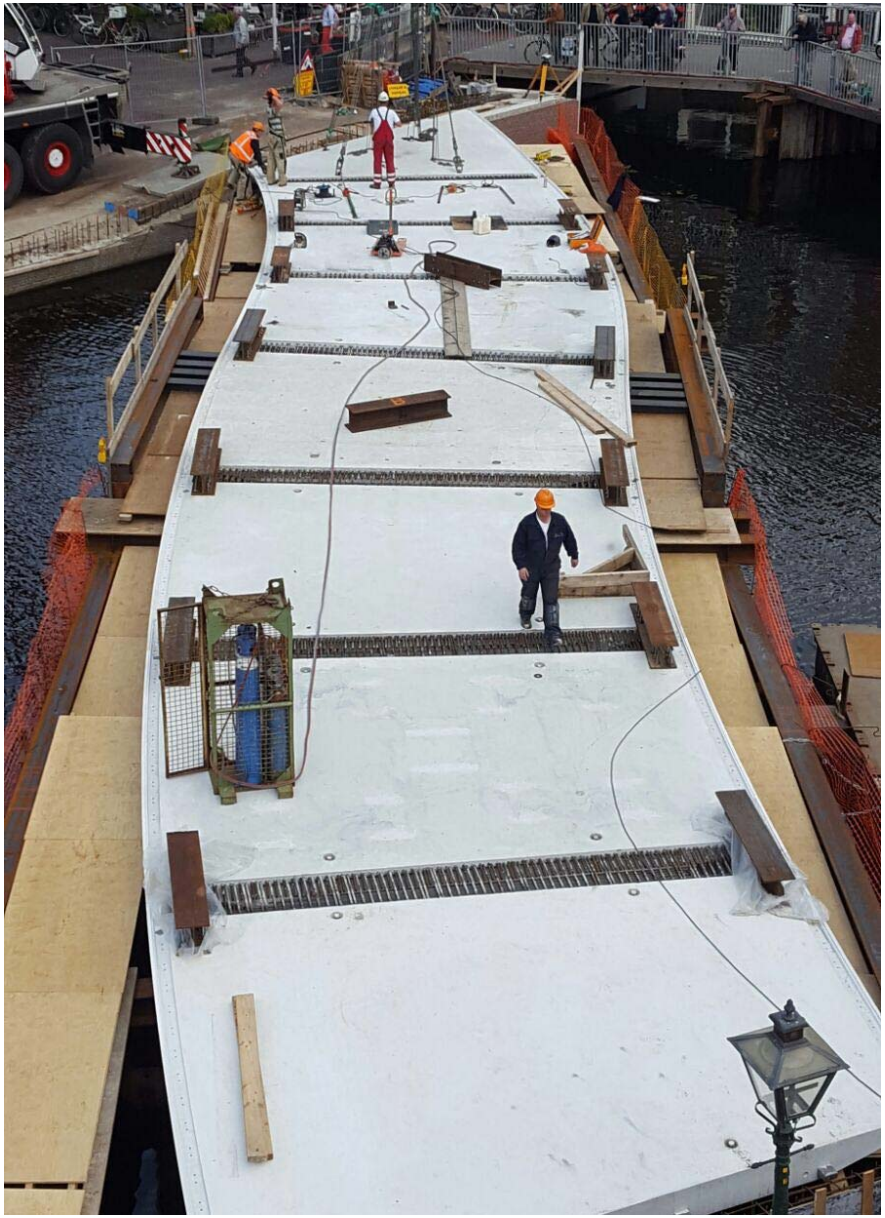


CONSTRUCTION

CONSTRUCTION

CONSTRUCTION

CONSTRUCTION



THE RESULT

THE RESULT

THE RESULT

THANK YOU…

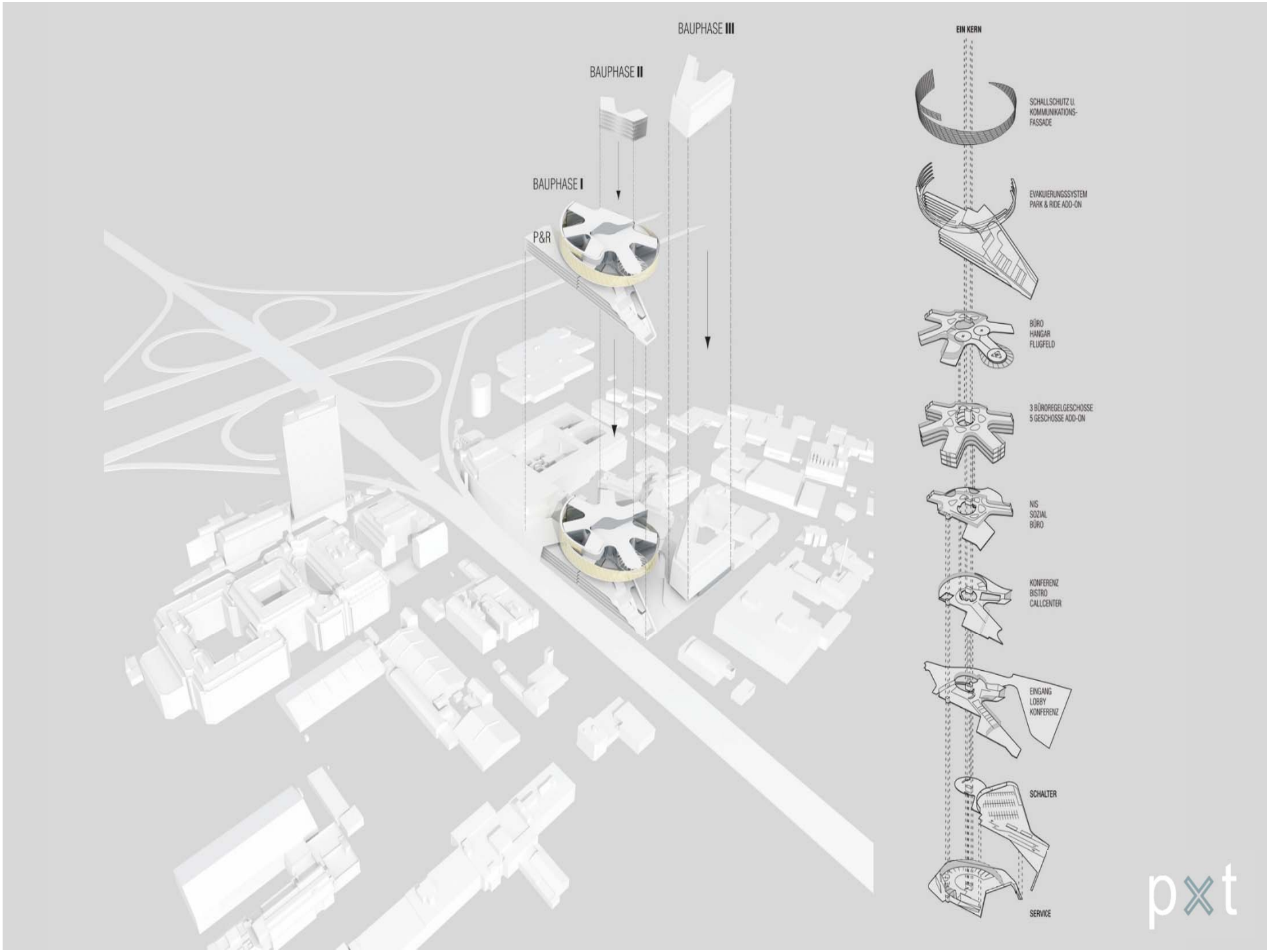
QUESTIONS?

Project details

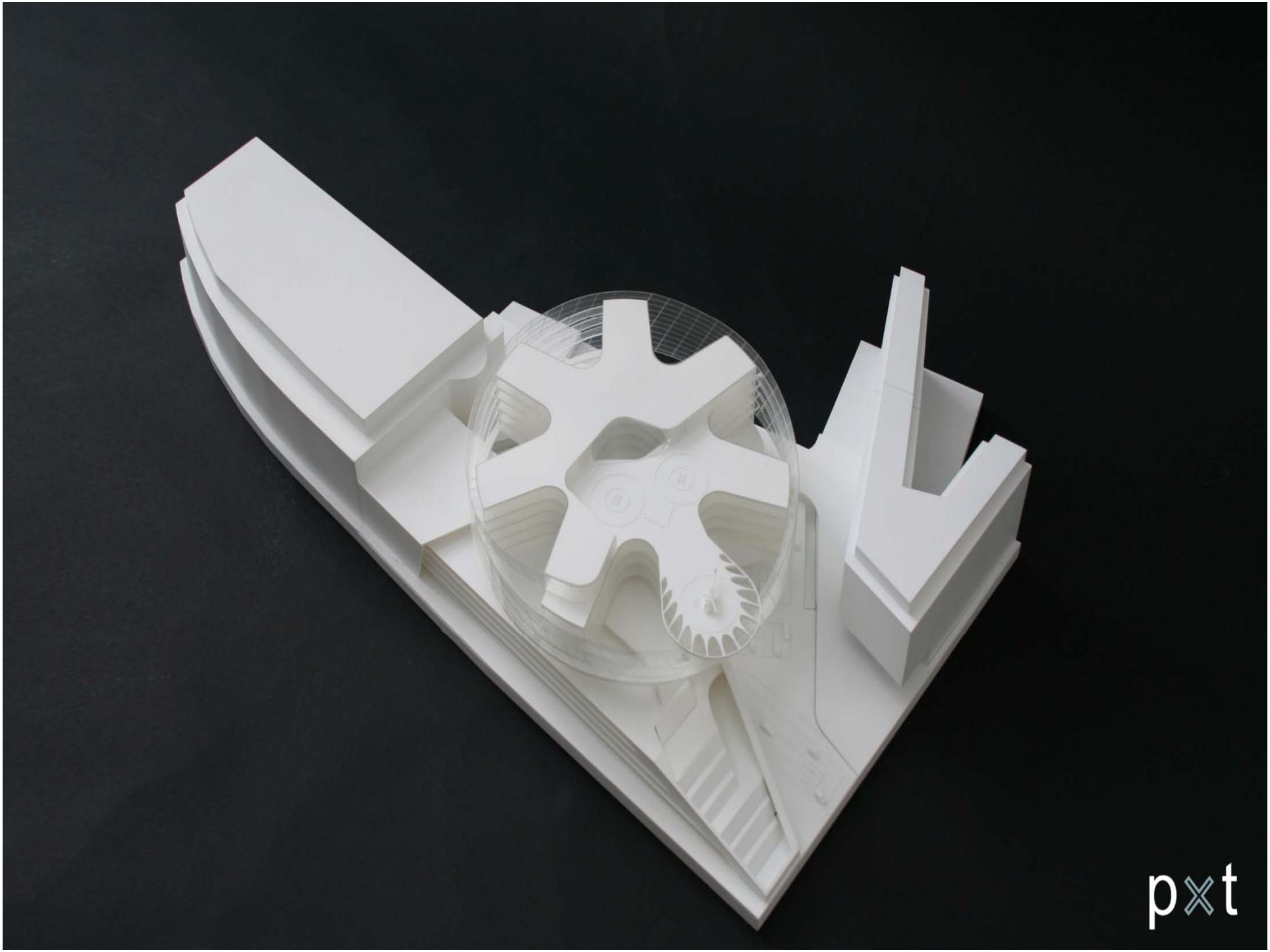
Start design	: 2012
Start construction	: 2015
Finished	: 2016
Client	: Gemeente Leiden
Design	: DP6 architectuurstudio, Delft
Constructor	: Pieters Bouwtechniek, Delft
Contractor	: Gebr. Schouls, Leiden
Supplier	: Hi-Con

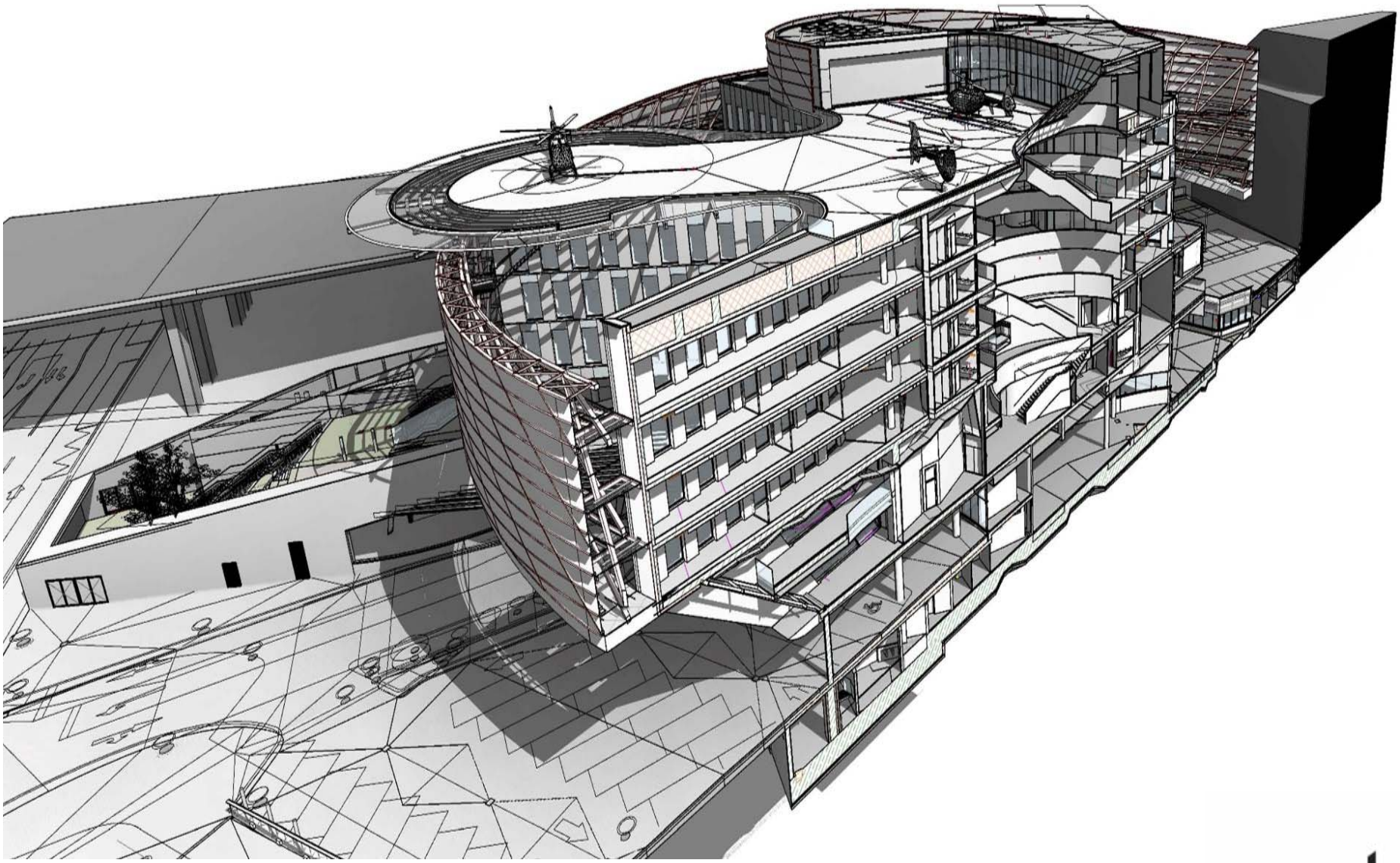
OEAMTC MOBILITY CENTRE VIENNA
European Concrete Award 2018

Christoph PICHLER, PICHLER & TRAUPMANN ARCHITECTS
Wolf-Dietrich DENK, FCP FRITSCH, CHIARI & PARTNERS

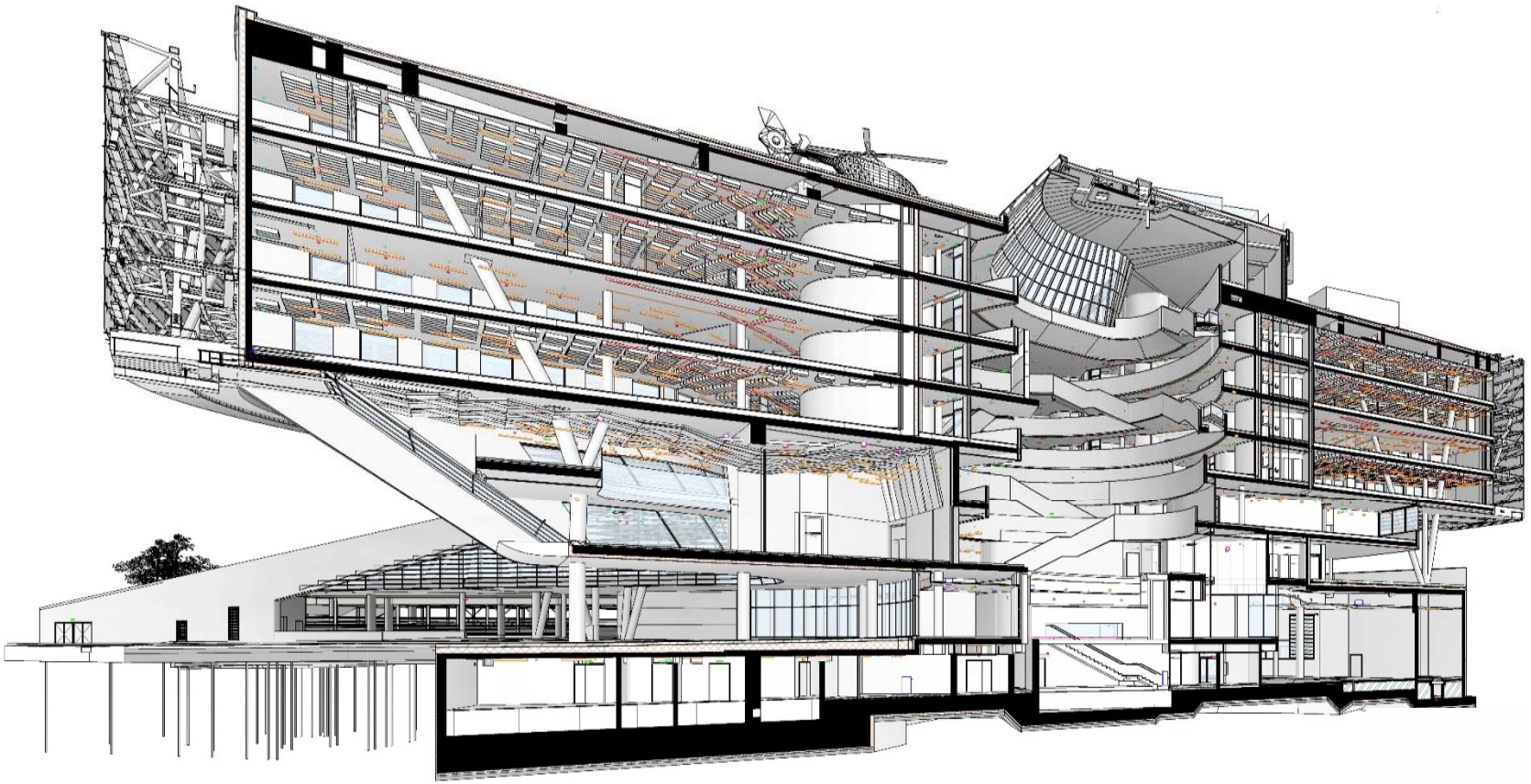

BAUPHASE III
BAUPHASE II
BAUPHASE I
P&R
EIN KERN
SCHALLSCHUTZ U. KOMMUNIKATIONS-FASSADE
EVAKUIERUNGSSYSTEM PARK & RIDE ADD-ON
BÜRO HANGAR FLUGFELD
3 BÜROREGELGESCHOSSE 5 GESCHOSSE ADD-ON
NIS SOZIAL BÜRO
KONFERENZ BISTRO CALLCENTER
EINGANG LOBBY KONFERENZ
SCHALTER
SERVICE
pxt


DAMTC
SECURITAS

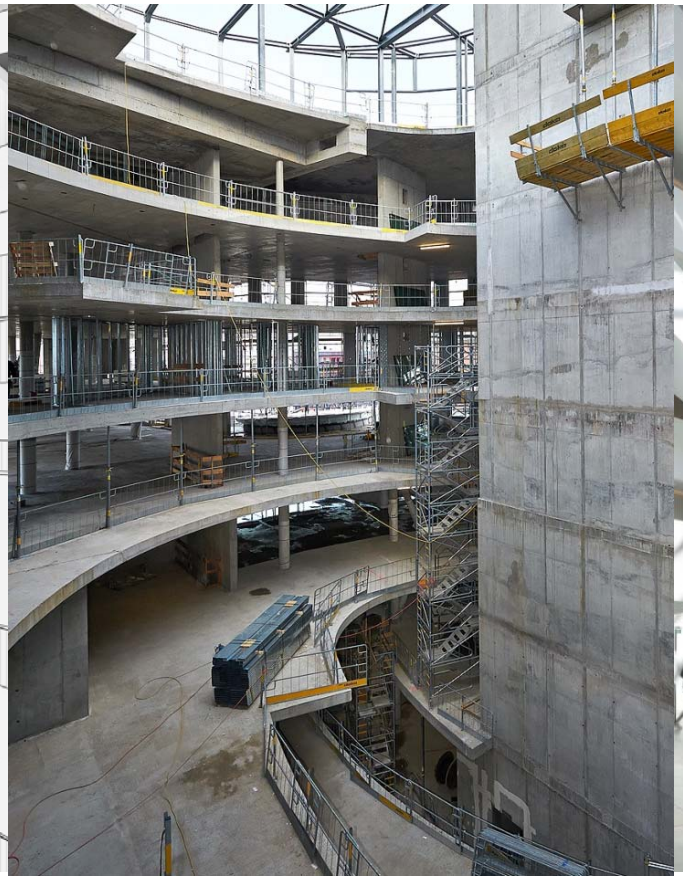

pxt

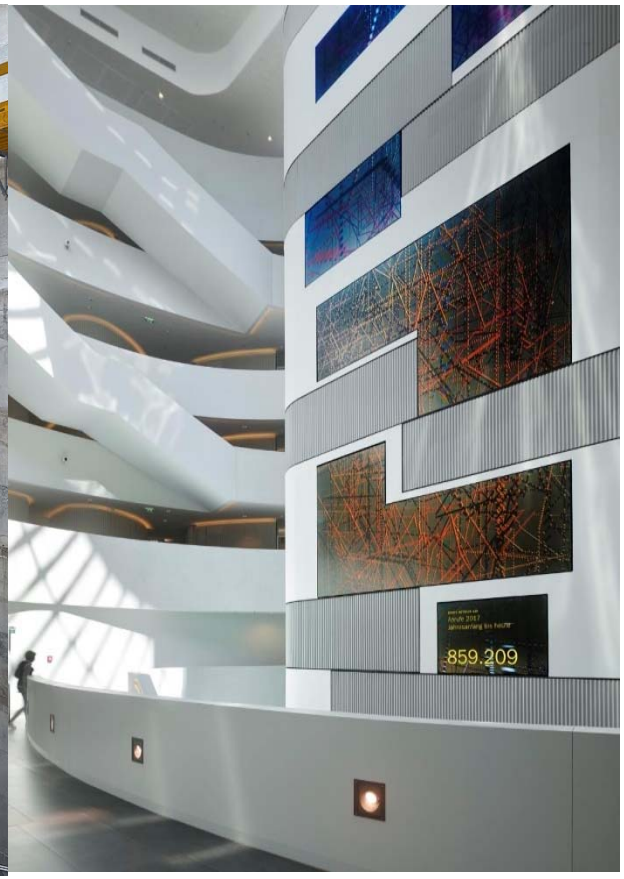


pxt

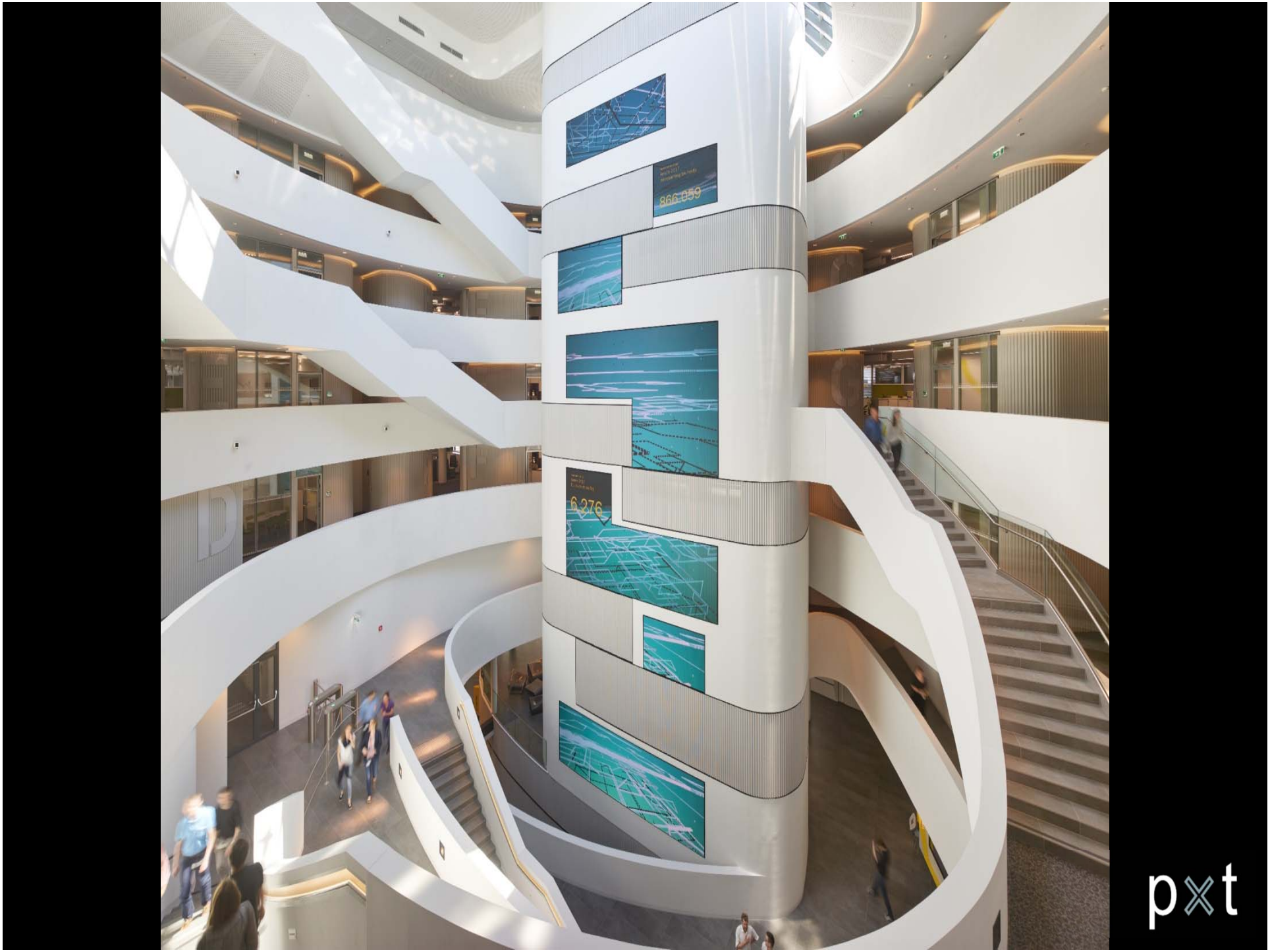


pxt

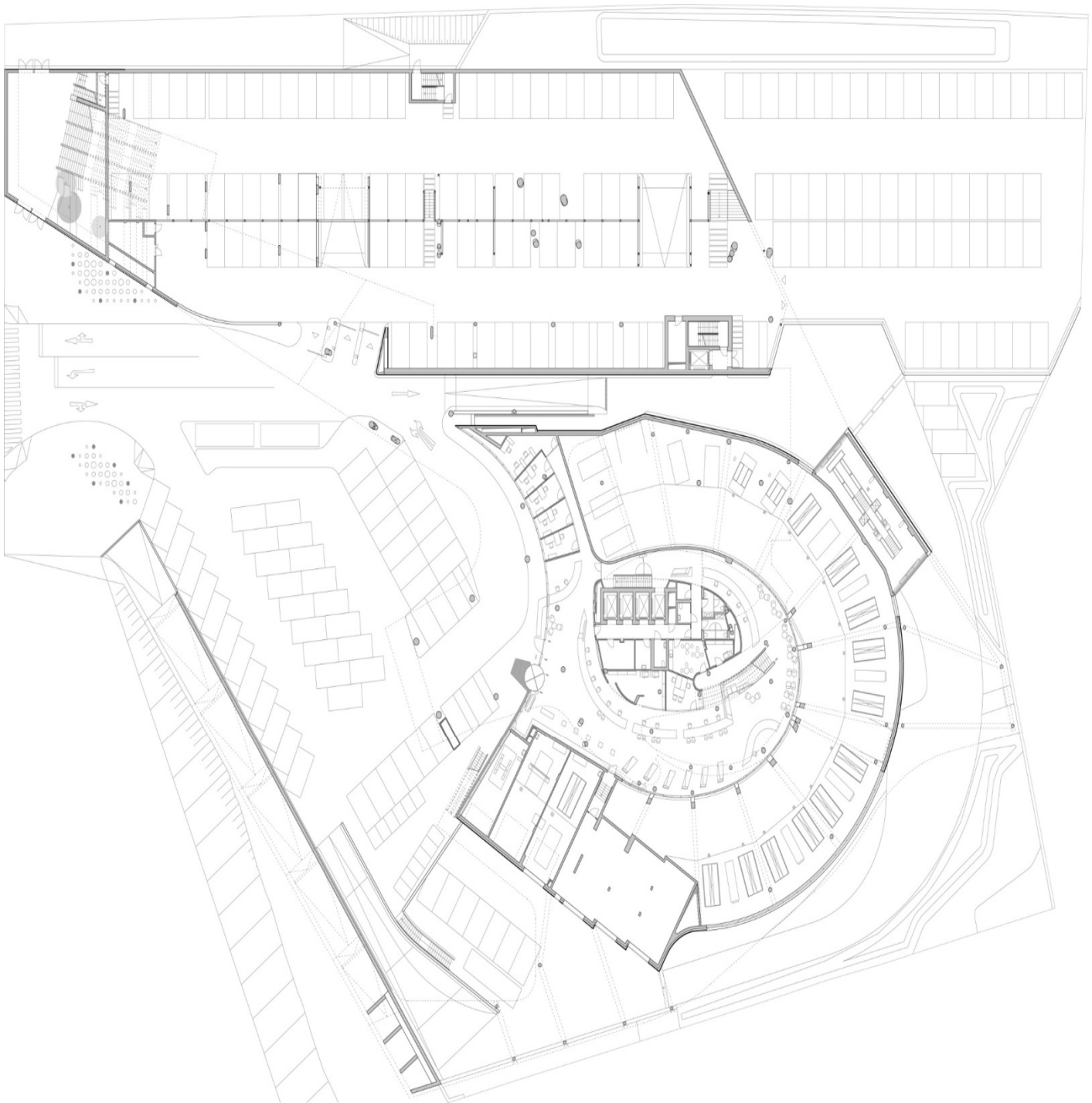




pxt


866 859
6 276
pxt


CHASSIS



pxt

2.5 5 10 20


pxt


20
21
12
13
pxt

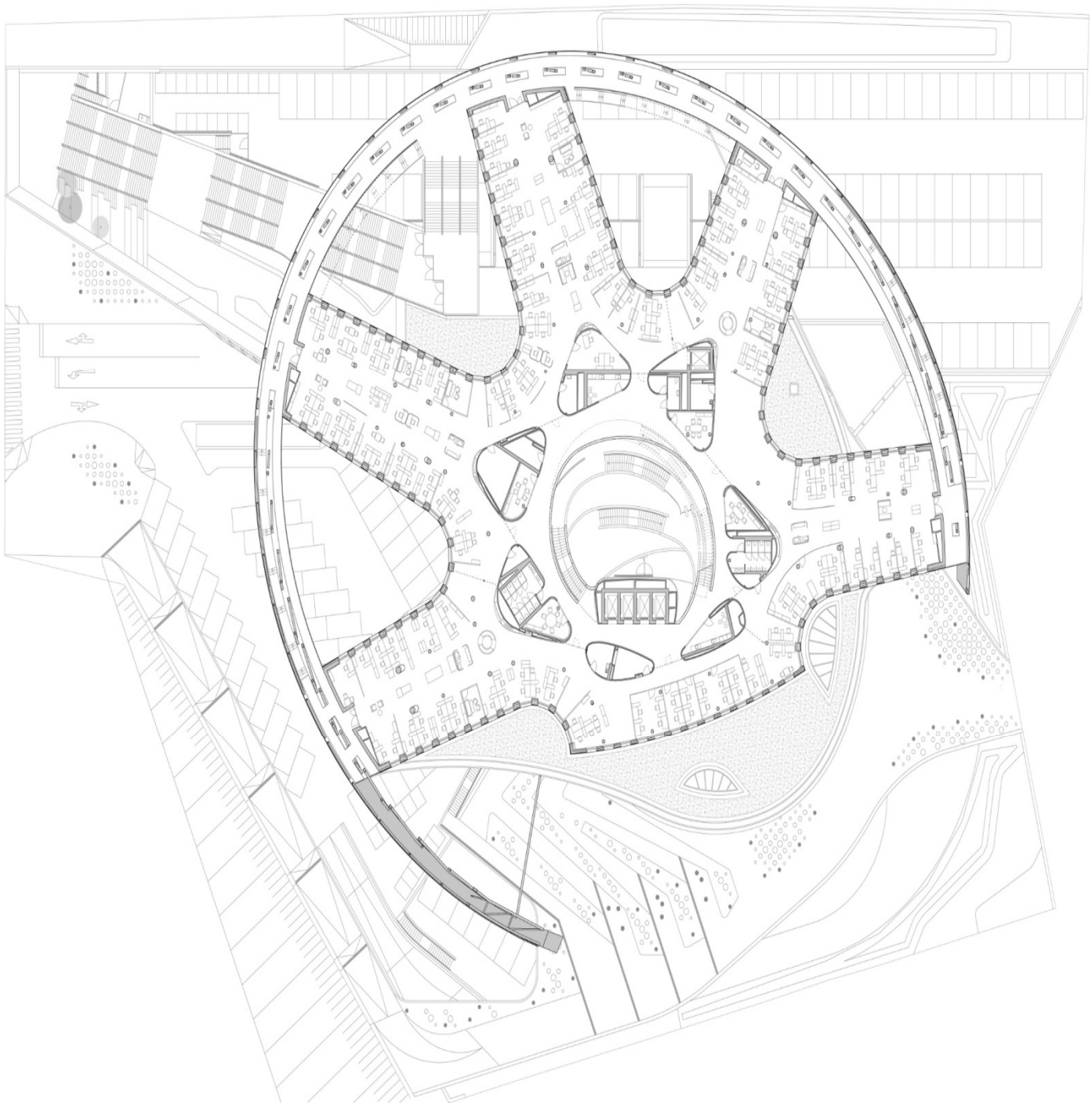

VERSICHERUNG
VERSICHERUNG
VERSICHERUNG
– KFZ-Haftpflicht und Kasko
– Rechtsschutz
– Unfall- und Krankenversicherung
– Reiseversicherung
– PKW-Leasing
Rundum geschützt!
ÖAMTC KFZ-VERSICHERUNGEN
EXKLUSIV FÜR CLUB-MITGLIEDER!
REISE
SERVICE
ÖAMTC
pxt

pxt

2.5 5 10 20


1
pxt

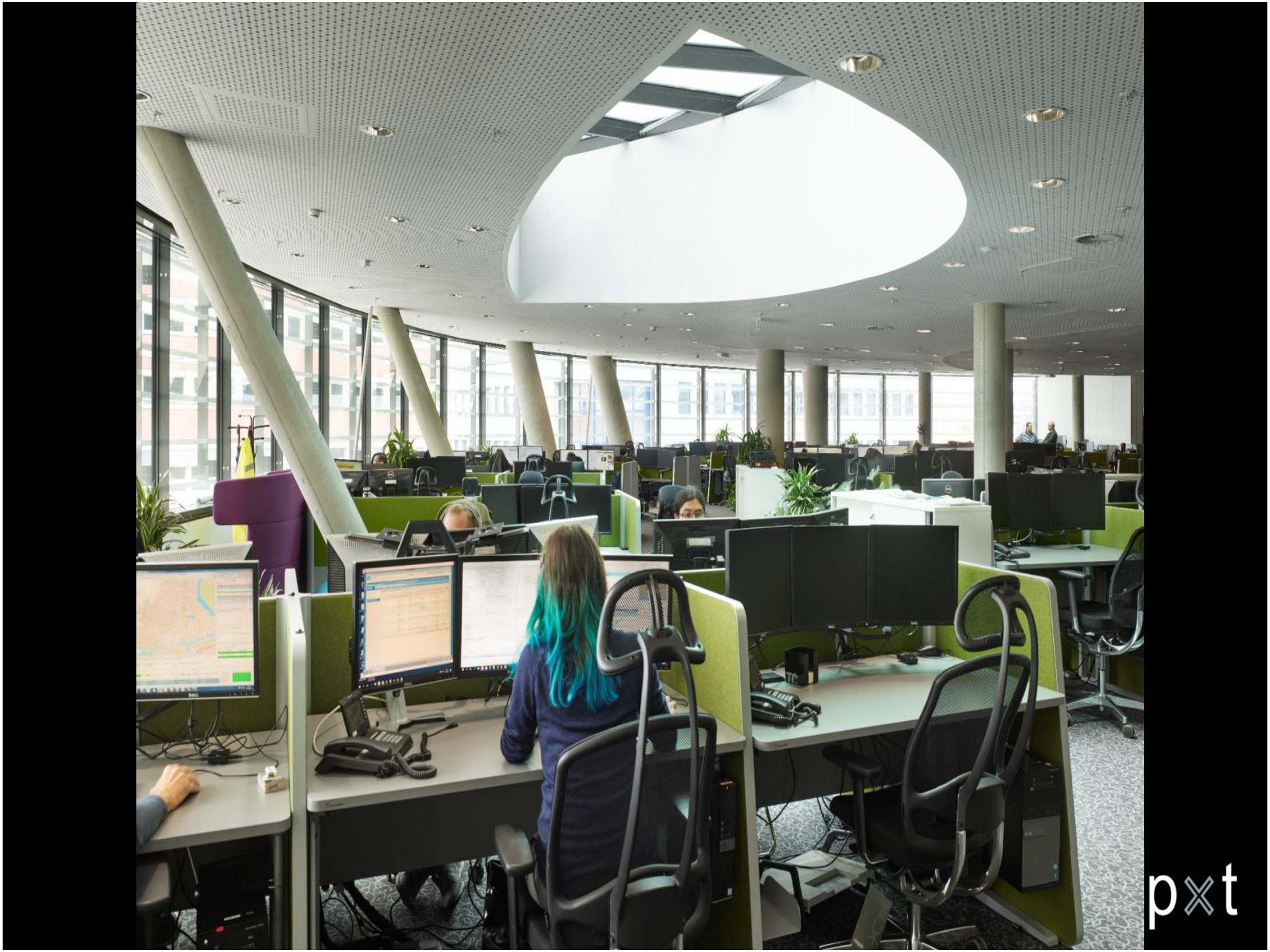

pxt



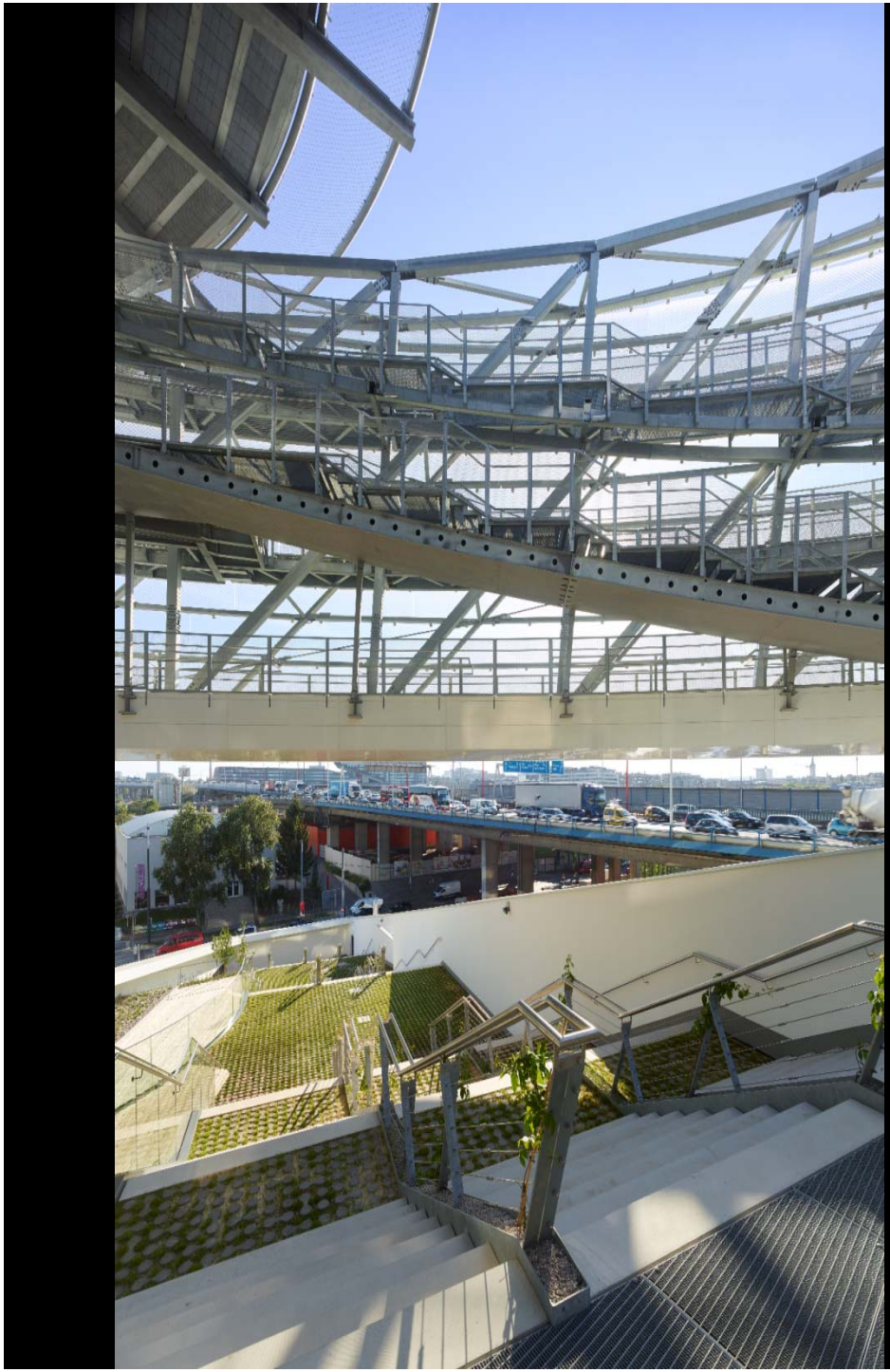
pxt

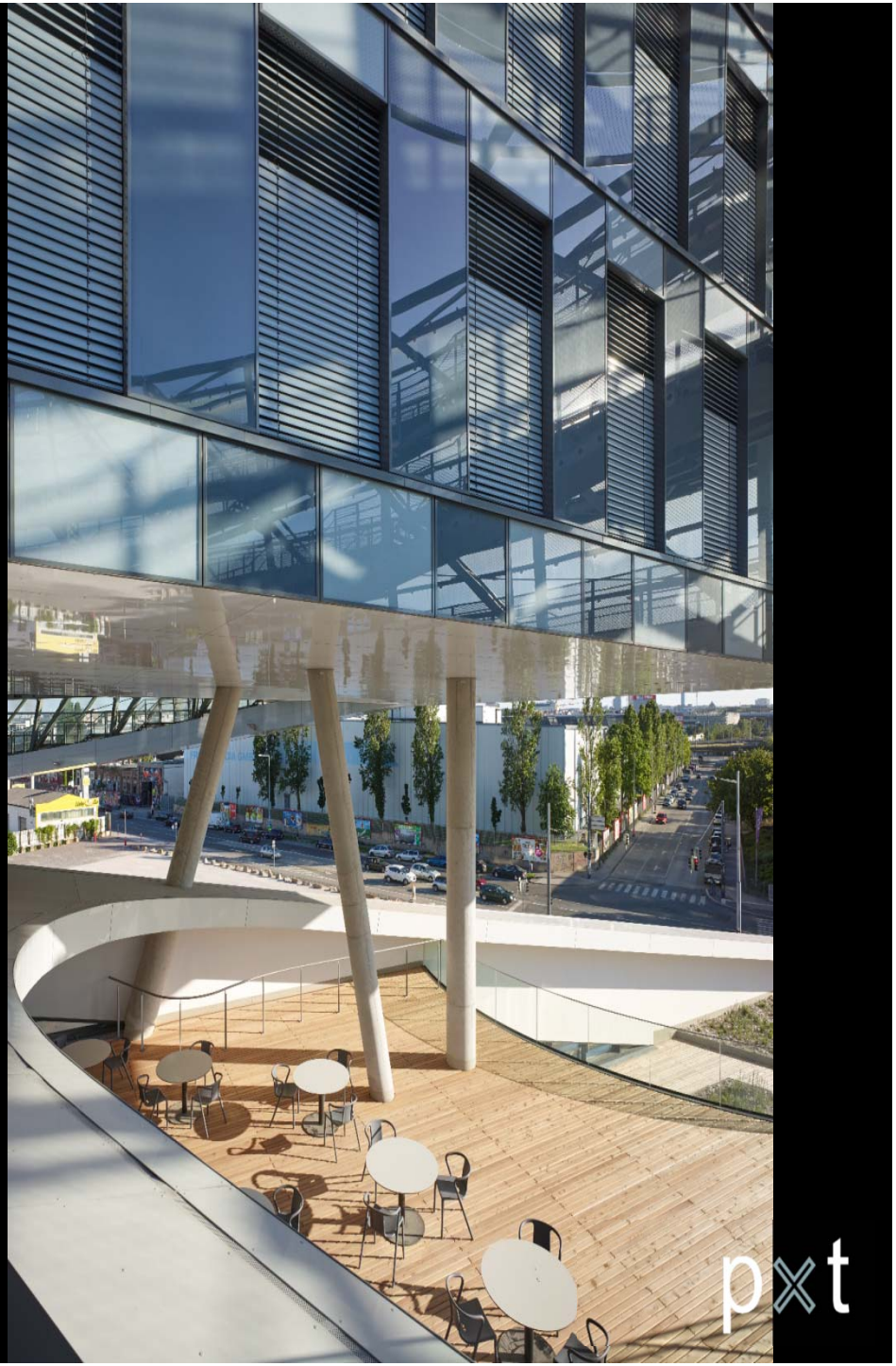
2.5 5 10 20


pxt


pxt


ÖAMTC






ÖAMTC


pxt


ÖAMTC

Pichler & Traupmann Architekten ZT GmbH

pxt

FCP

ÖAMTC Mobility Centre Vienna . **Structural Engineering**

LEAD CONSULTANT and ARCHITECT

PICHLER & TRAUPMANN Architekten ZT GmbH
Weyrgasse 6/4 . 1030 Wien

STRUCTURAL ENGINEERING, QUANTITY SURVEYING, TENDER DOCUMENTATION, INTERNAL COORDINATION, QC ENGINEER

CONTRACTOR

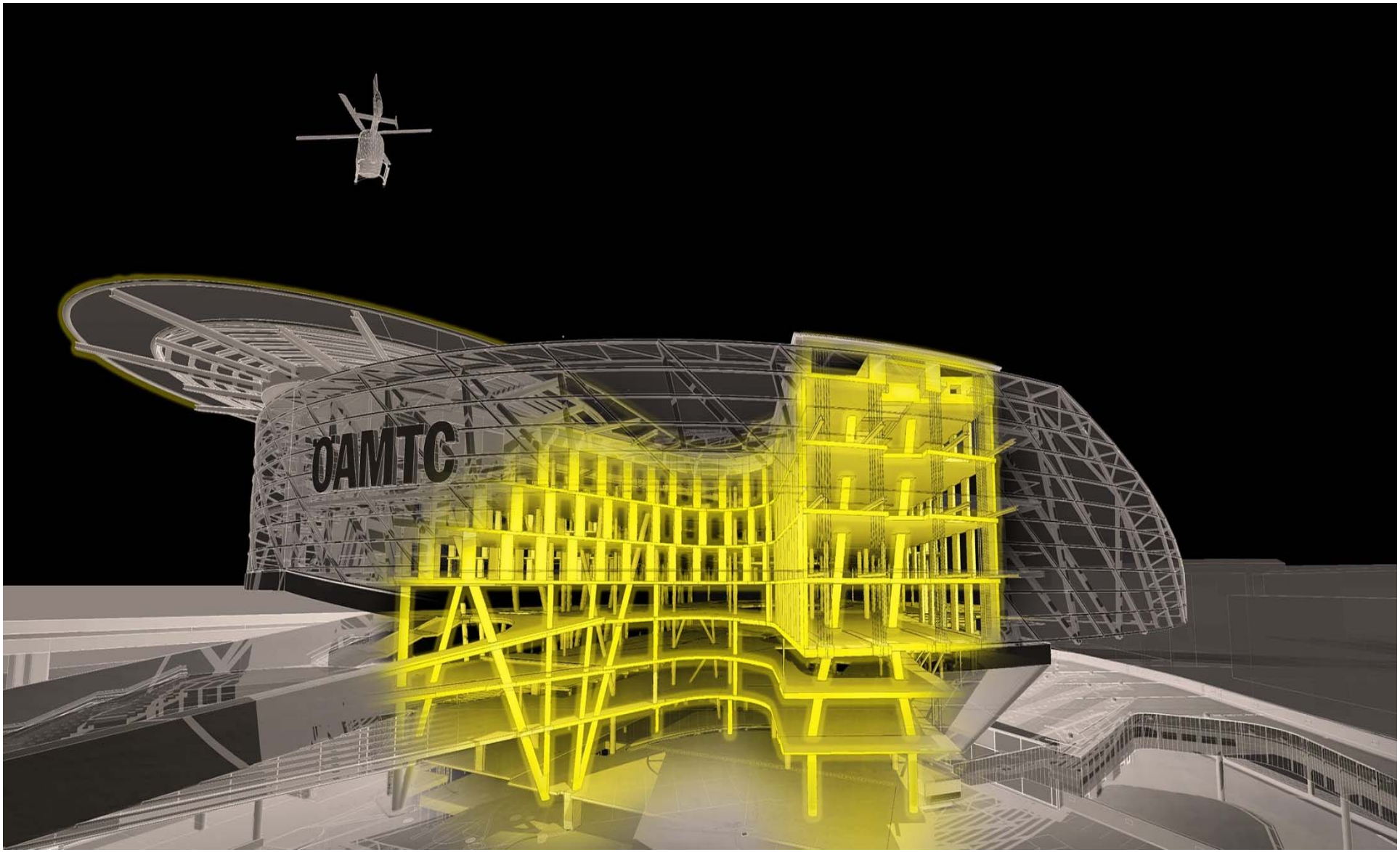
Granit Gesellschaft m.b.H.
8055 Graz

CLIENT

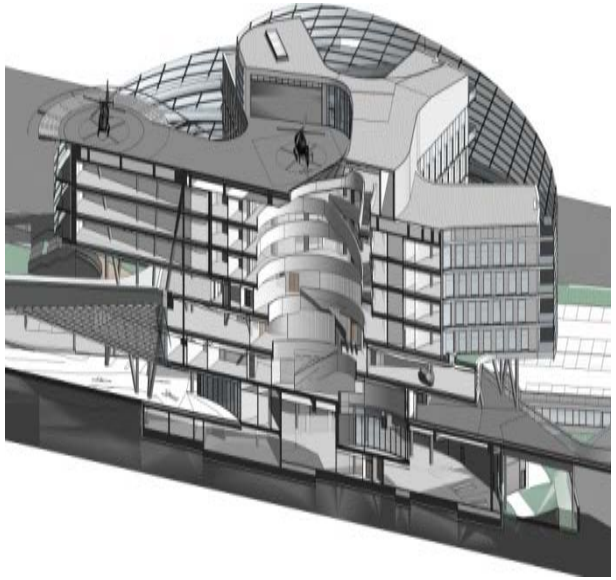
ÖAMTC – Österreichischer Automobil-, Motorrad- und Touringclub

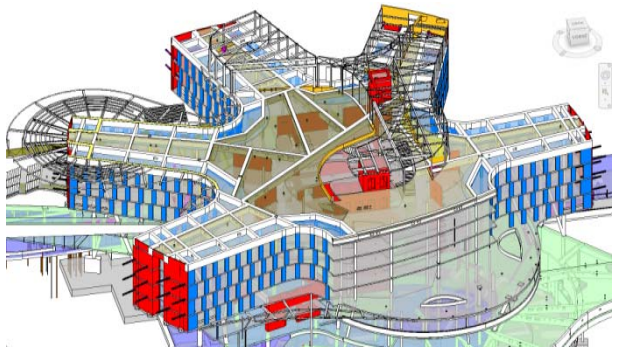
FCP

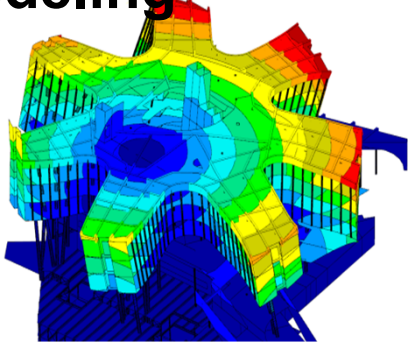
ÖAMTC Mobility Centre Vienna . **Structural System**

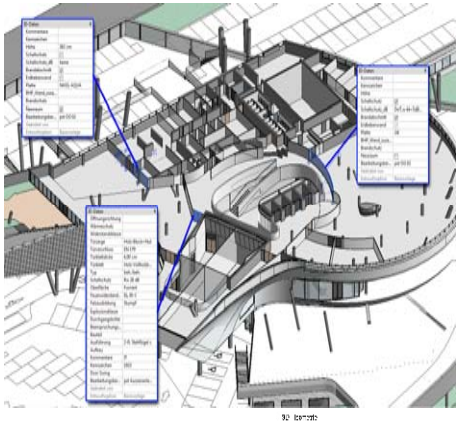


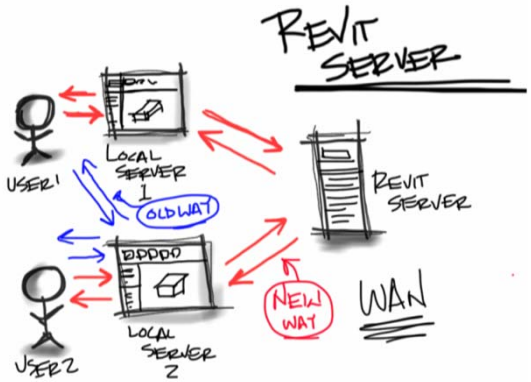
ÖAMTC Mobility Centre Vienna . **Building Information Modeling**

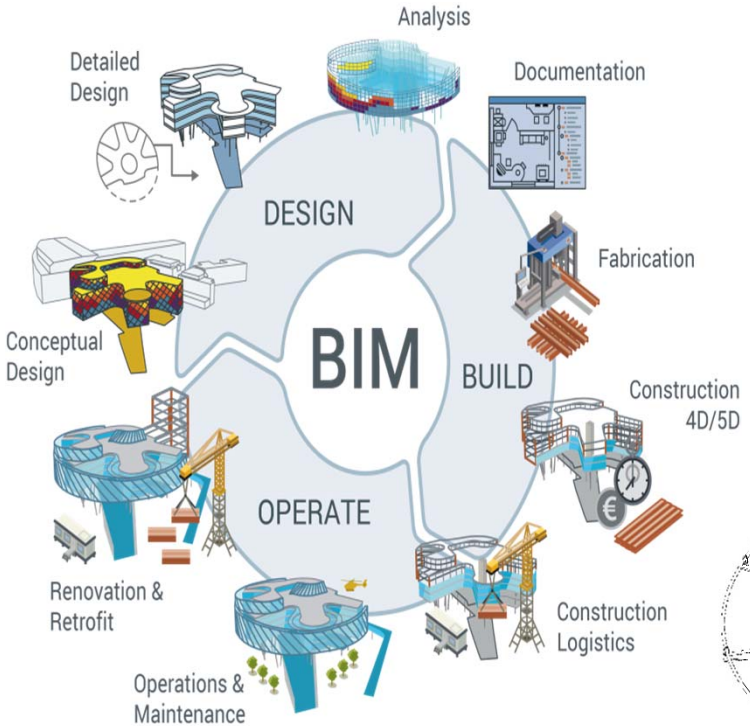


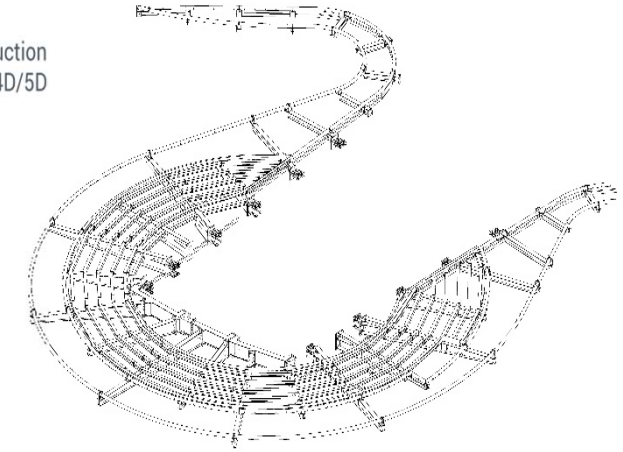








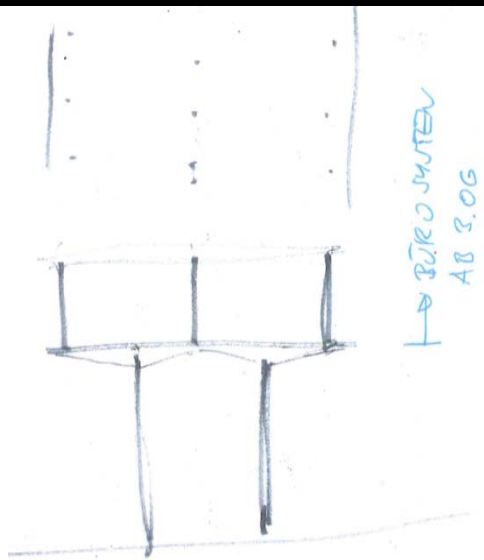


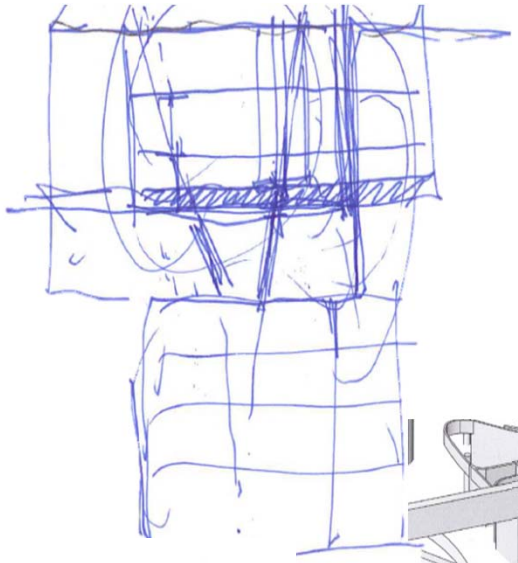


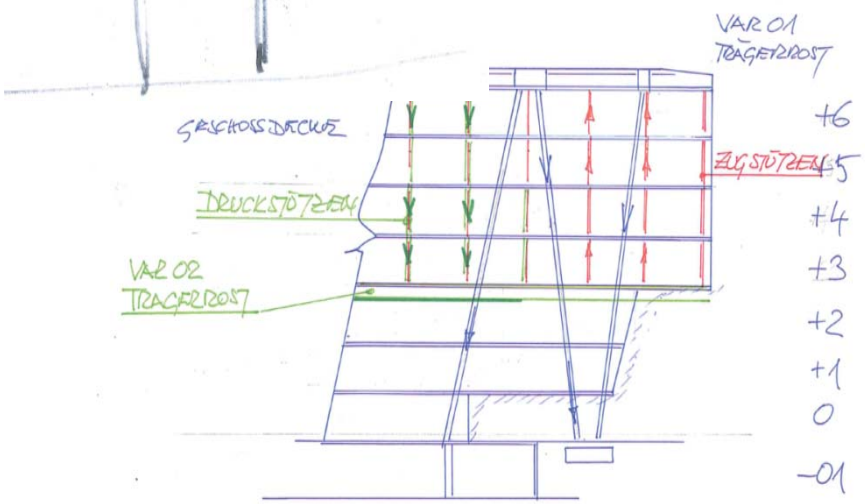
FCP

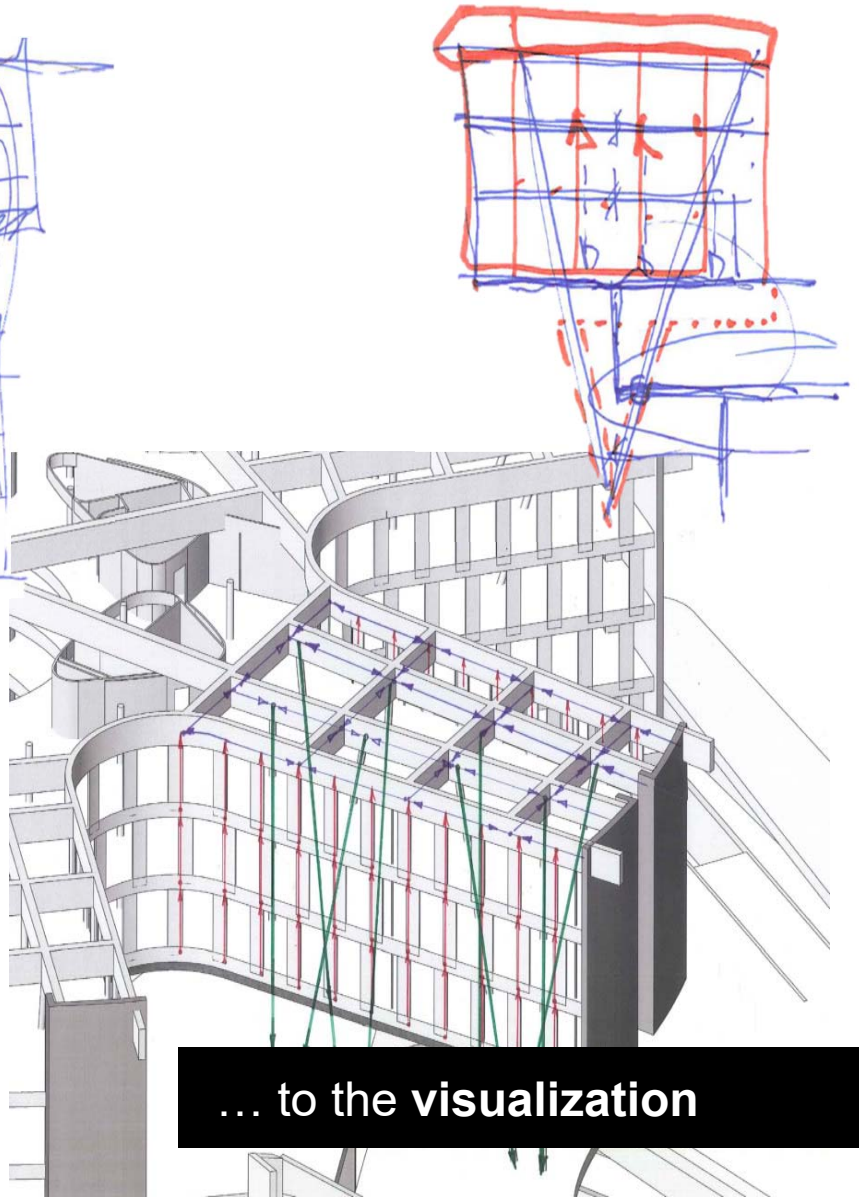
ÖAMTC Mobility Centre Vienna . **Development of the structural system**

from the **sketch** …



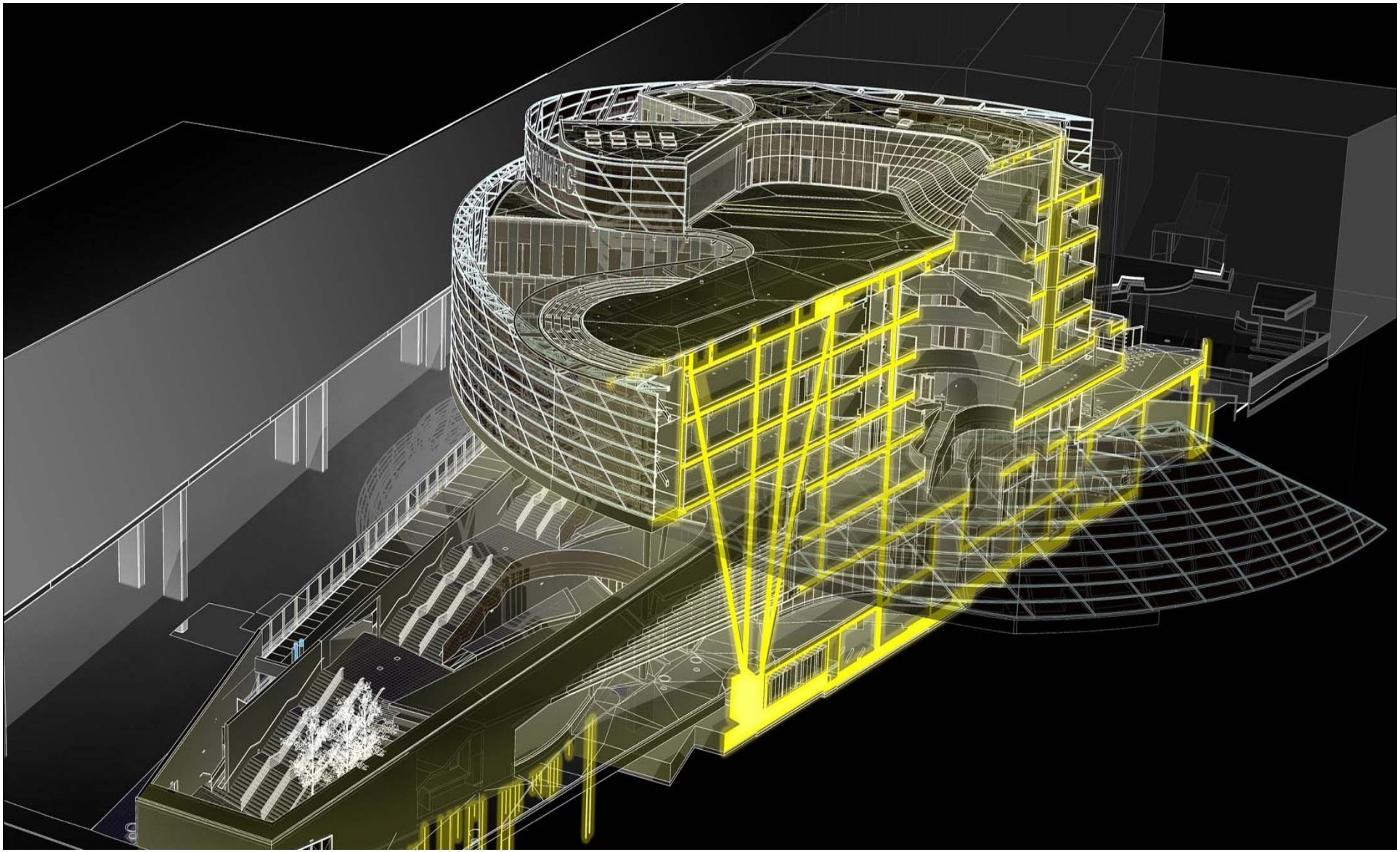






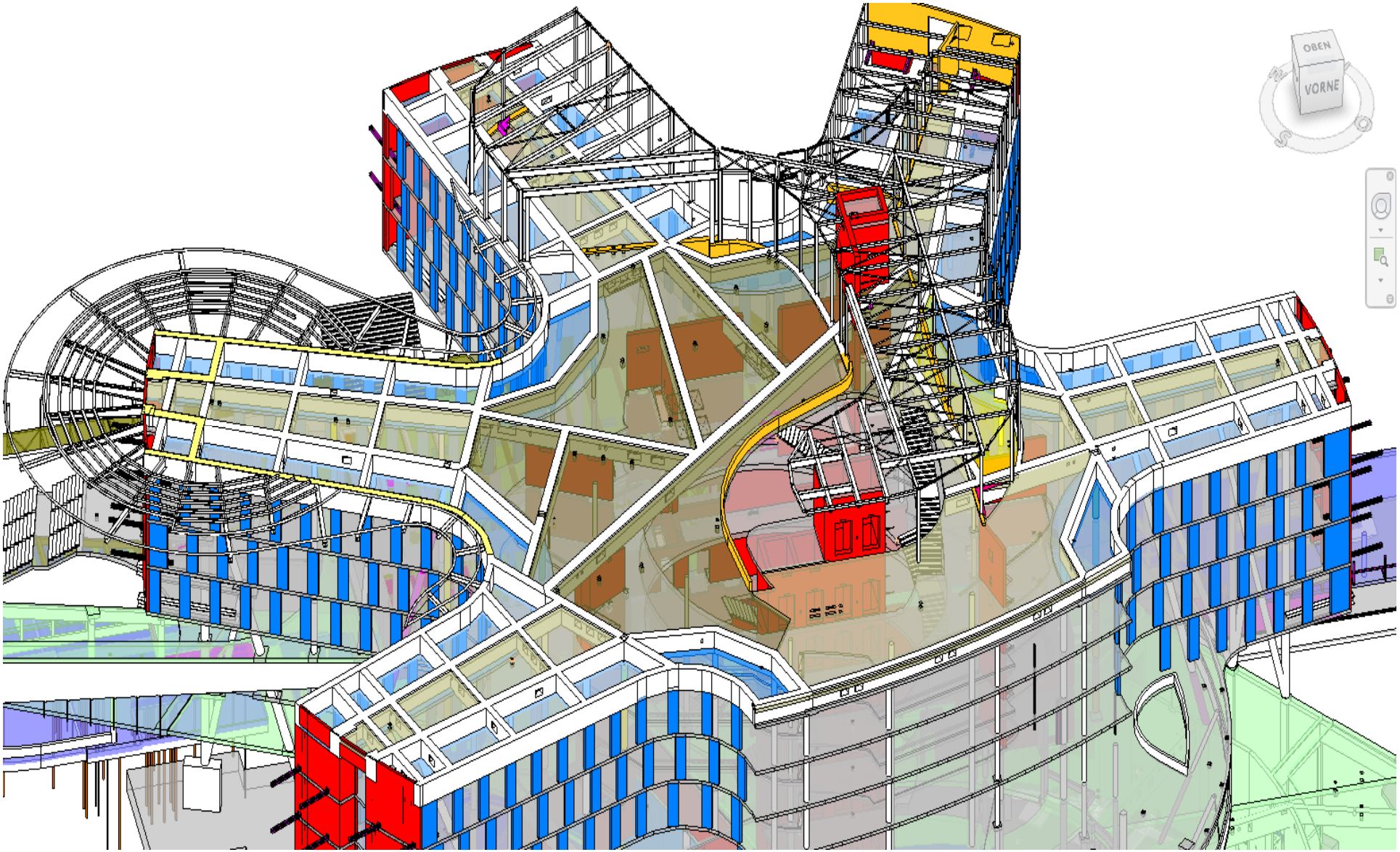
… to the **visualization**

ÖAMTC Mobility Centre Vienna . **Structural System**



FCP

ÖAMTC Mobility Centre Vienna . **Structural System . Support Grid**

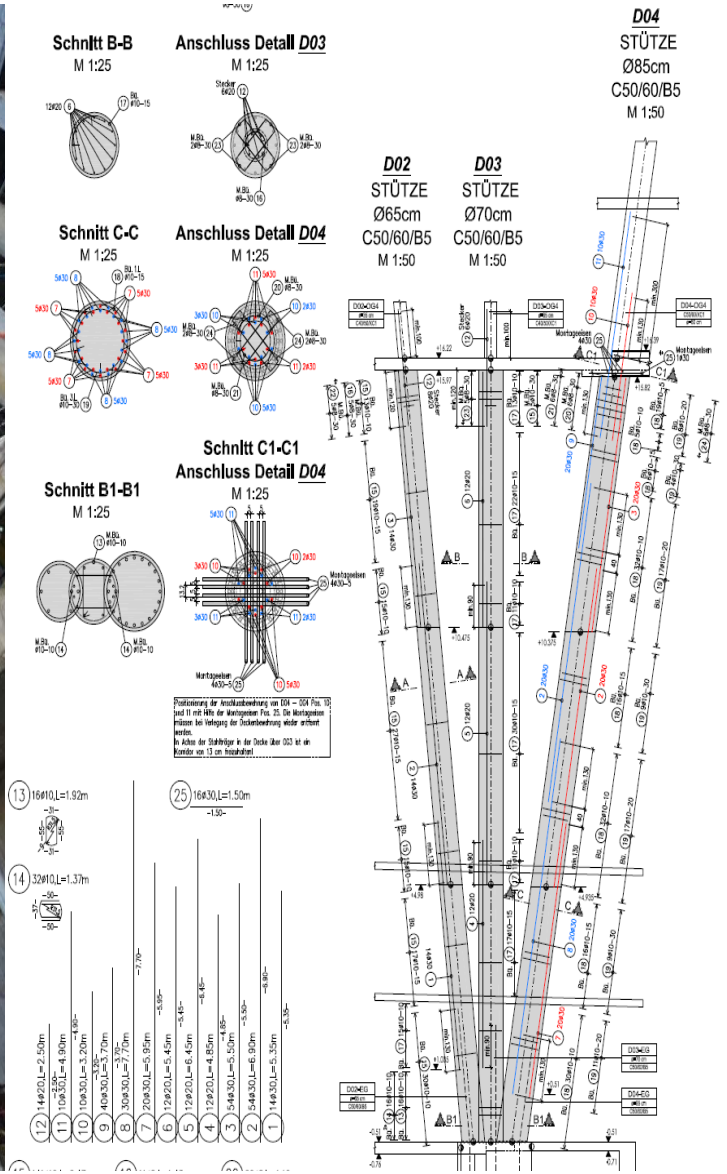


ÖAMTC Mobility Centre Vienna . **Construction Concept**

ÖAMTC Mobility Centre Vienna . **Construction Concept**

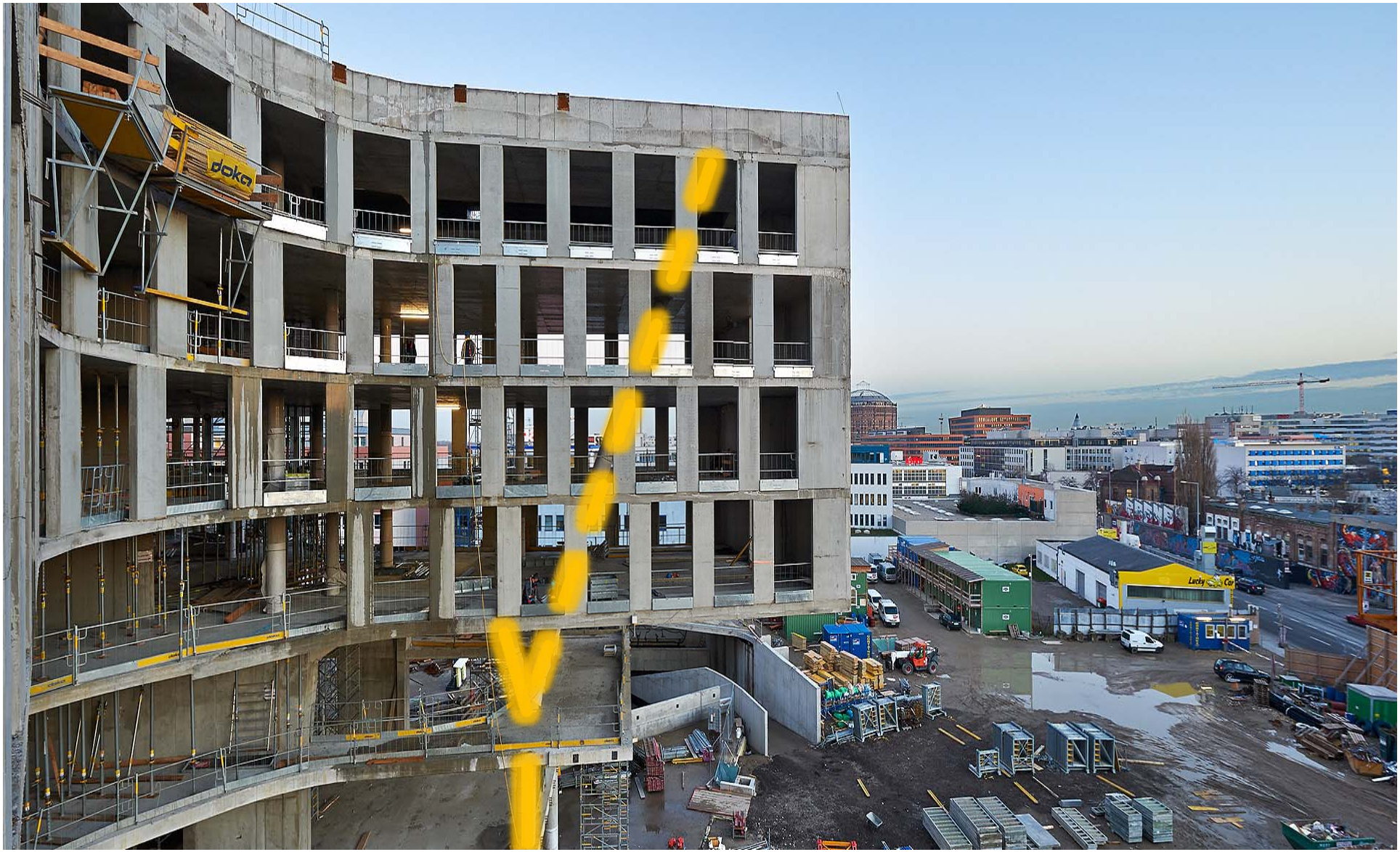
ÖAMTC Mobility Centre Vienna . **Construction Concept**

ÖAMTC Mobility Centre Vienna . **Challenges . Inclined Columns**

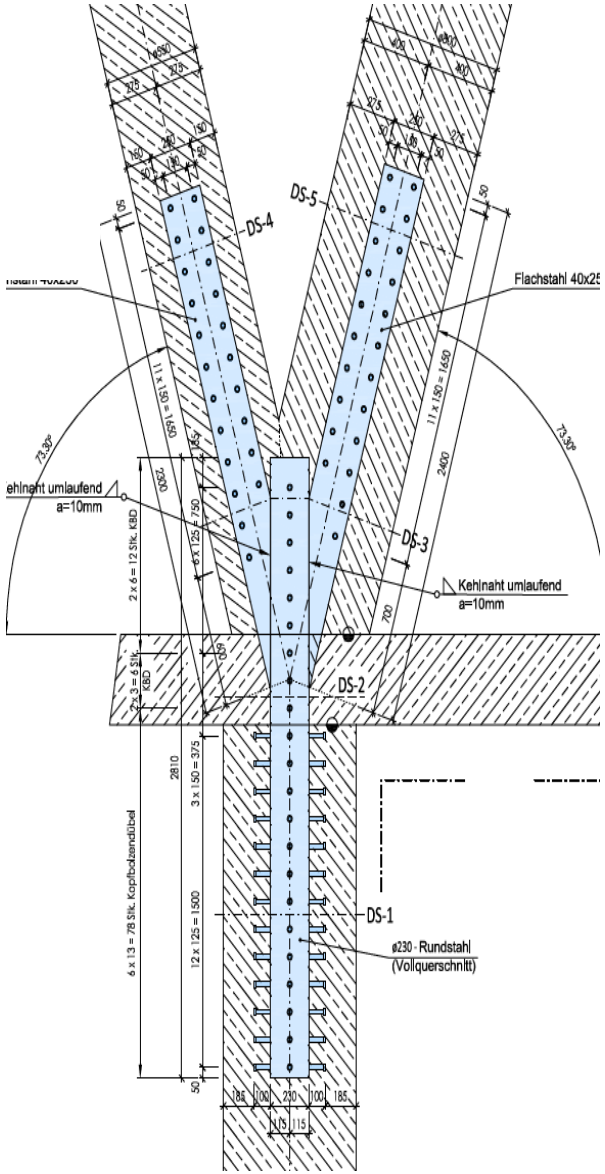


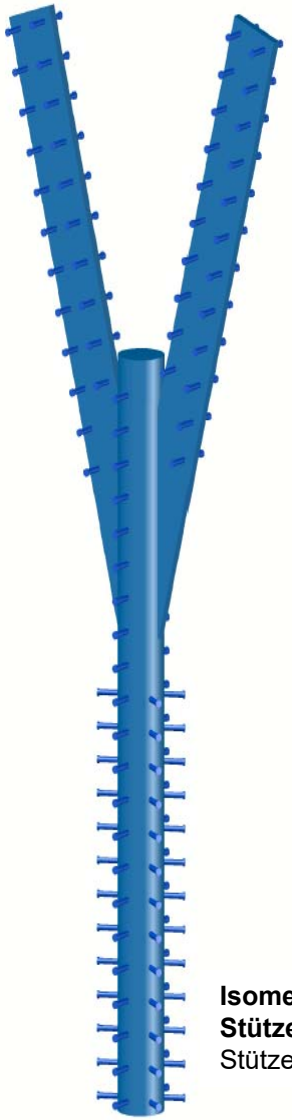
FCP

ÖAMTC Mobility Centre Vienna . **Challenges . Composite Column Nodes**



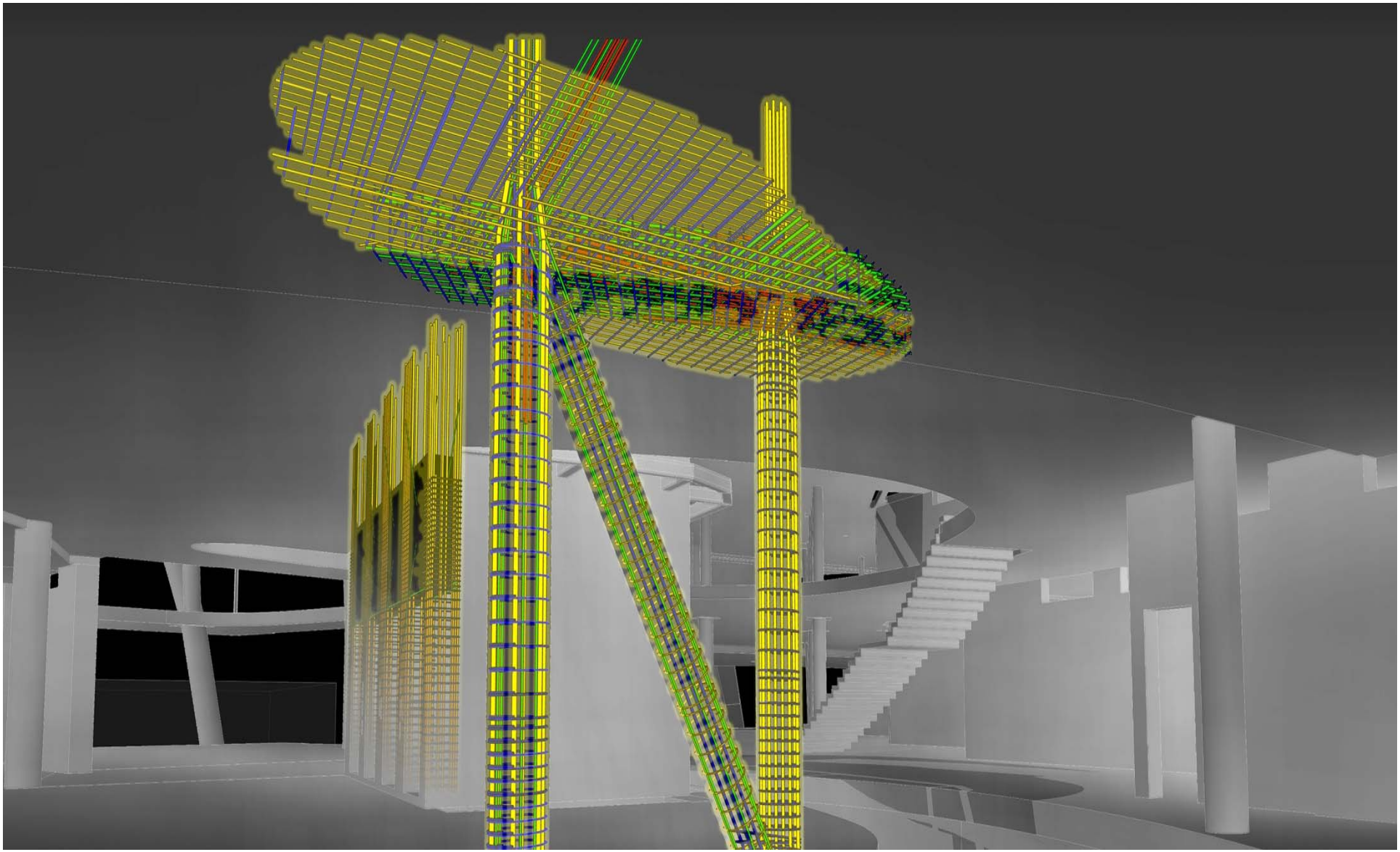
ÖAMTC Mobility Centre Vienna . **Challenges . Composite Column Nodes**





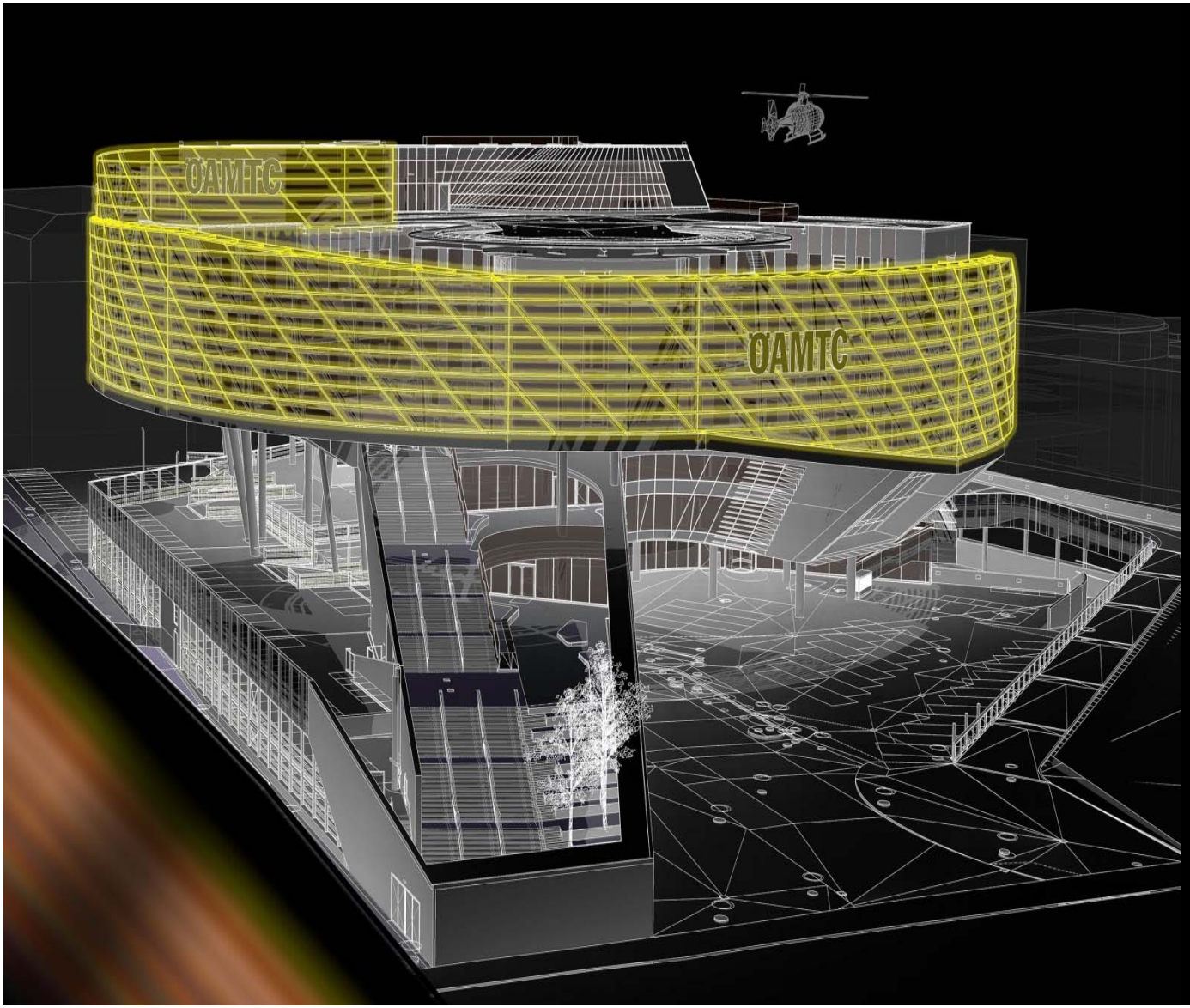
Isometric view
Stützeneinbauteil
Stütze A02/A03

ÖAMTC Mobility Centre Vienna . **Challenges . 3D Reinforcement**



FCP

ÖAMTC Mobility Centre Vienna . **Ring Facade**



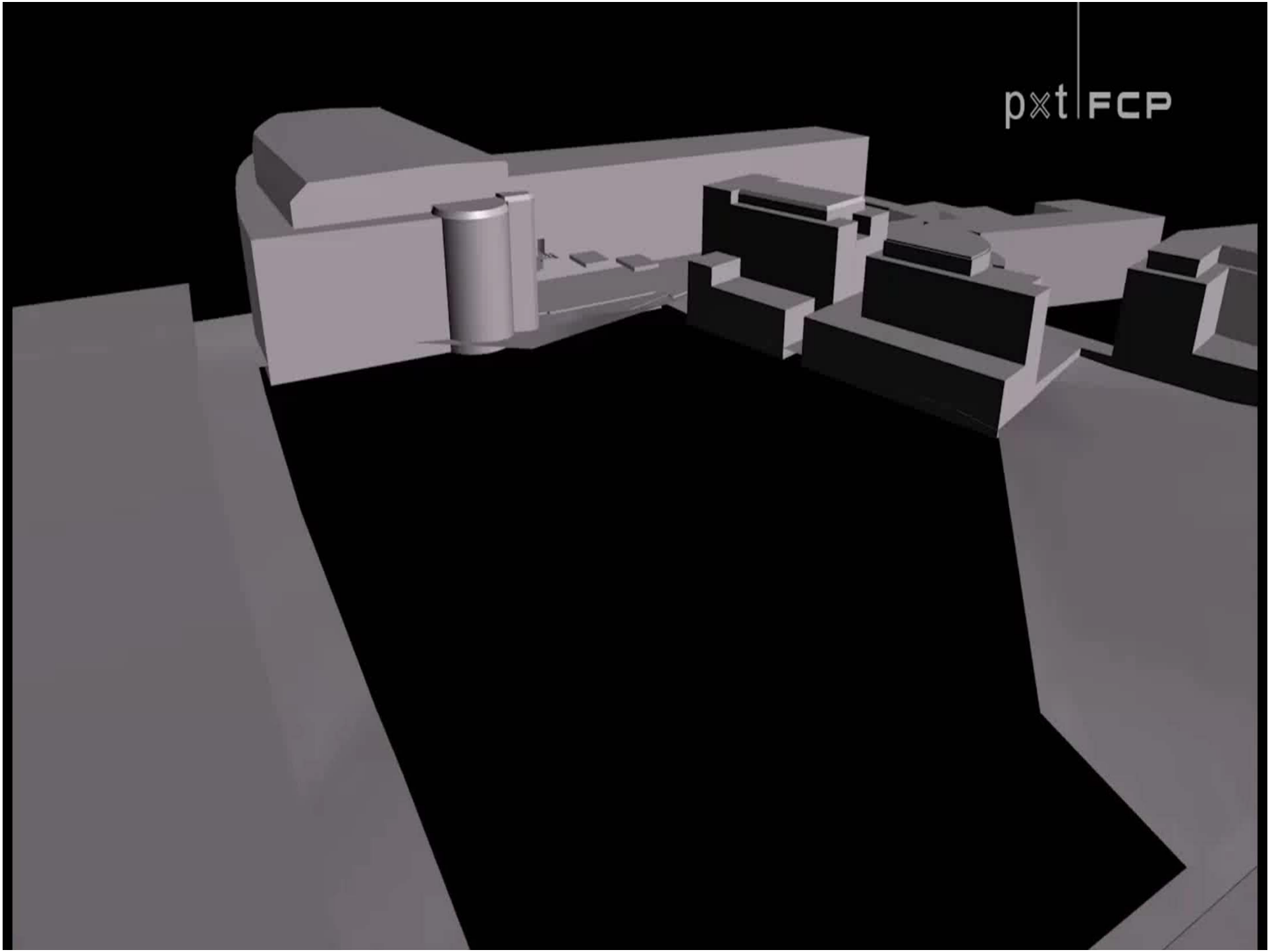
- continuous truss construction with an approximate length of **250 m**
- exterior layer for **glass substructure**
- inner layer acts as **primary structure** (with two interlocking trusses)
- **ramp levels** fastened inside and outside the main truss

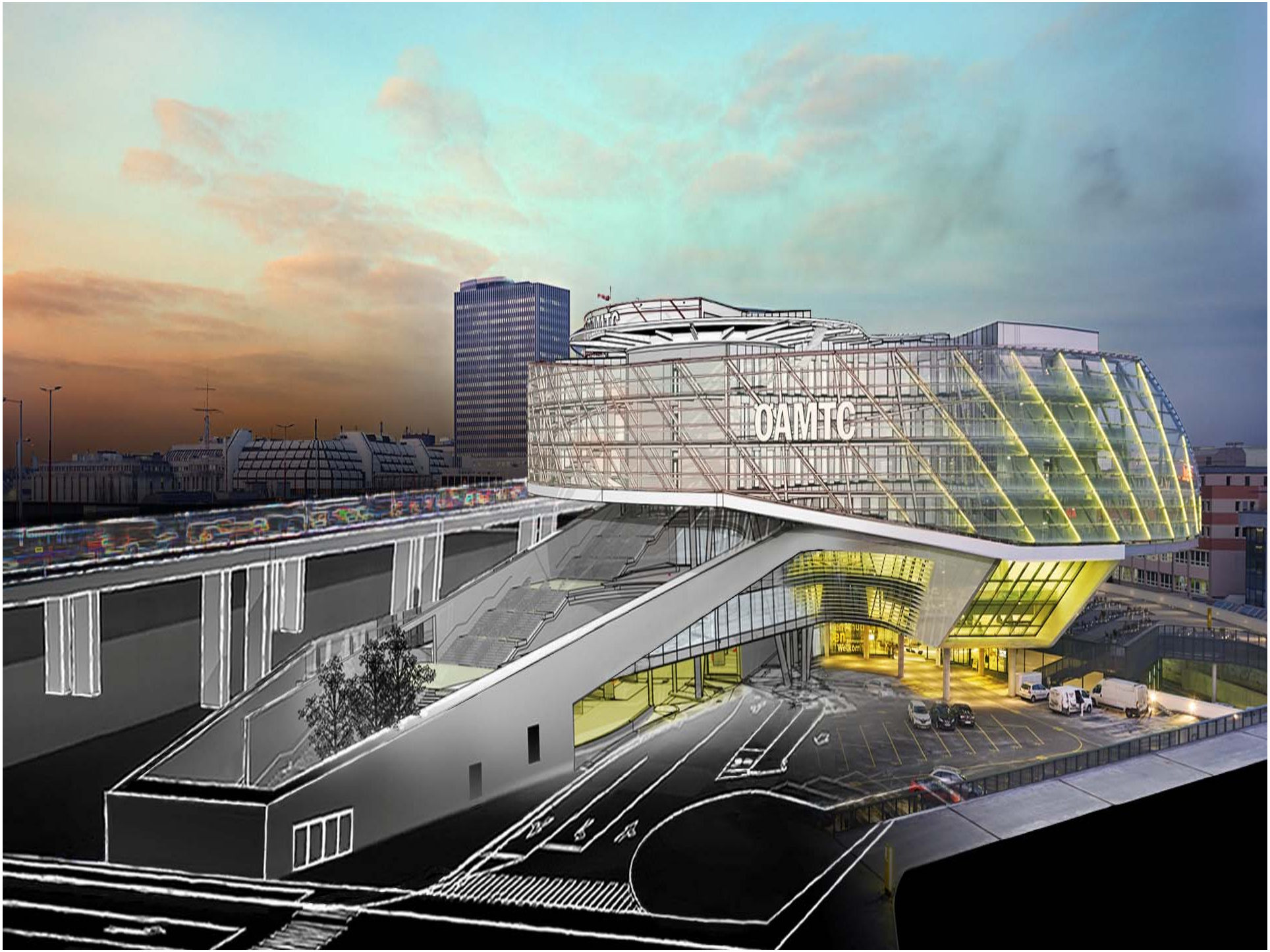
FCP

ÖAMTC Mobility Centre Vienna . **Ring Facade**

FCP

ÖAMTC Mobility Centre Vienna . **Ring Facade**


p×t|FCP


ÖAMTC

ECSN

European Concrete Societies Network

öbv austrian society for construction technology

European Concrete Award 2018

ECSN
European Concrete Societies Network

Congratulation to all winners!

Release Thursday !

www.ecsn.net