

“TRANSFER”

Final thesis project
Master in advanced architecture
2016-2017

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Professor: Vicente Guallart

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2016/2017


Bridges are by design
meant to bring people
together. All we have
to do is let them.
Remei Capdevila-Werning

01. Introduction

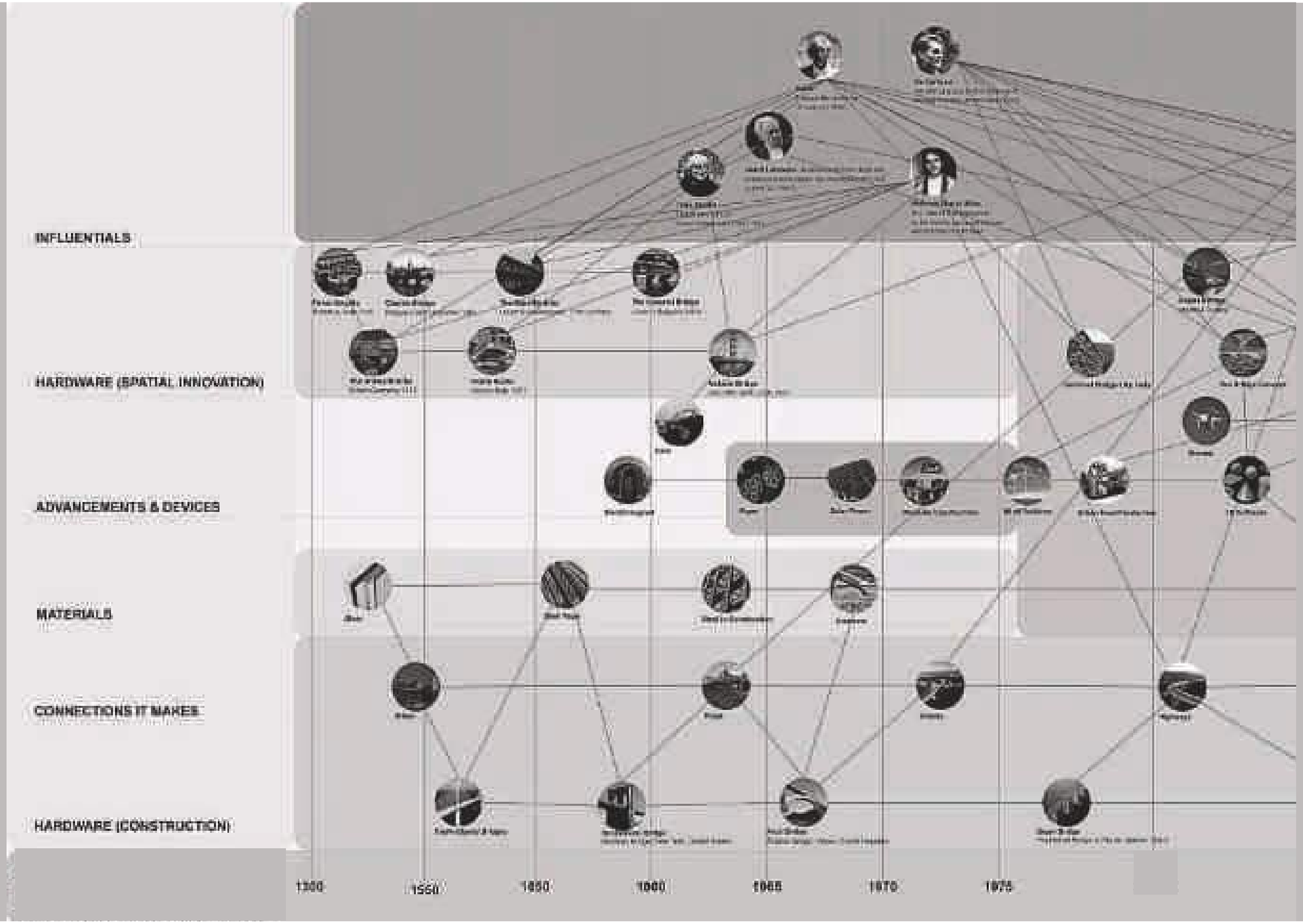
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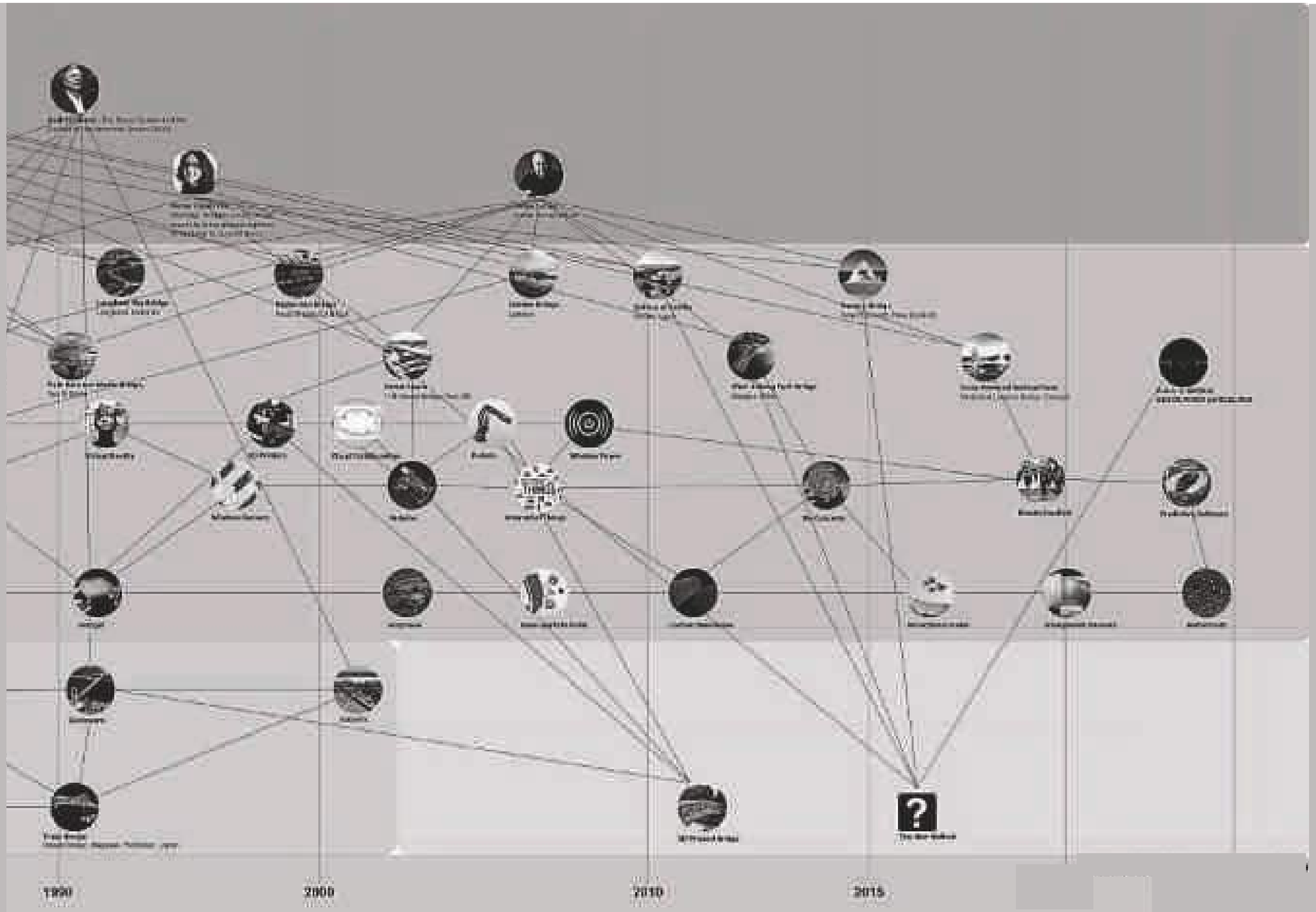
ABSTRACT

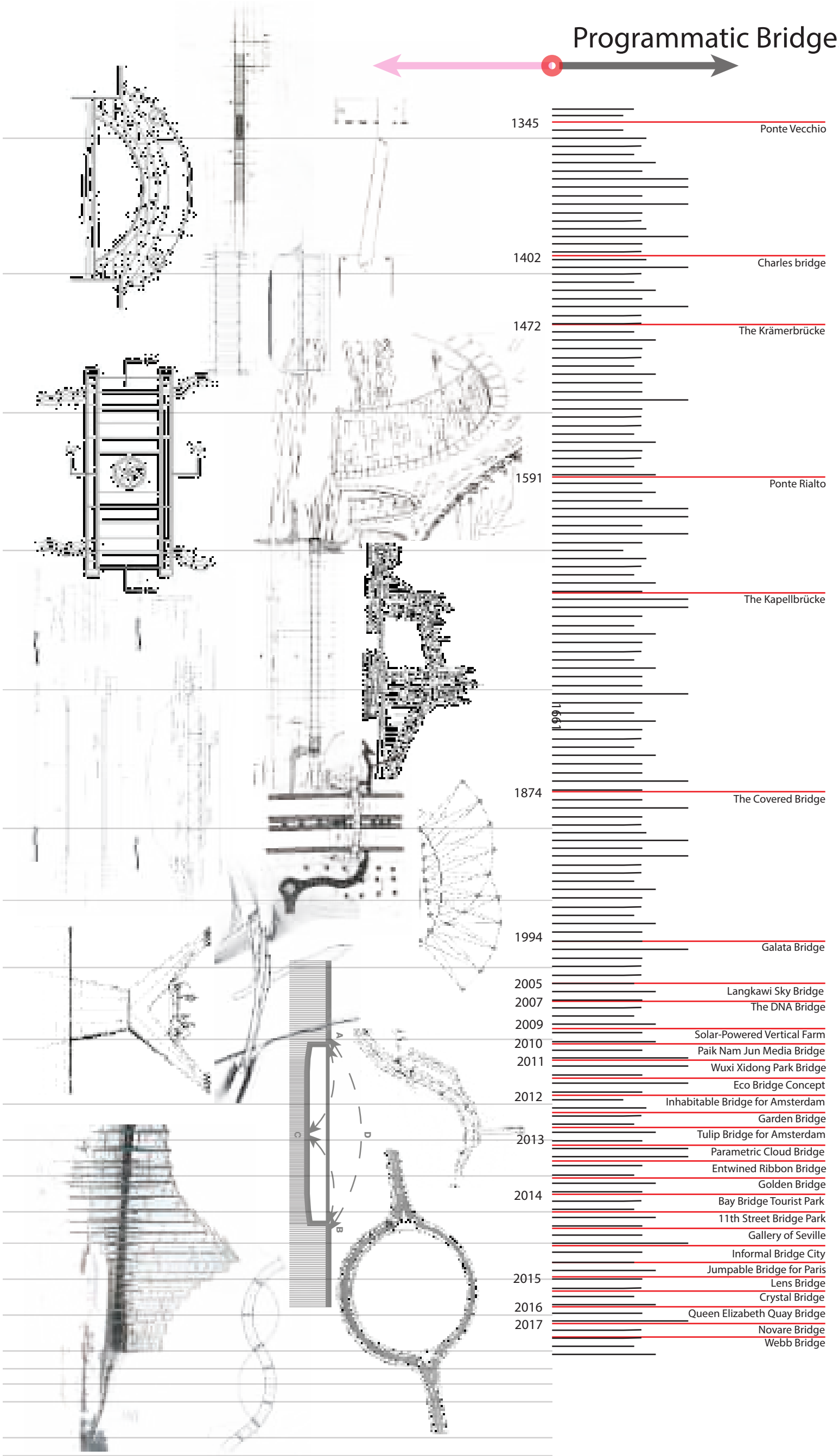
In the common understanding, bridges do not encourage people to stay on them and occupy the space. They are designed to cross, but not to stay. The question is could we rethink the purpose and functions of bridges, take advantage of the knowledge we have nowadays and implement it in a way that makes the bridge structure assets with a program, that creates a hospitable urban environment. This research is aiming to reveal how contemporary bridge structures are developing their basic function, creating program and becoming a merging link between two points, thus creating valuable hospitable urban environment, that is meant to keep people there. The aim of this thesis is to develop a bridge project at the outfall of River Besos, north of Barcelona. It is exploring the potential that such an infrastructure has to create, a unique specific public space, like no other urban element. Infrastructure, that is not anymore only to connect spaces, rather than producing space.



02. Historical Framework


INFLUENTIALS
HARDWARE (SPATIAL INNOVATION)
ADVANCEMENTS & DEVICES
MATERIALS
CONNECTIONS IT MAKES
HARDWARE (CONSTRUCTION)
1300
1550
1850
1900
1965
1970
1975


1990
2000
2010
2015



Tendency of programmatic bridges
Timefield analysis

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Programmatic bridge

Seville 24/7 Center



Programmatic Bridge

Wuxi Xidong Park Bridge



Programmatic bridge

Jumpable Bridge for Paris



Programmatic Bridge

Tabiat pedestrian Bridge









Programmatic bridge
Conventional bridge

"Bridges are by design meant to bring people together. All we have to do is let them"

VS.

"The fate of the bridges is to be lonely; because bridges are to cross not to stay"


Ponte Vecchio, Florence 1345


Covered Bridge, Lovech 1874


Irvine Bridge California 2008


John Seigenthaler Bridge 1998


The Kapellbrücke, Lucerne, 17 c.


Galata Bridge, Istanbul 1994


Pedestrian Bridge I-235, 2005


Ponte Rialto, Venice 1591


The Krämerbrücke, Erfurt 1472


South Reserve Bridge 2011


Smith Creek Bridge 2008

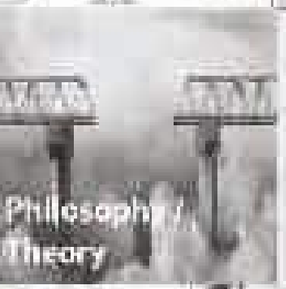
Contemporary bridge structures

Influences











Our ecological footprint.

Cradle to cradle design.

Transforming urban environment.

The new science of cities.

Solar Wind Concept. Italy

Tulip Bridge for Amsterdam

Helicoide Bridge for Seville

Inflatable, Jumpable Bridge for Paris

Solar-powered, Inhabited London Bridge

Chiba Bridge Towers Over the Seine

Sky Bridge Tourist Park

Inhabitable Bridge for Amsterdam

Tacoma Narrows Bridge

Millau Viaduct

Sundial Bridge

Tilikum Crossing, Bridge of the P

Ronald Kirk Bridge,

Millennium Bridge London

Tehiat Bridge -

Henri Lefebvre

Rafael Cipollo Woning

Mehmet Murat Ilkan

Richard Rogers

Andrés Duany

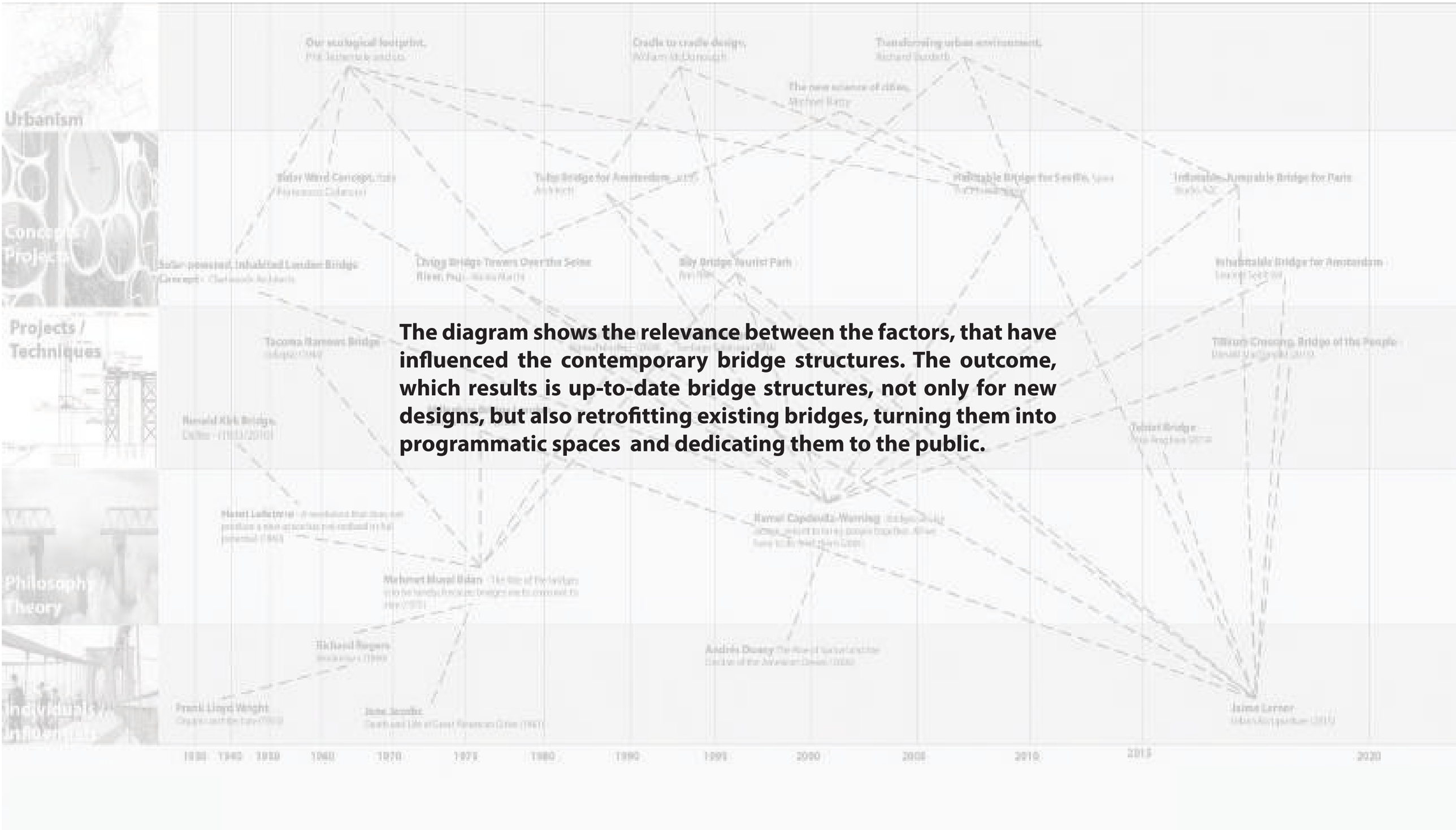
Frank Lloyd Wright

Jane Jacobs

James Lerner

1930 1940 1950 1960 1970 1975 1980 1990 1998 2000 2005 2010 2015 2020

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The diagram shows the relevance between the factors, that have influenced the contemporary bridge structures. The outcome, which results is up-to-date bridge structures, not only for new designs, but also retrofitting existing bridges, turning them into programmatic spaces and dedicating them to the public.

03. Site urban approach

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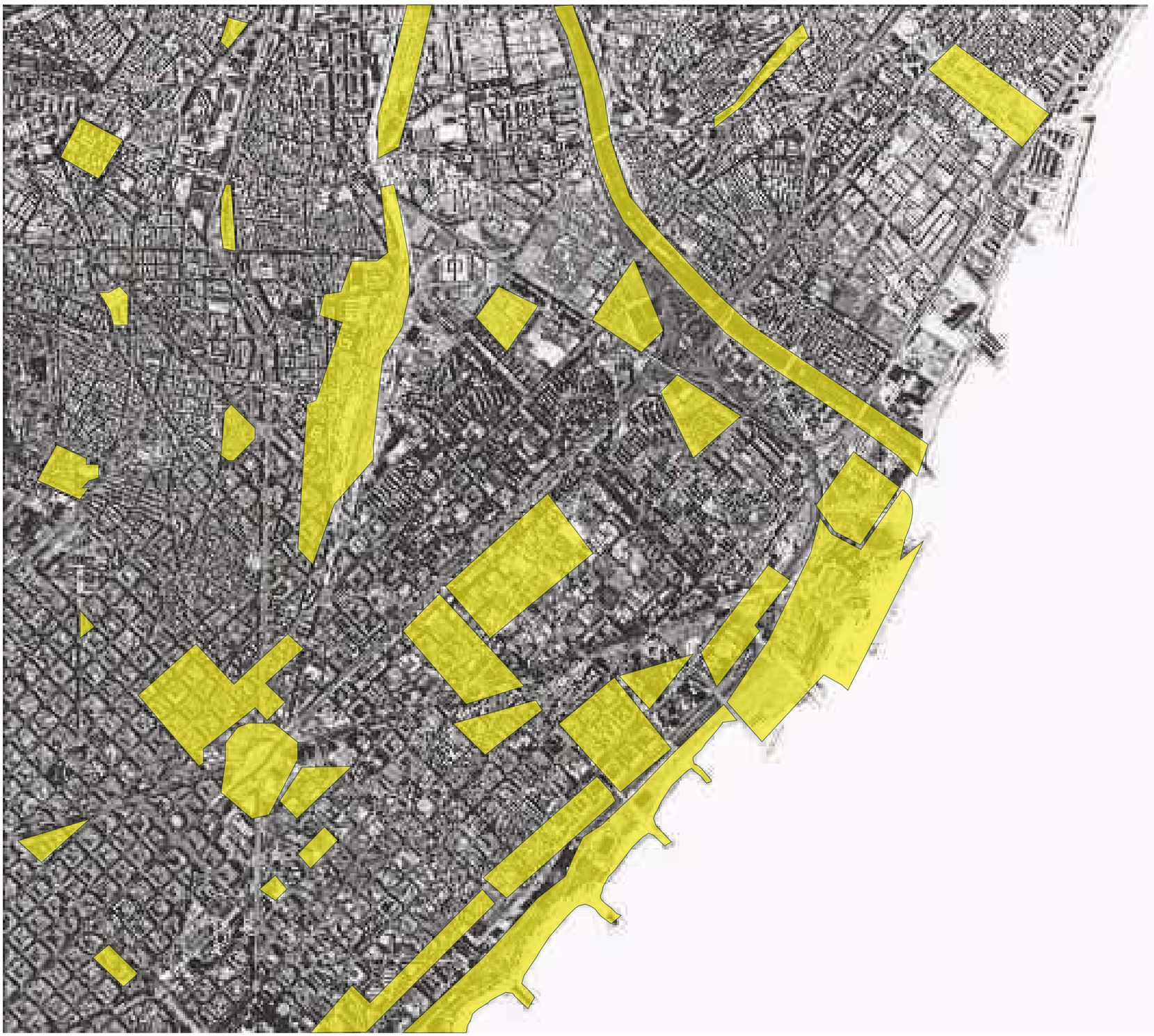


BARCELONA

Iaac Institute for advanced architecture of Catalonia

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03. 1 Urban analysis



Last decade interventions

Barcelona, Badealona, Sant Adrea de Besos

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Green Map

Barcelona, Badealona, Sant Adrea de Besos

Tfac

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Urban spaces and conncectivity
Barcelona



Multy center organization

Urban continuity

Sabadell

Santa Coloma
de Gramanet

Badalona

Sant Cugat
del Valles

Sant Andreu
del Besos

Barcelona

Cornella de
Llobregat

Hospitalet
de Llobregat

El Prat
de Llobregat

03. 1 Area analysis

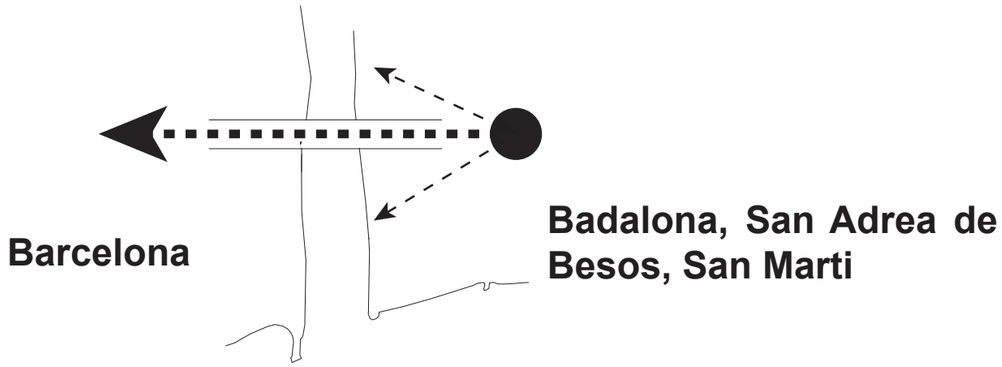
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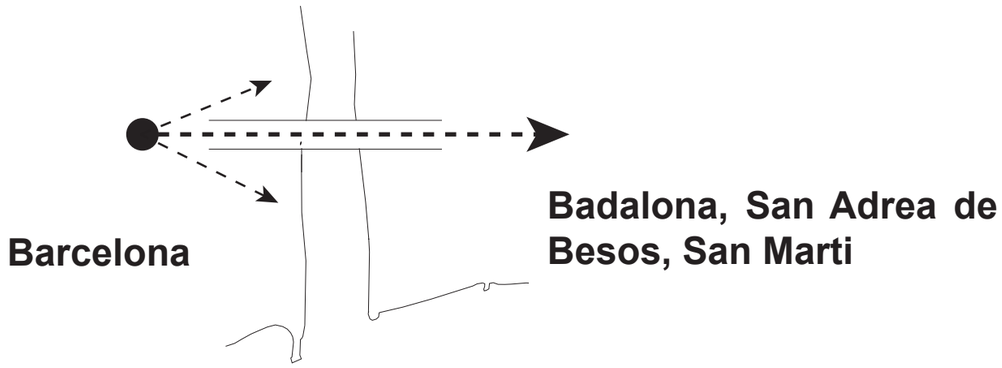
Location of river Besos
Central location in urban continuity

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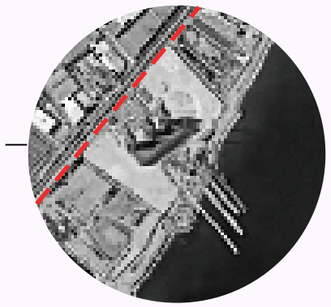


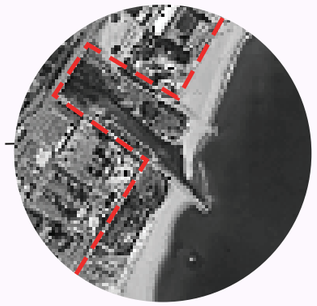
**Citizens moving across the river
over 10 bridges and a single passarella**

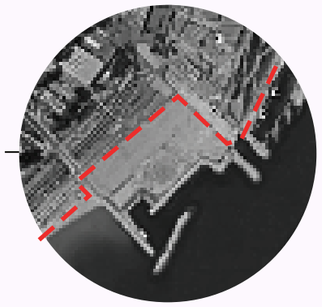


Commuters crossing the river
Badalona⟷Barcelona

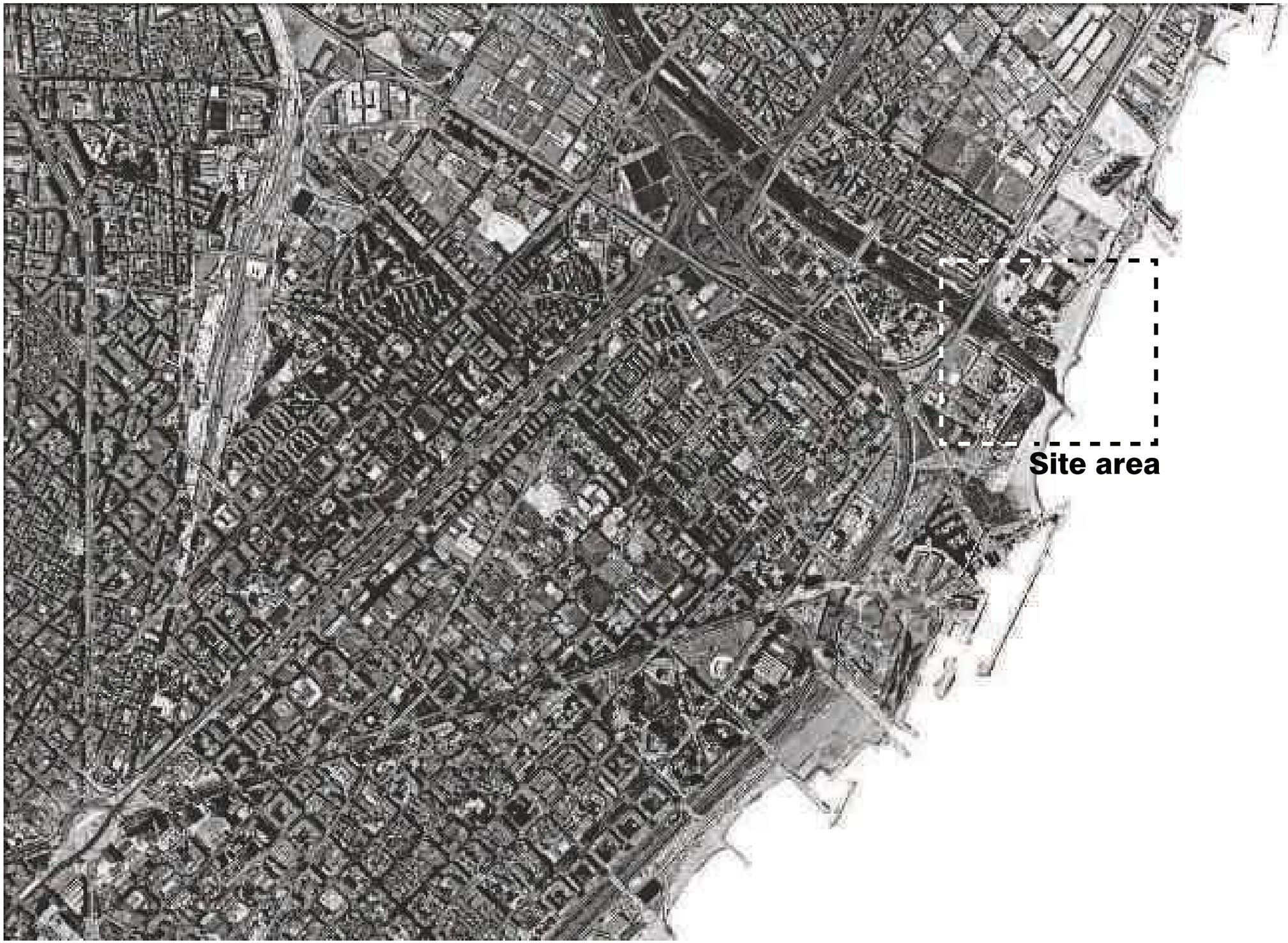
Barcelona coastline
Disconnectivity points







04. Site presentation



Site area

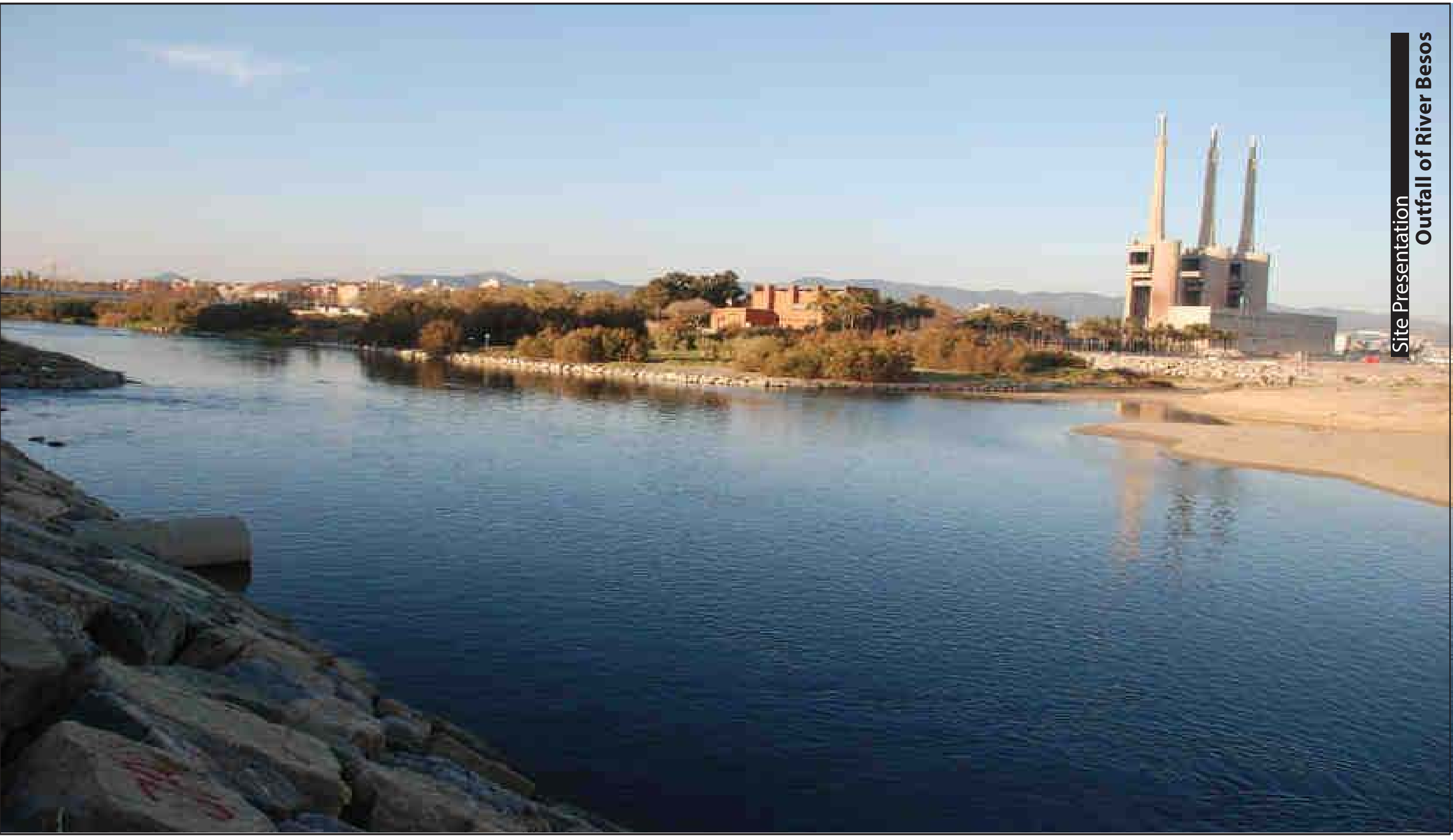
Bridge location



Site Presentation

Outfall of River Besos

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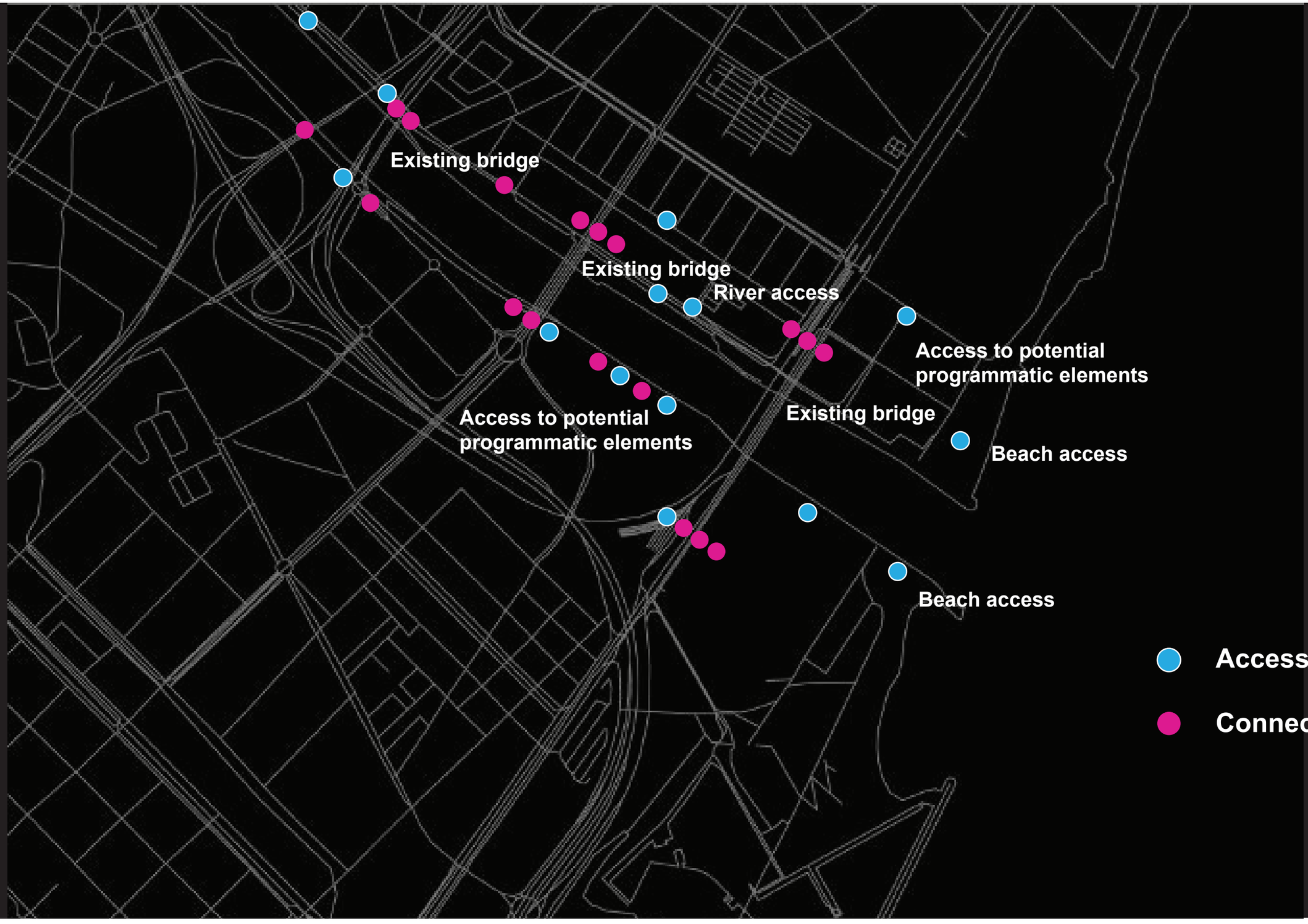


Site Presentation

Outfall of River Besos

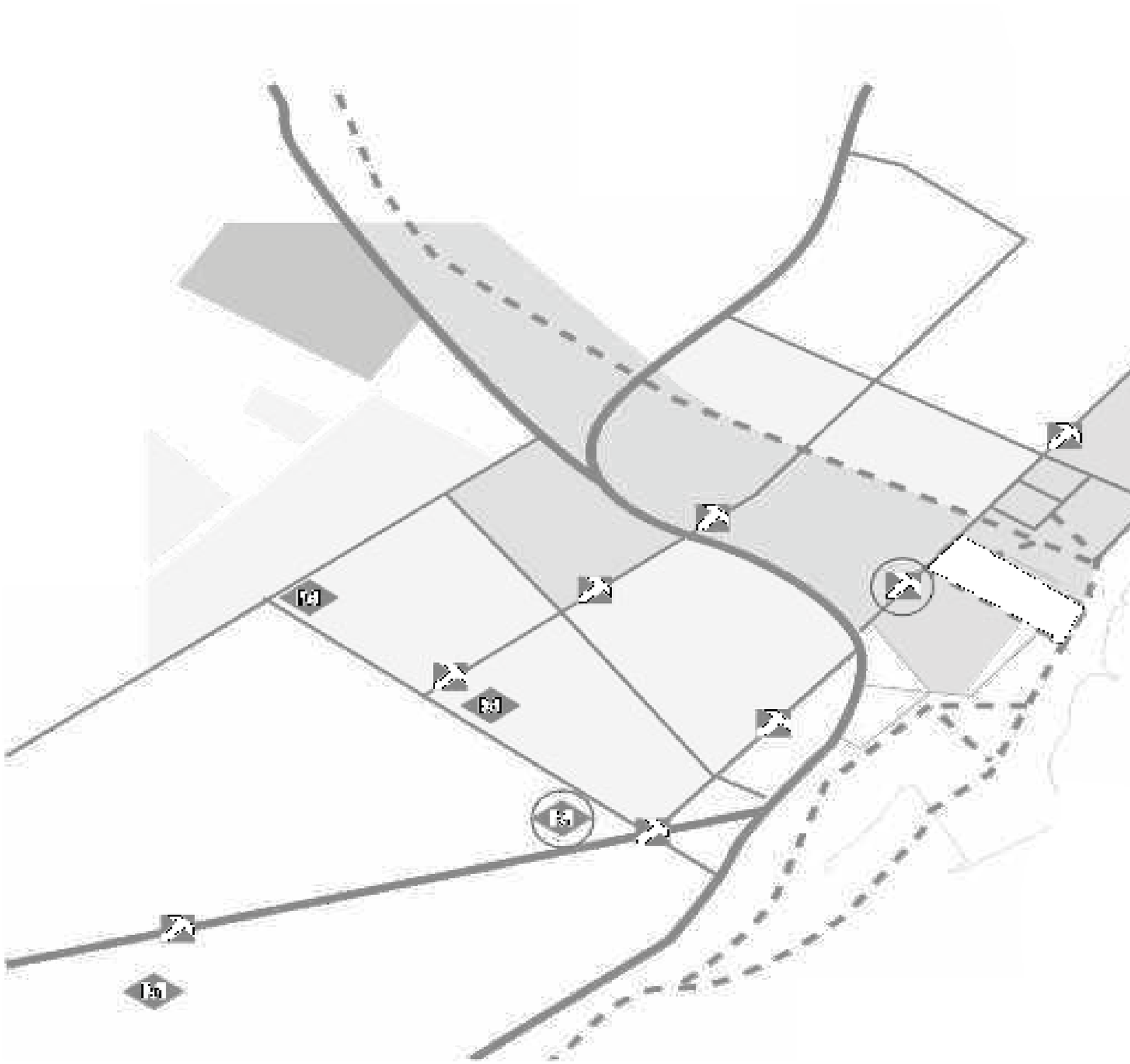
Riverbed connectivity

Access points



Mobility map

Public connections



Major roads

Minor roads

Walkways

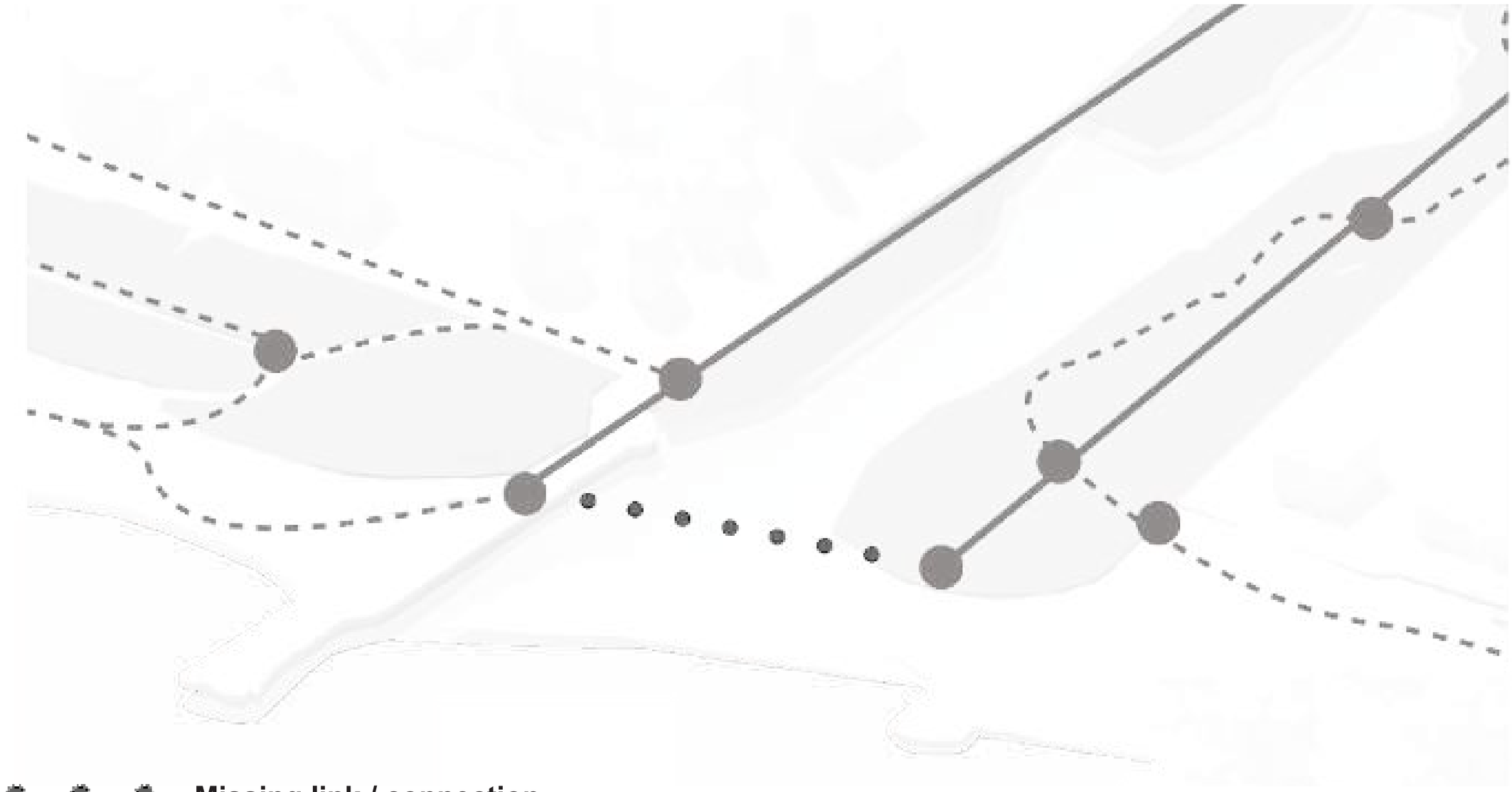
Subway stops

Tram stops

Closest stops

Mobility map

Pedestrians



Missing link / connection

Fast path

Slow path

Access points

12 trams / hour

6 trains / hour

820 cars / hour

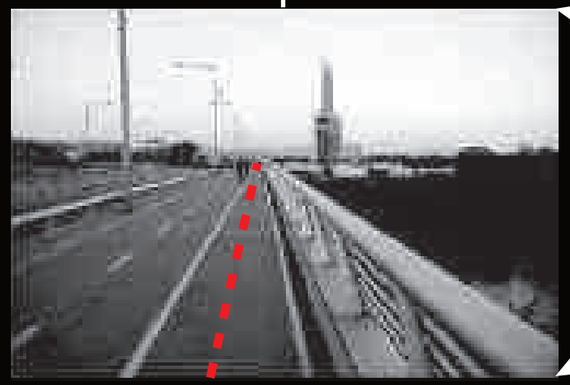
29 trucks / hour

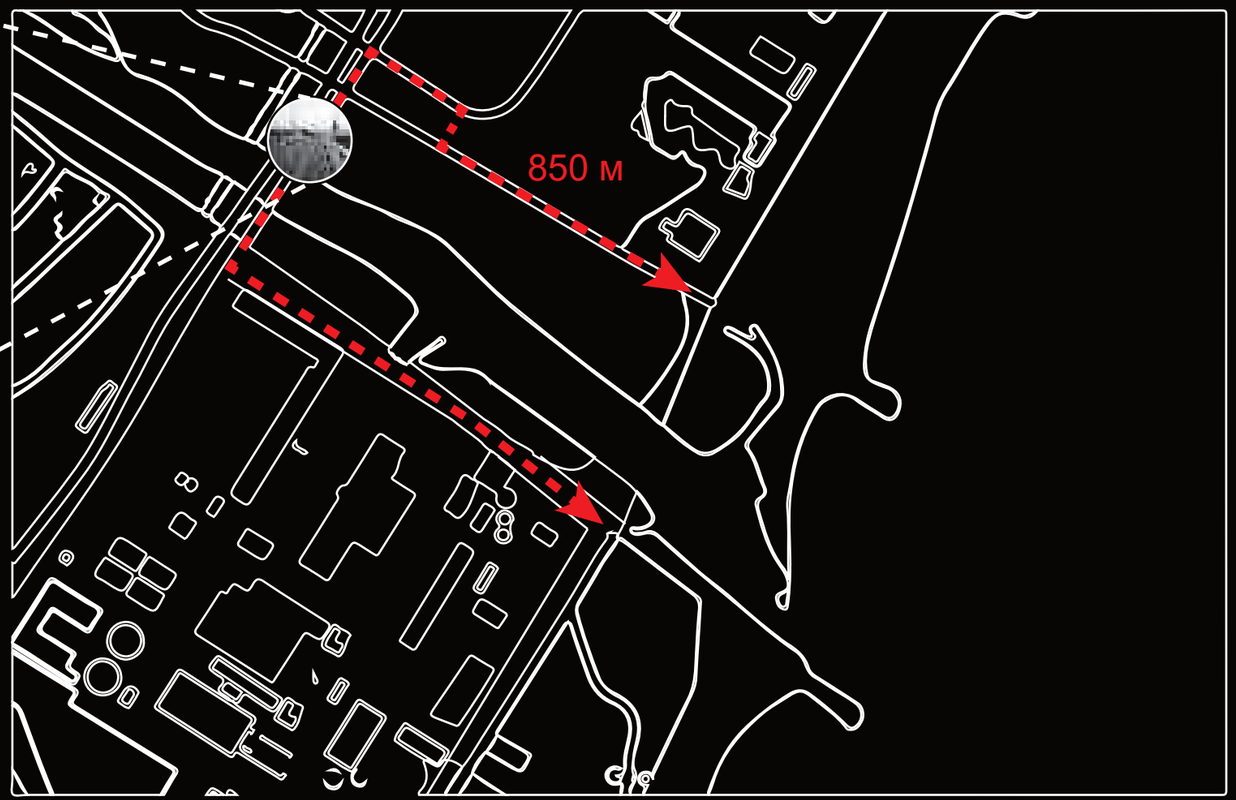
72 bikes / hour

160 motorbikes / hour

8 joggers / hour

92 pedestrians / hour





Detour to get to the other side of river Besos

First bridge along the river
Heavy traffic

Getting to the other side of the river at the outfall, not only takes 850 m, but also exposes pedestrians and bikers to the heavy traffic the existing bridge contains.

04. 1 Solution

Ensuring the missing link

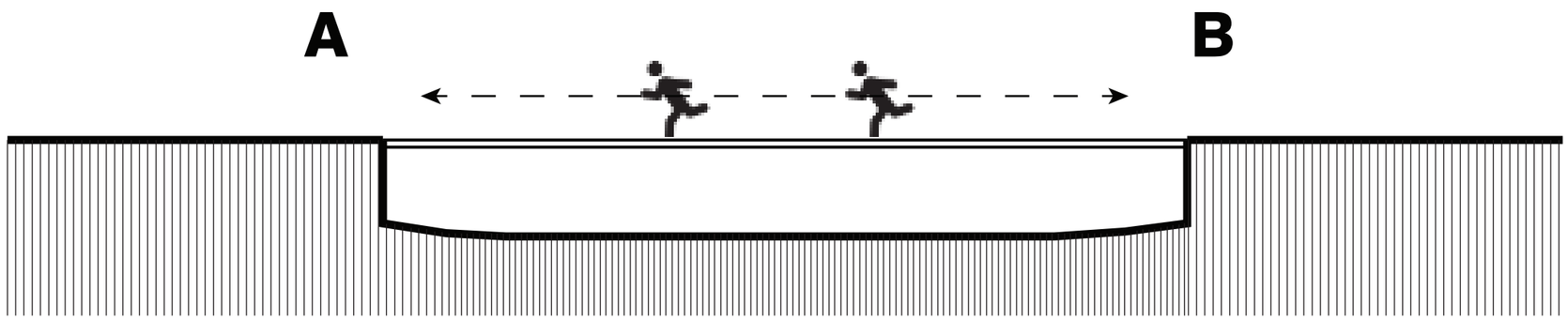
Outfall of river Besos

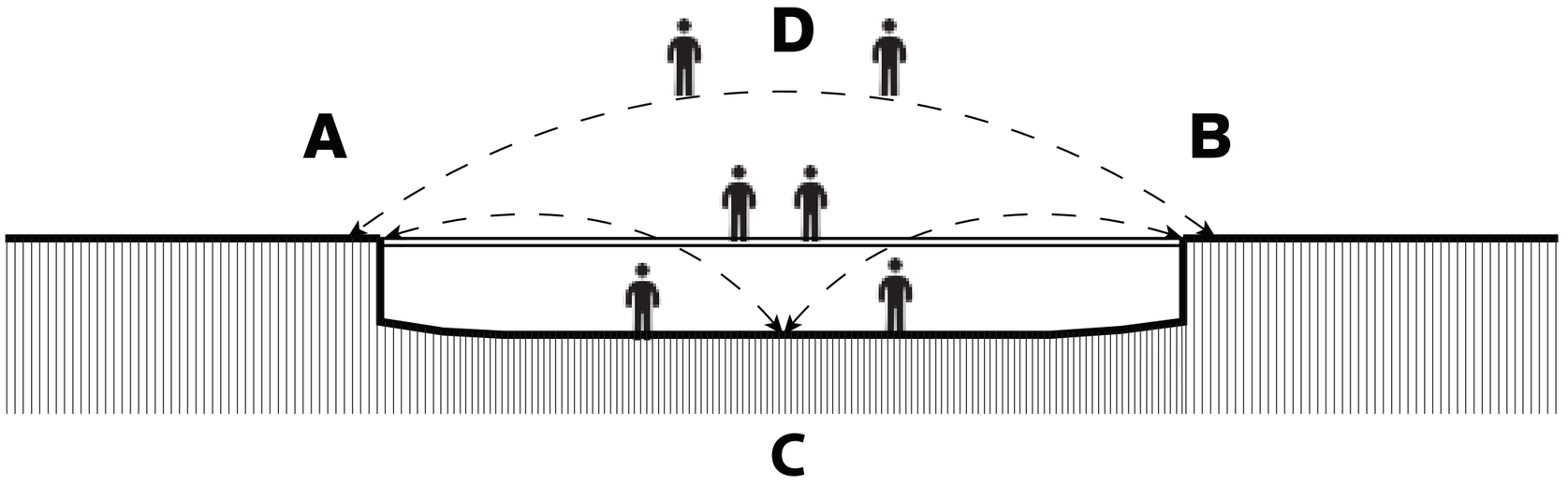


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Bridge concept

Traditional





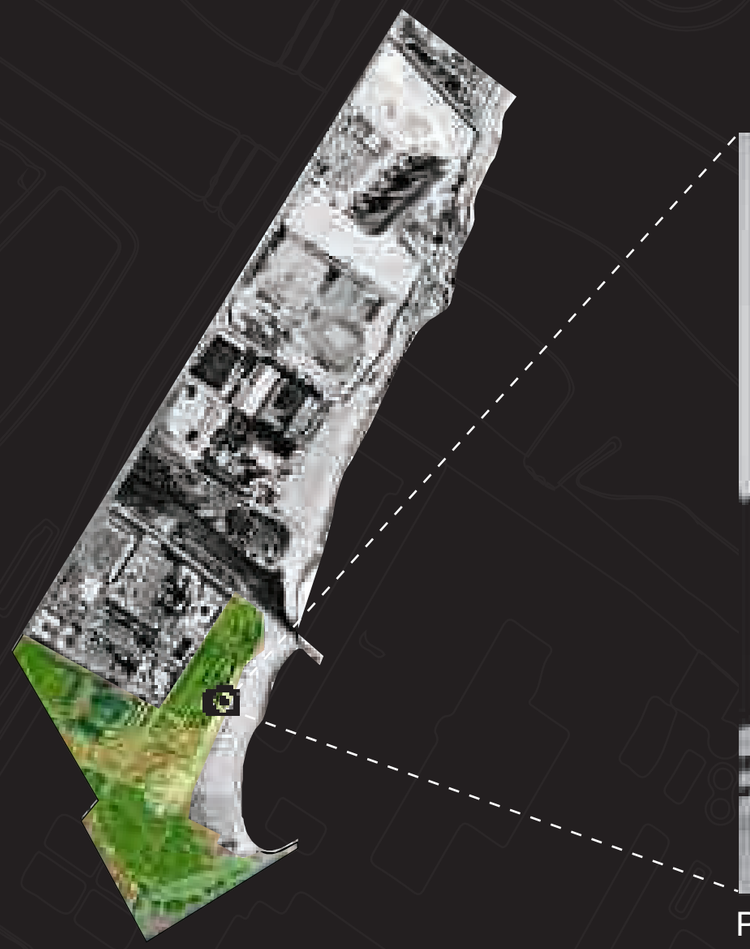
Bridge concept

Proposal

04. 2 Future scenario

Parks on site

Parc de la Plau

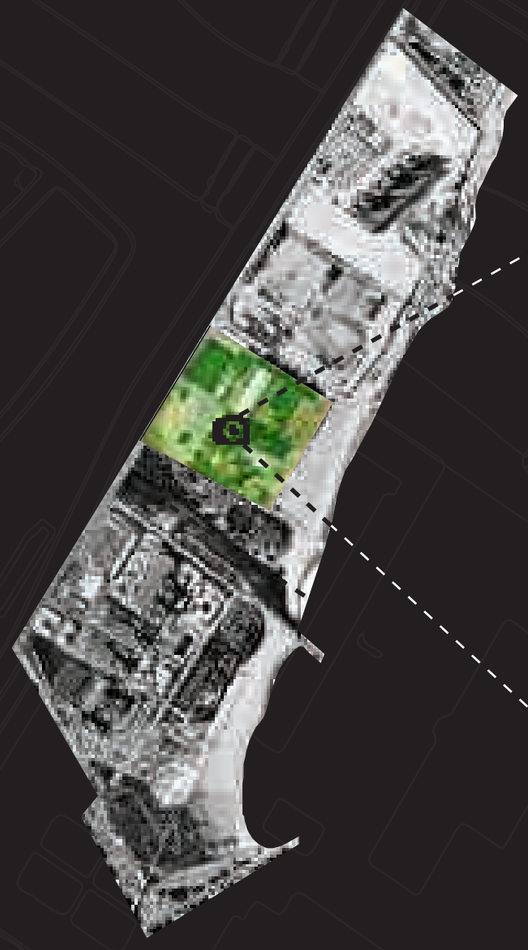




Parc de la Plau is somewhat abandoned, very few people use the area

Parks on site

Parc del Litoral





Parc del Litoral facilitates sport fields and a club

Parks on site

Parc de la Ribera



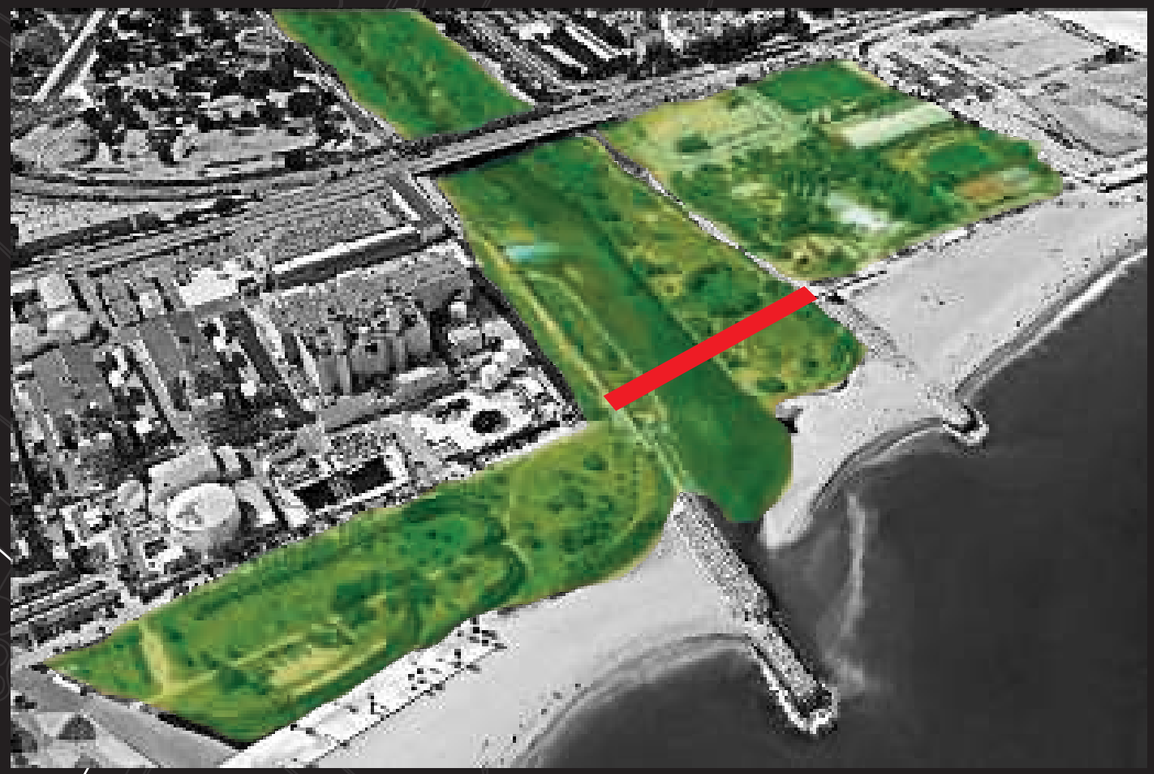


Parc de la Ribera is running alongside the river Besos

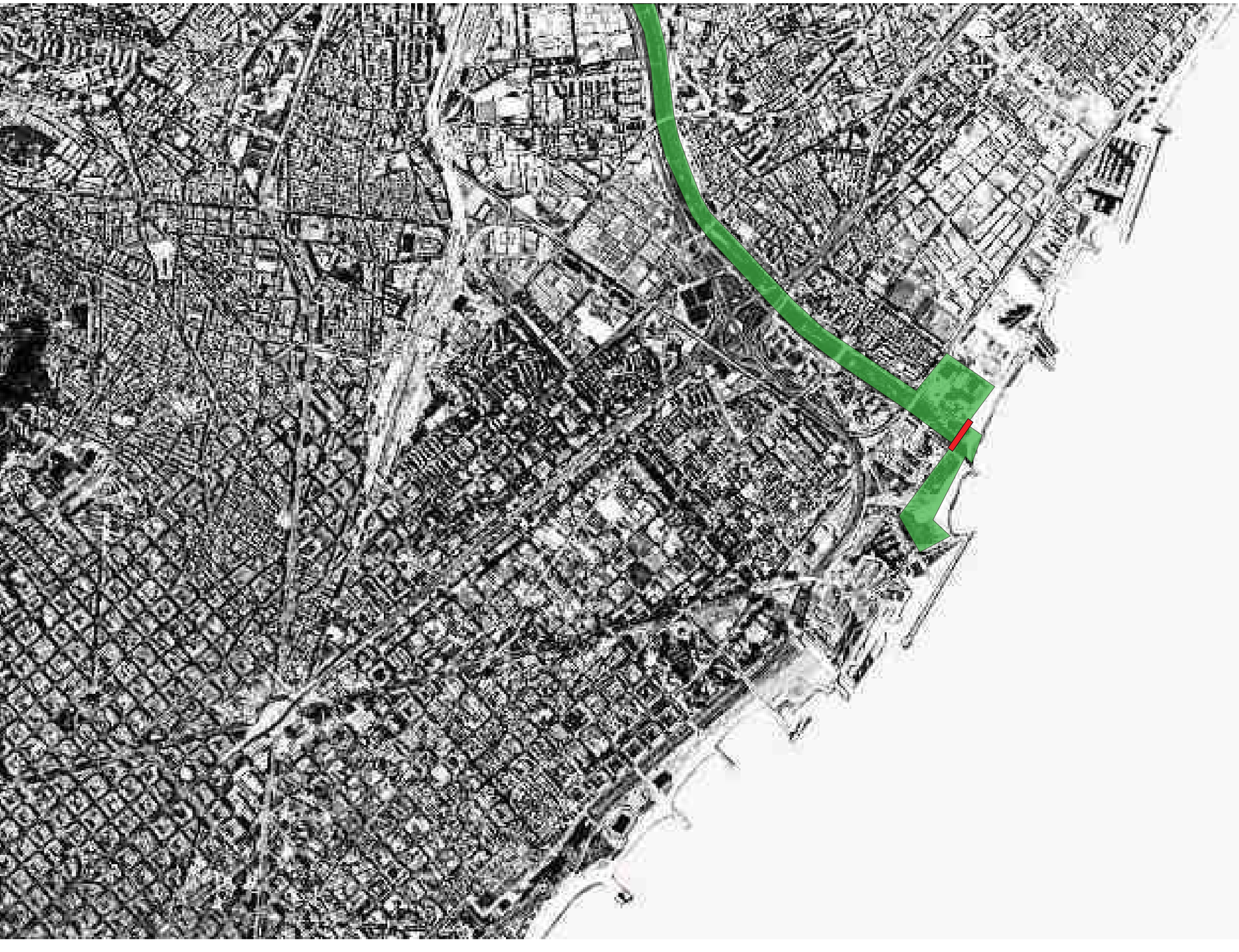
Future scenario

Three united parks





A bridge connection at the outfall of river Besos, would create a continuity along the coast line, unite the three parks, that are neighboring but have no connection between them. A new centrality and attraction point for locals and beachfront users. Badalona and Sant Adria de Besos are slowly merging with Barcelona and the location of the site is becoming of more significance not only for the area, but also for the whole urban scale.



Future scenario

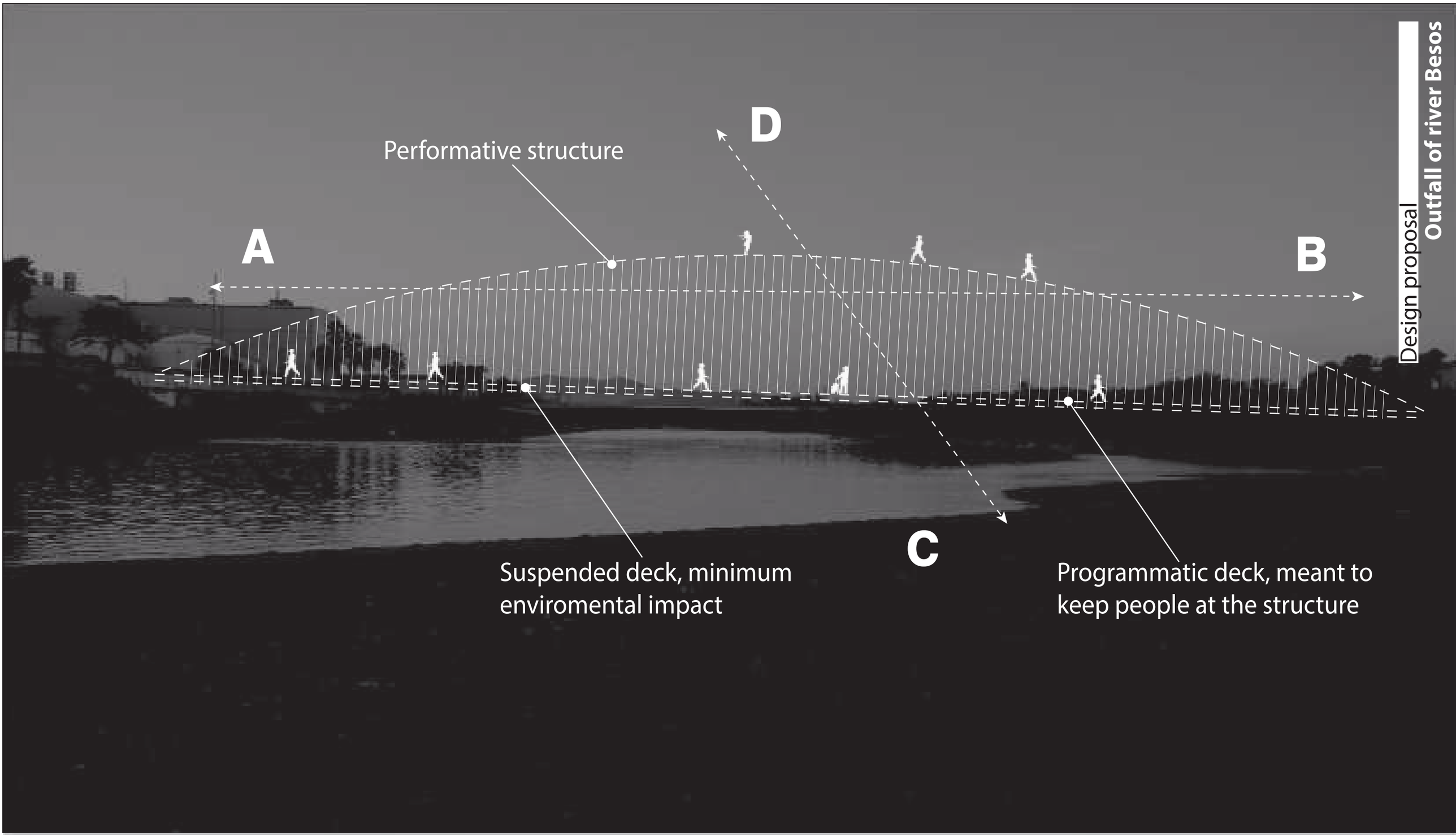
Three united parks

05. Bridge proposal

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Design proposal

Outfall of river Besos



Plan

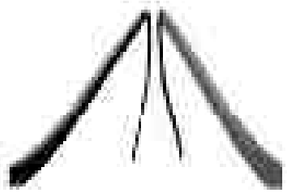
View

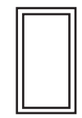
Profile





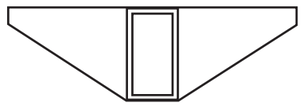










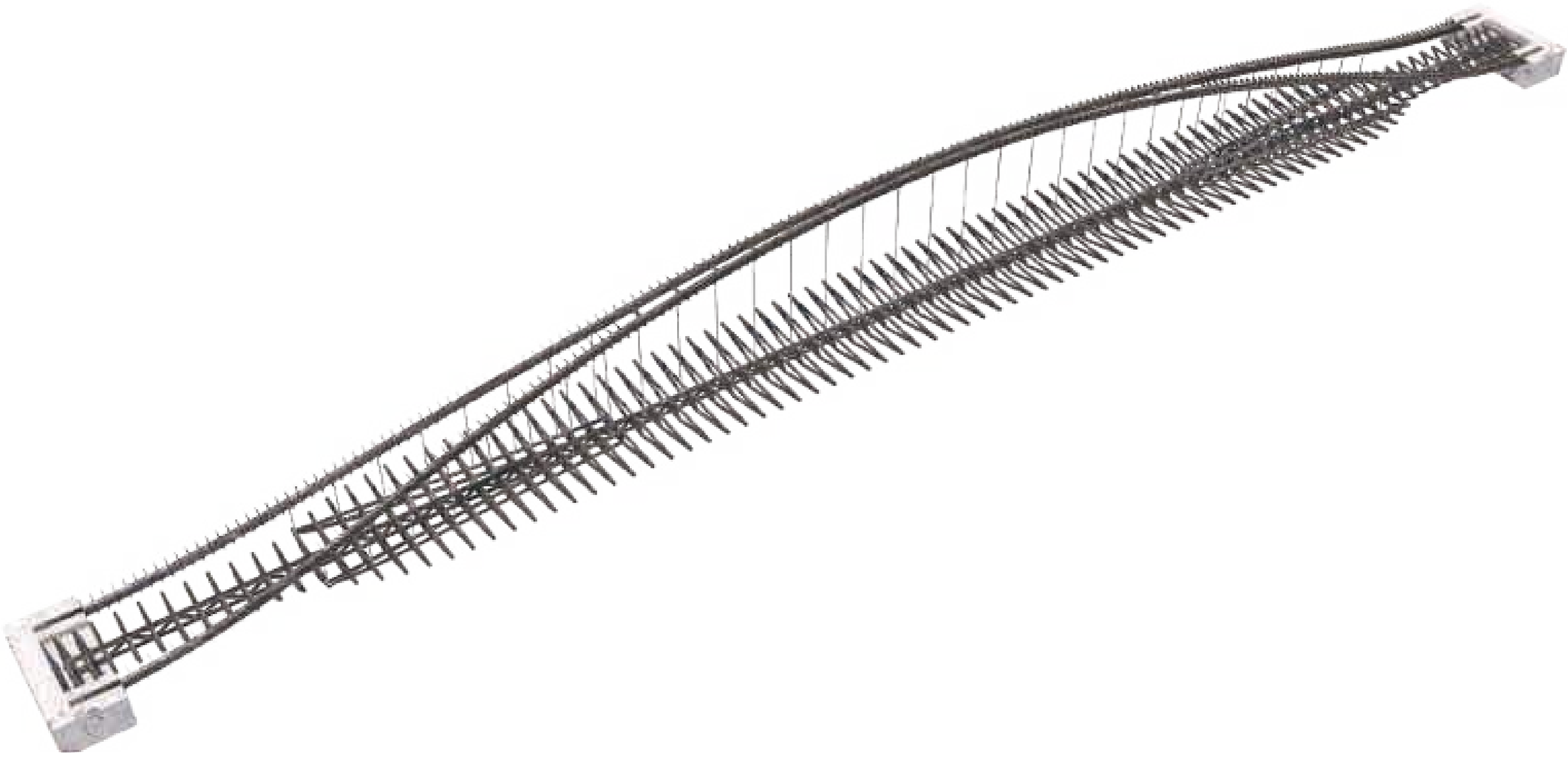


Shape forming

Structural pattern

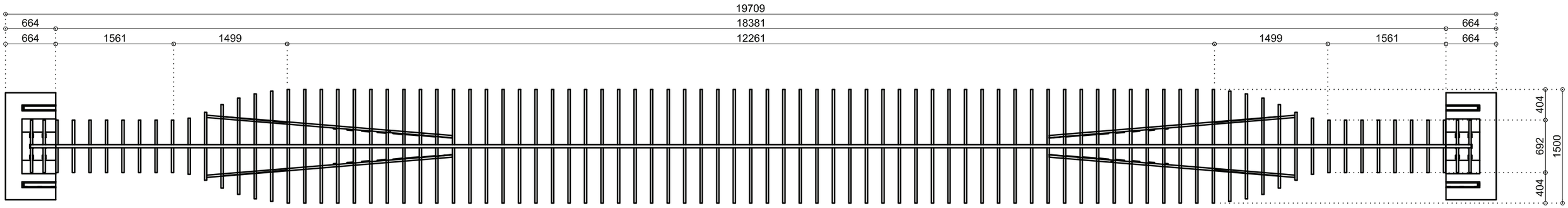
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Bridge construction
Metal constr. and foundation



Scale 1:500

Deck construction
Plan of deck construction

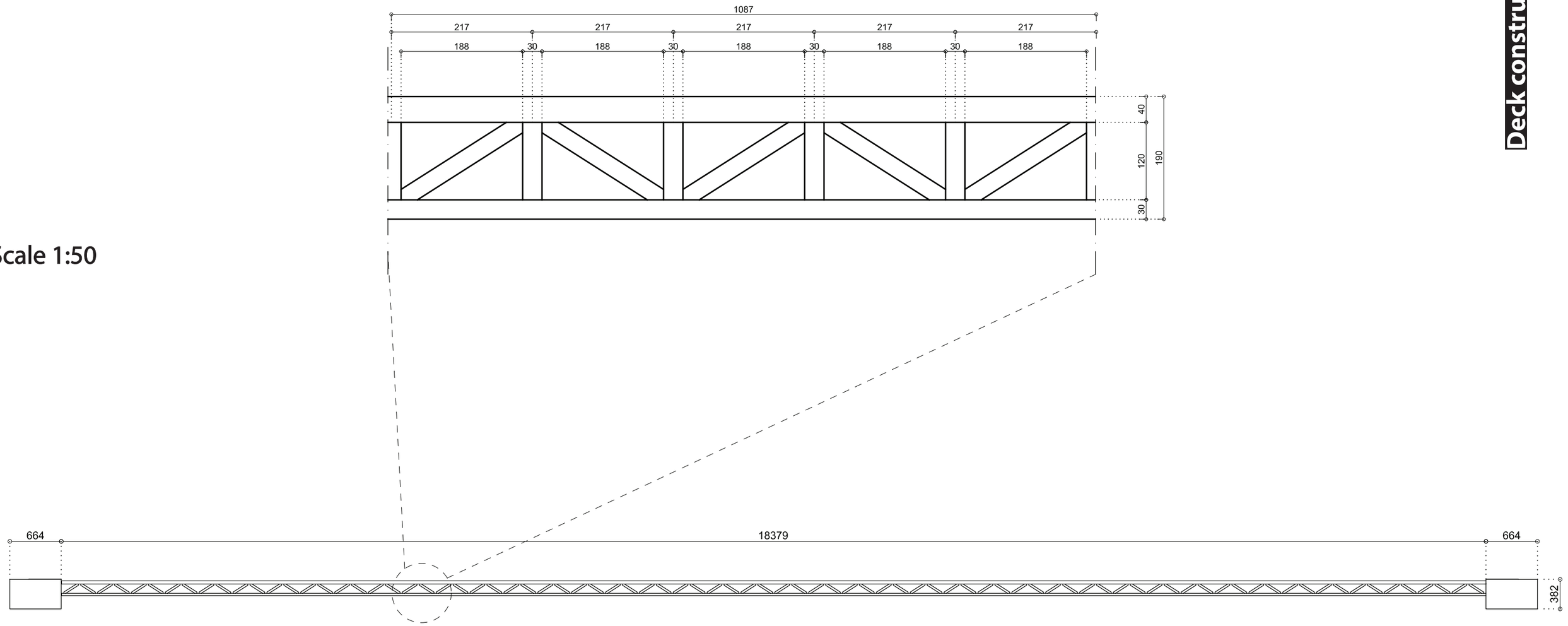


Scale 1:500

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Deck construction

Deck spine



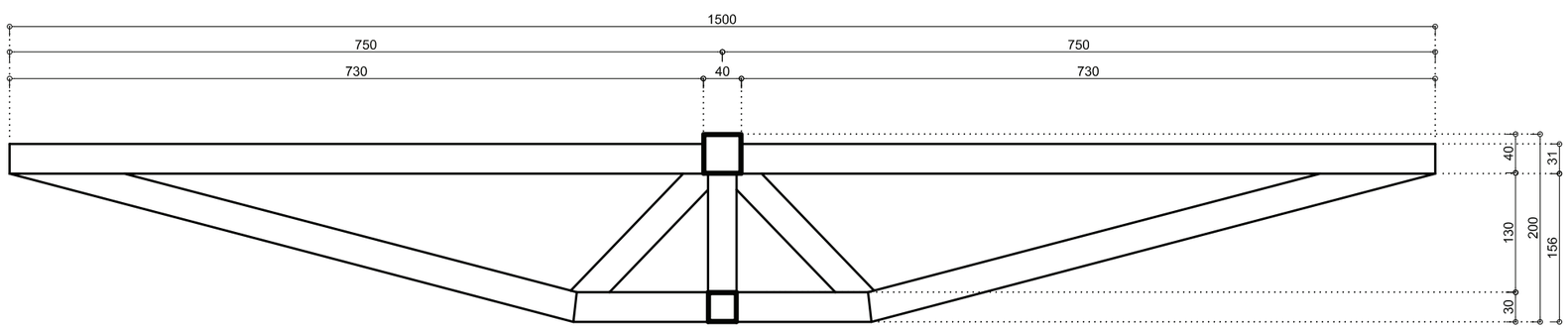
Scale 1:50

Scale 1:500

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Deck construction

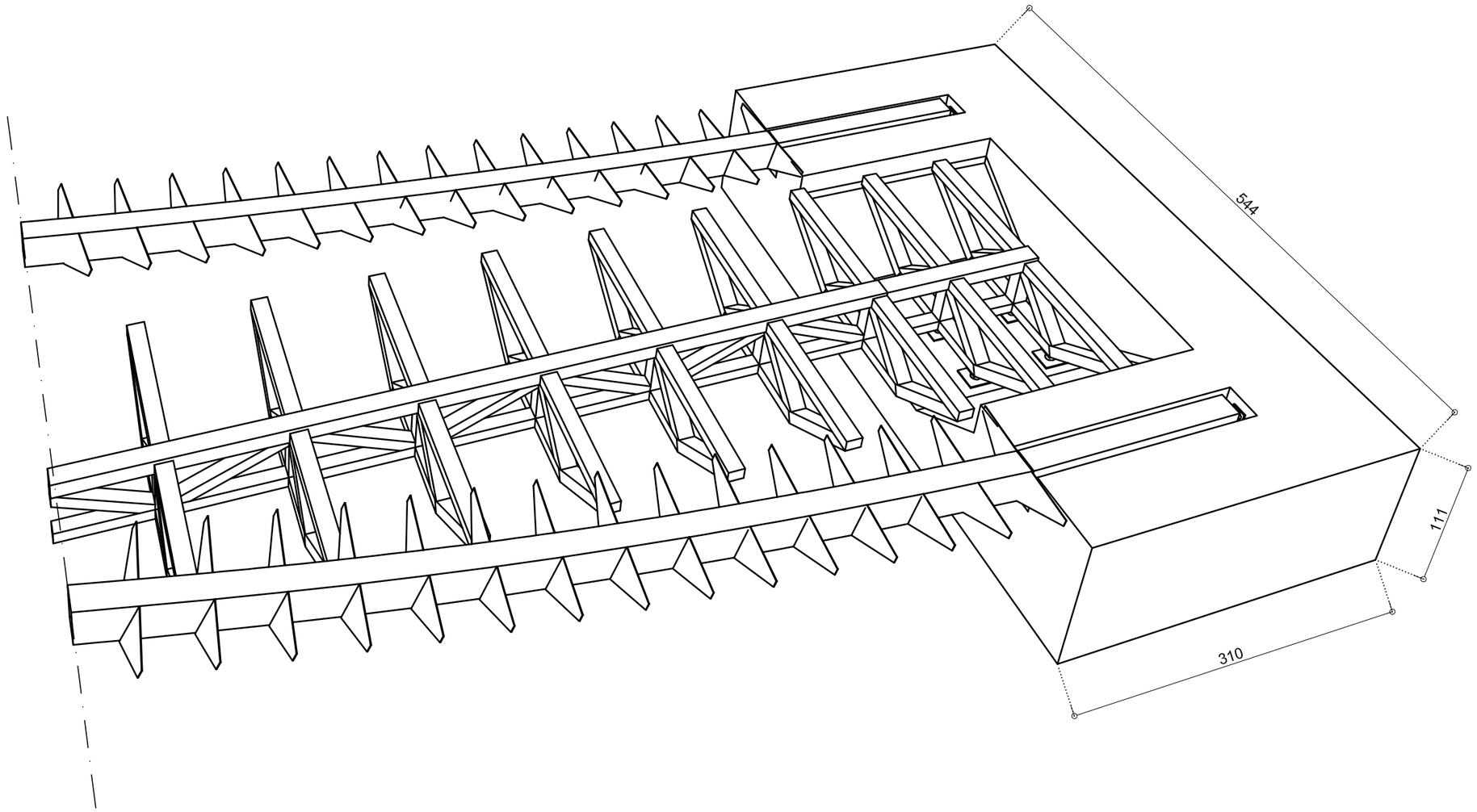
Metal truss



Scale 1:50

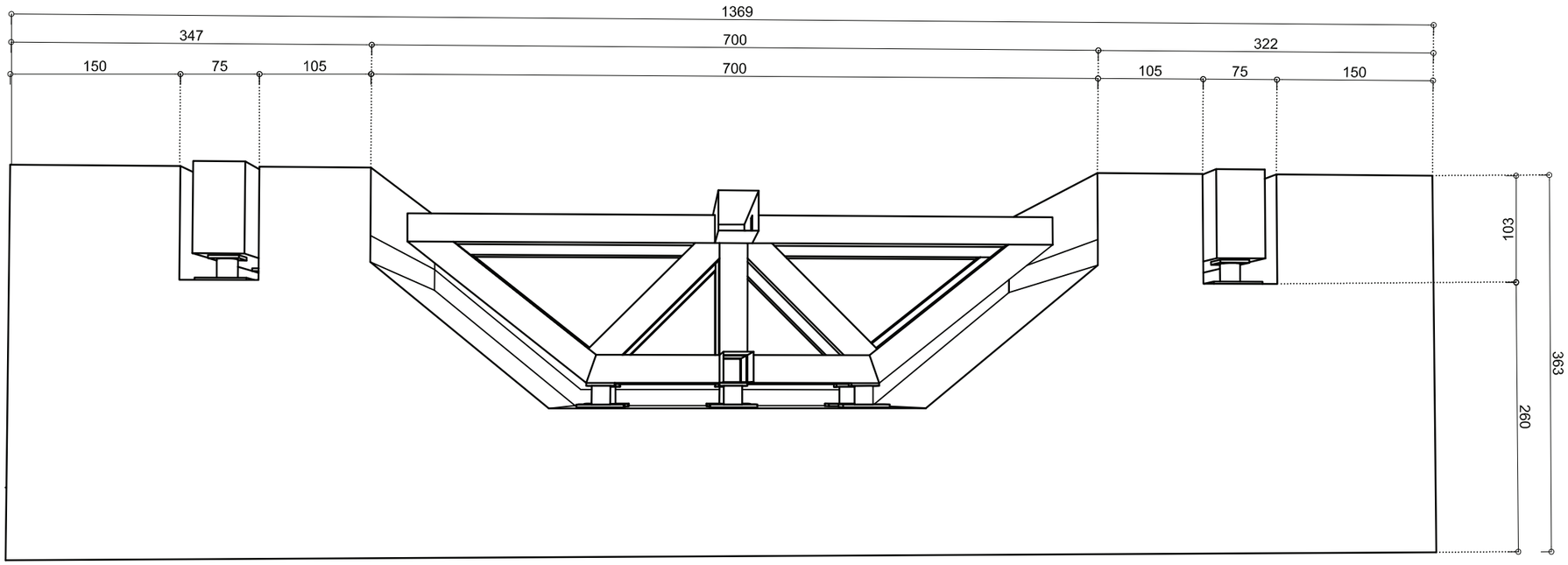
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Deck foundation
Concrete funding



Scale 1:50

Deck foundation
Concrete funding

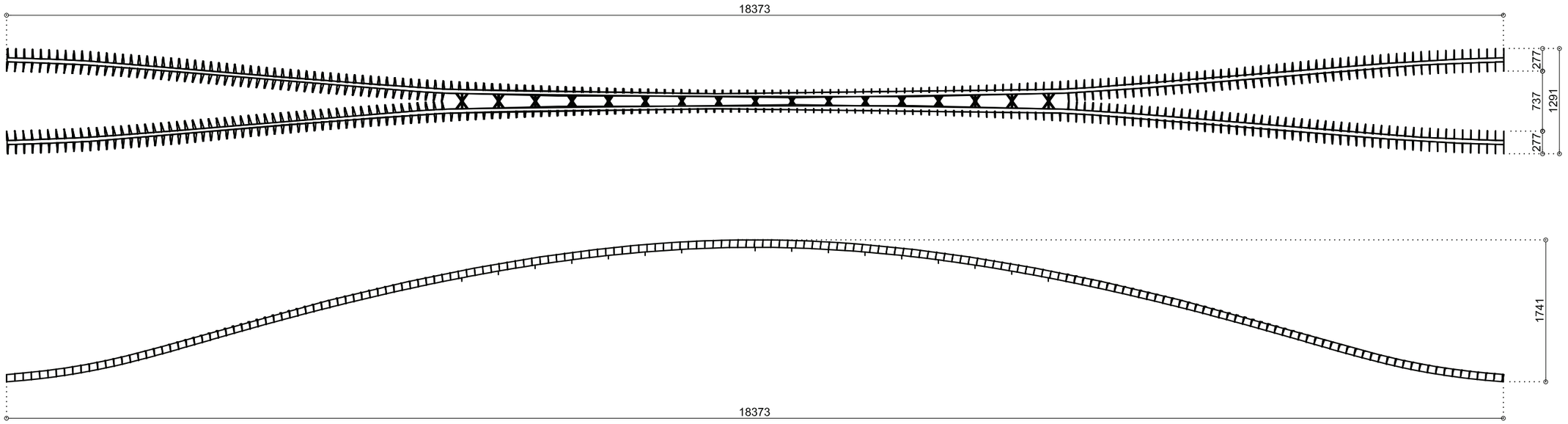


Scale 1:50

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Arch spine

Metal construction

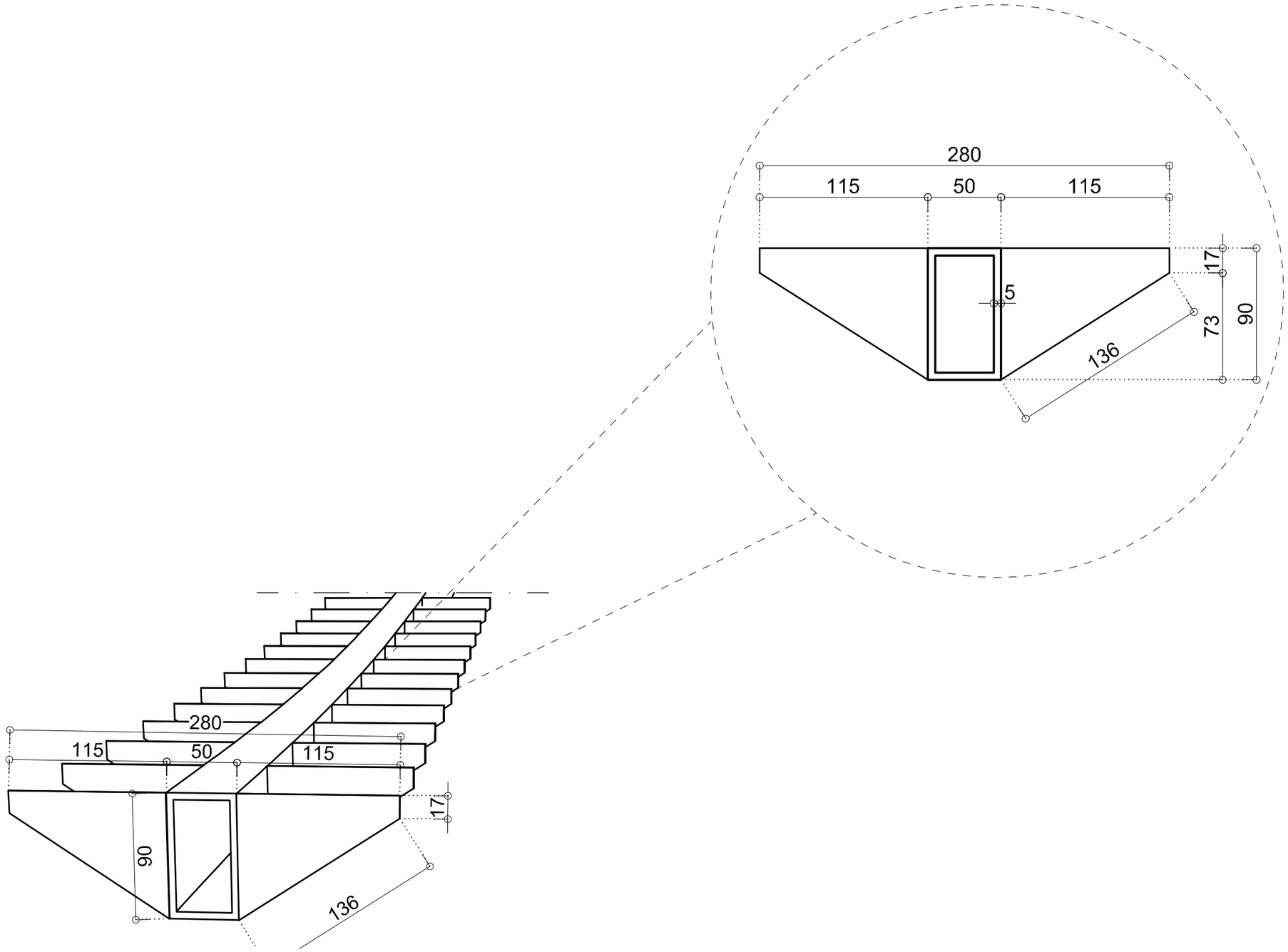


Scale 1:500

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Arch spine

Metal construction

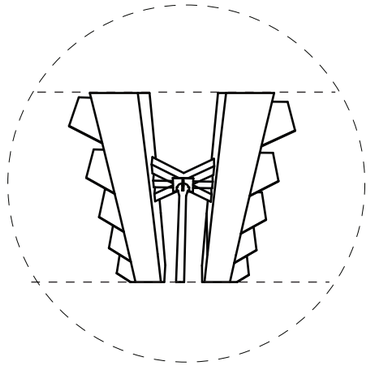


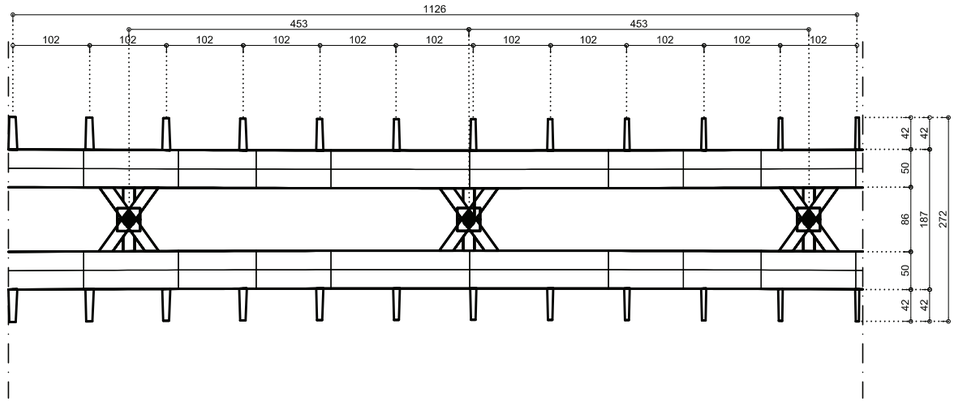
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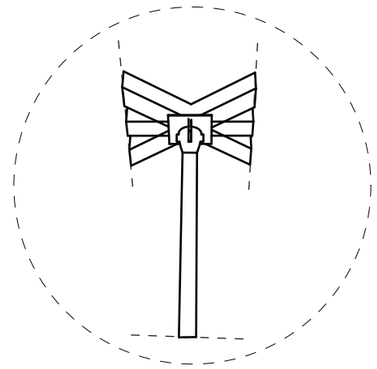
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Arch spine

Brackets and cables





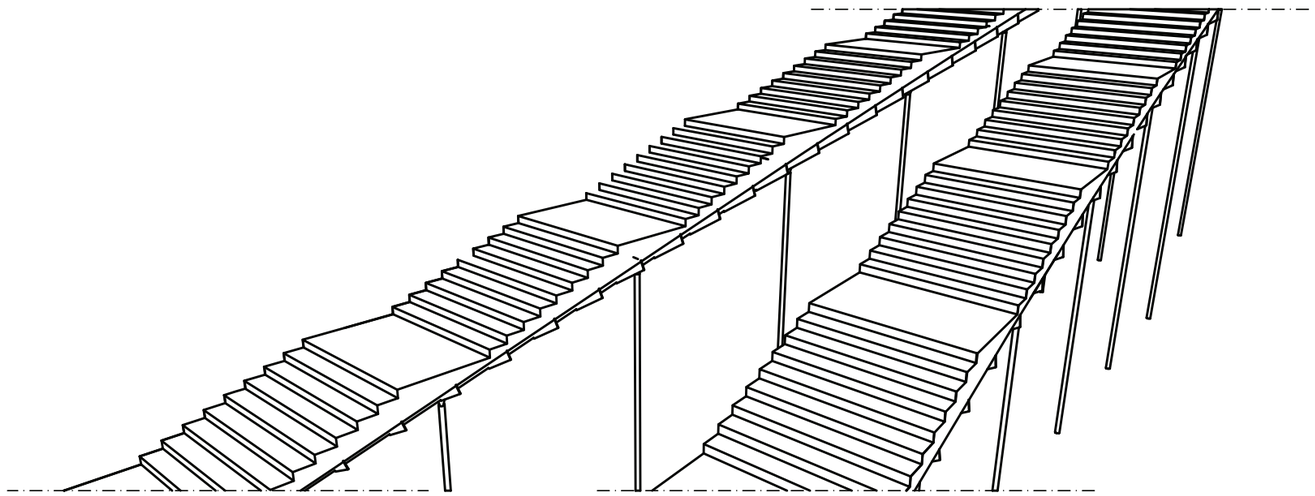


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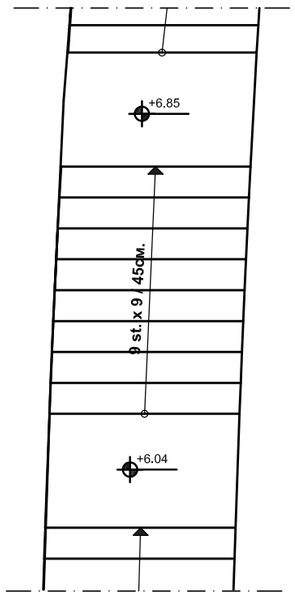
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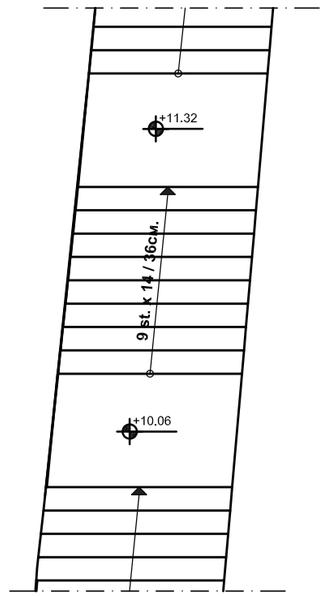
Arch stairs

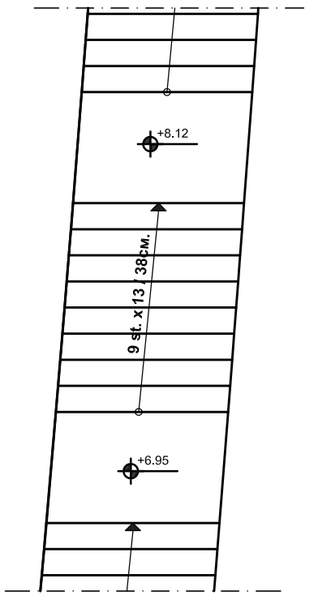
Stairs variety

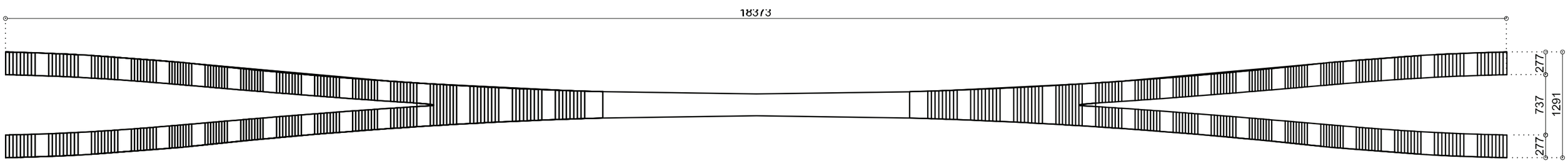


Scale 1:50





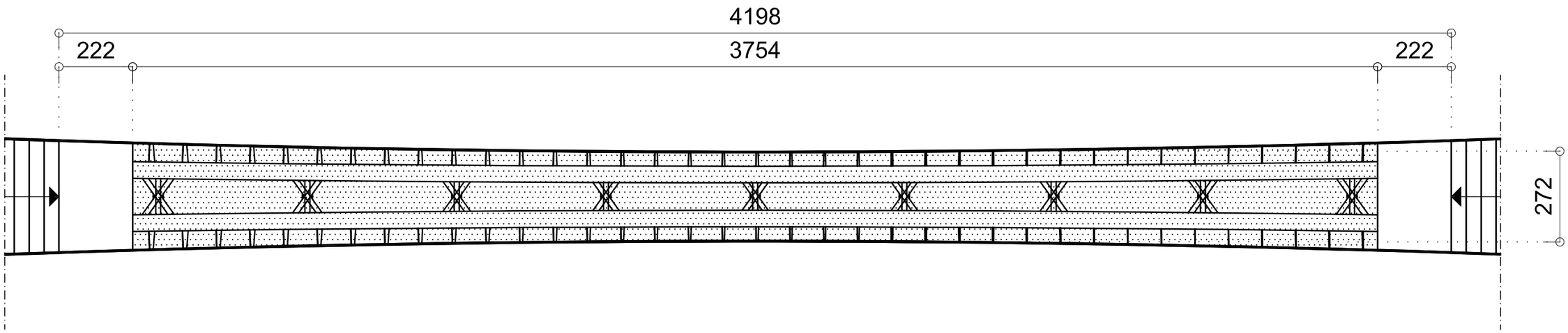




Scale 1:500

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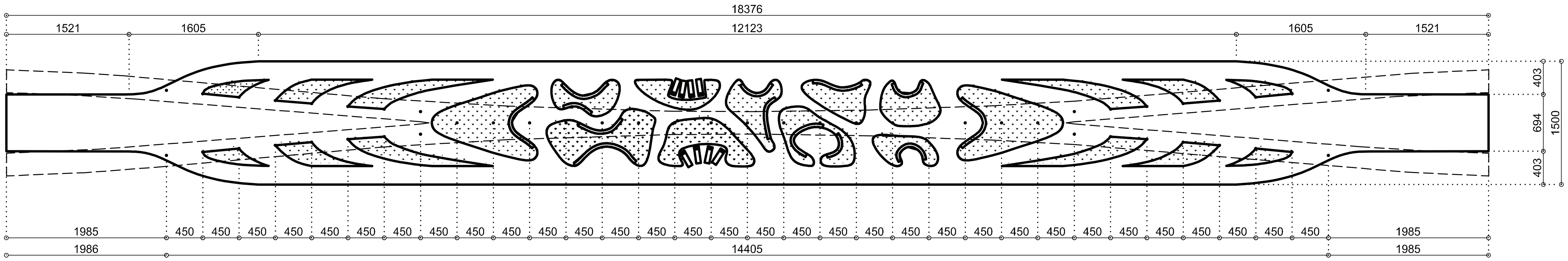
Arch top glass walkway
Transperancy

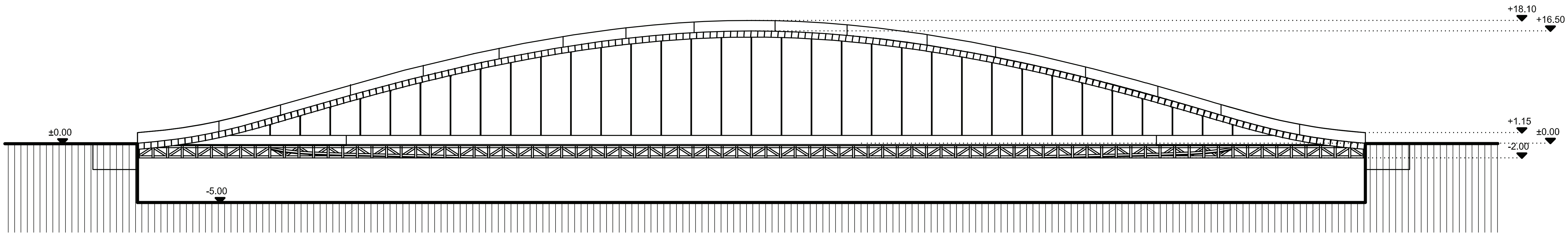


Scale 1:250

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Floor plan and side view
Programmatic brdge

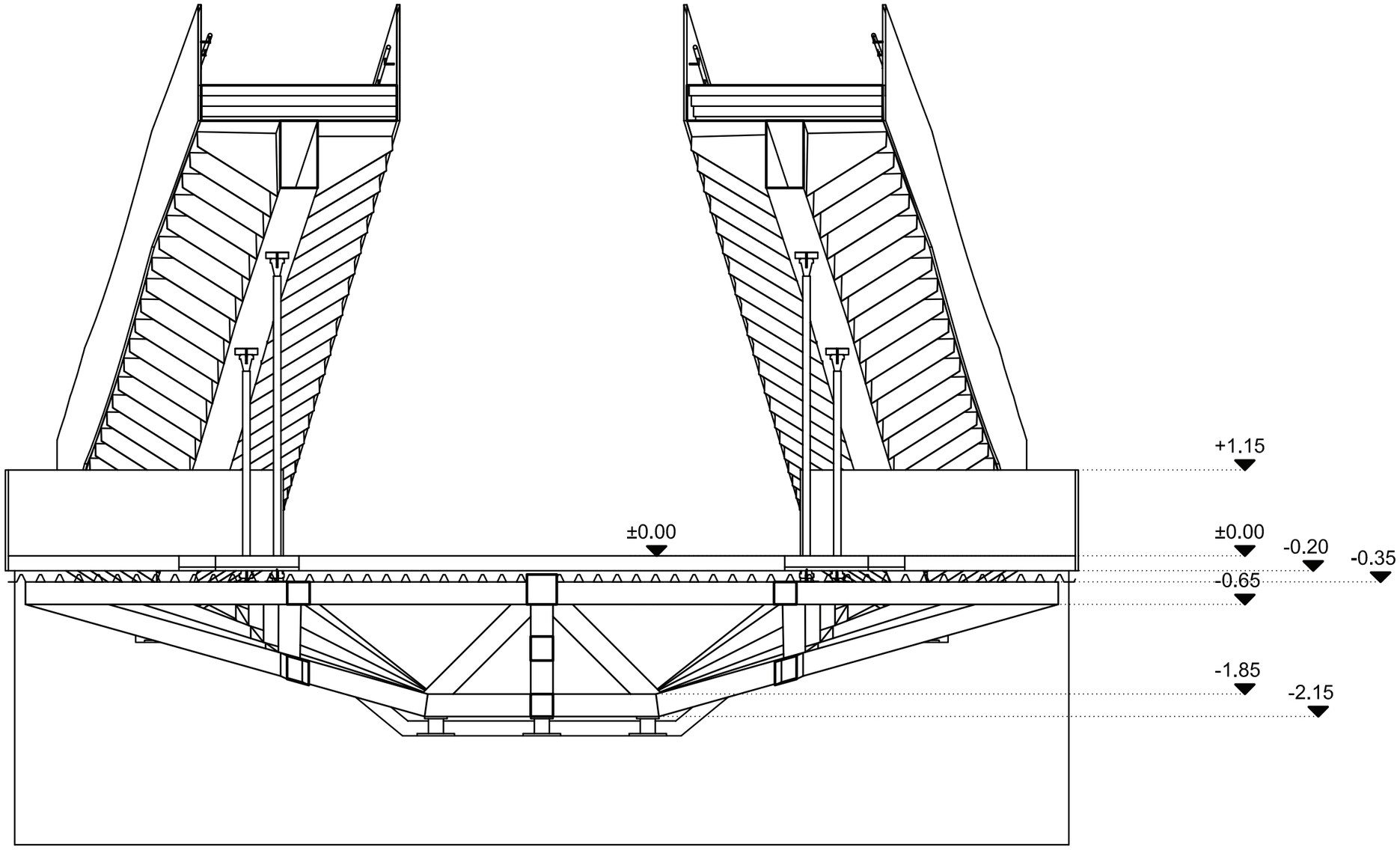




Scale 1:500

Section deck and arch

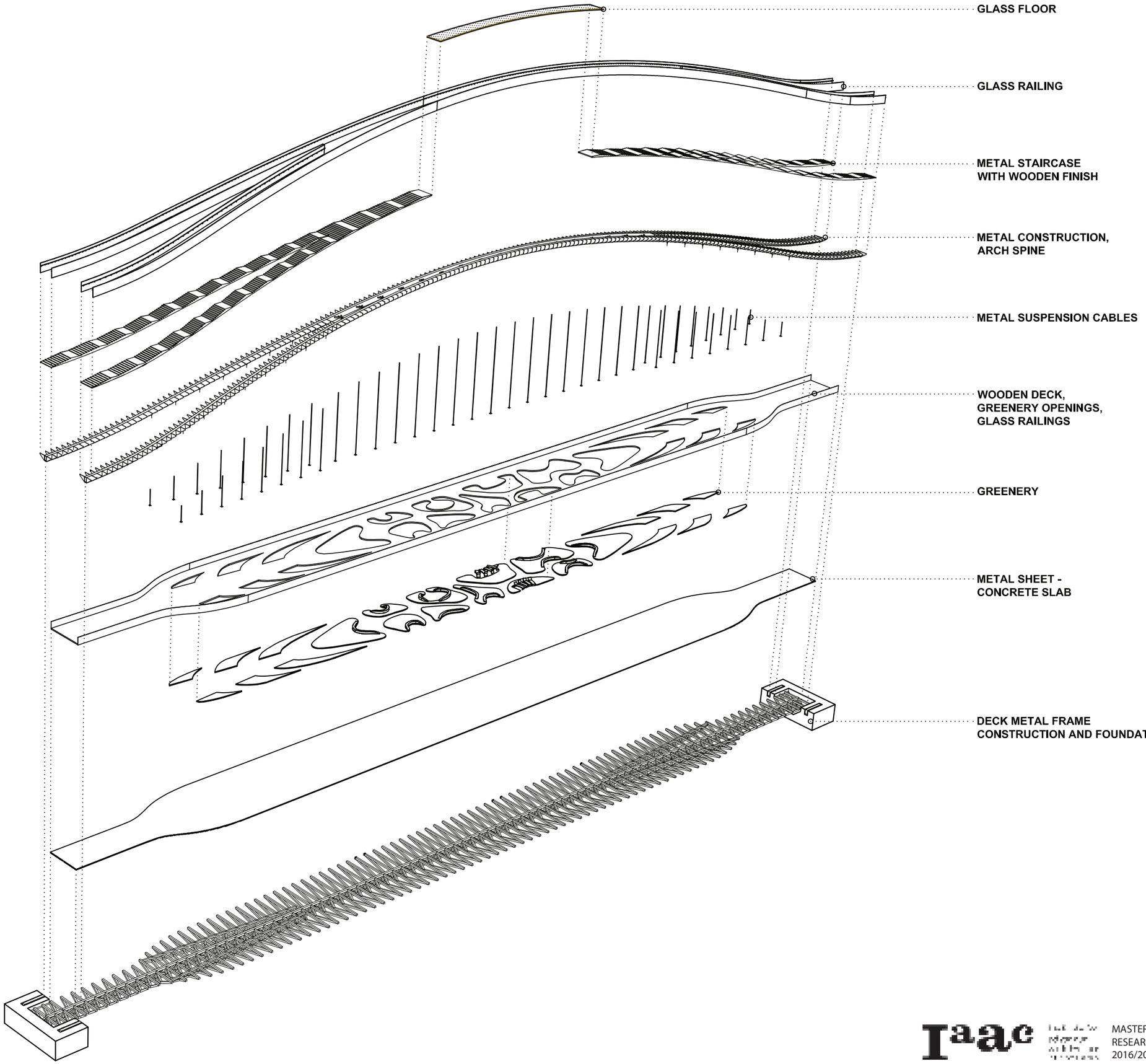
Section A -A



Scale 1:50

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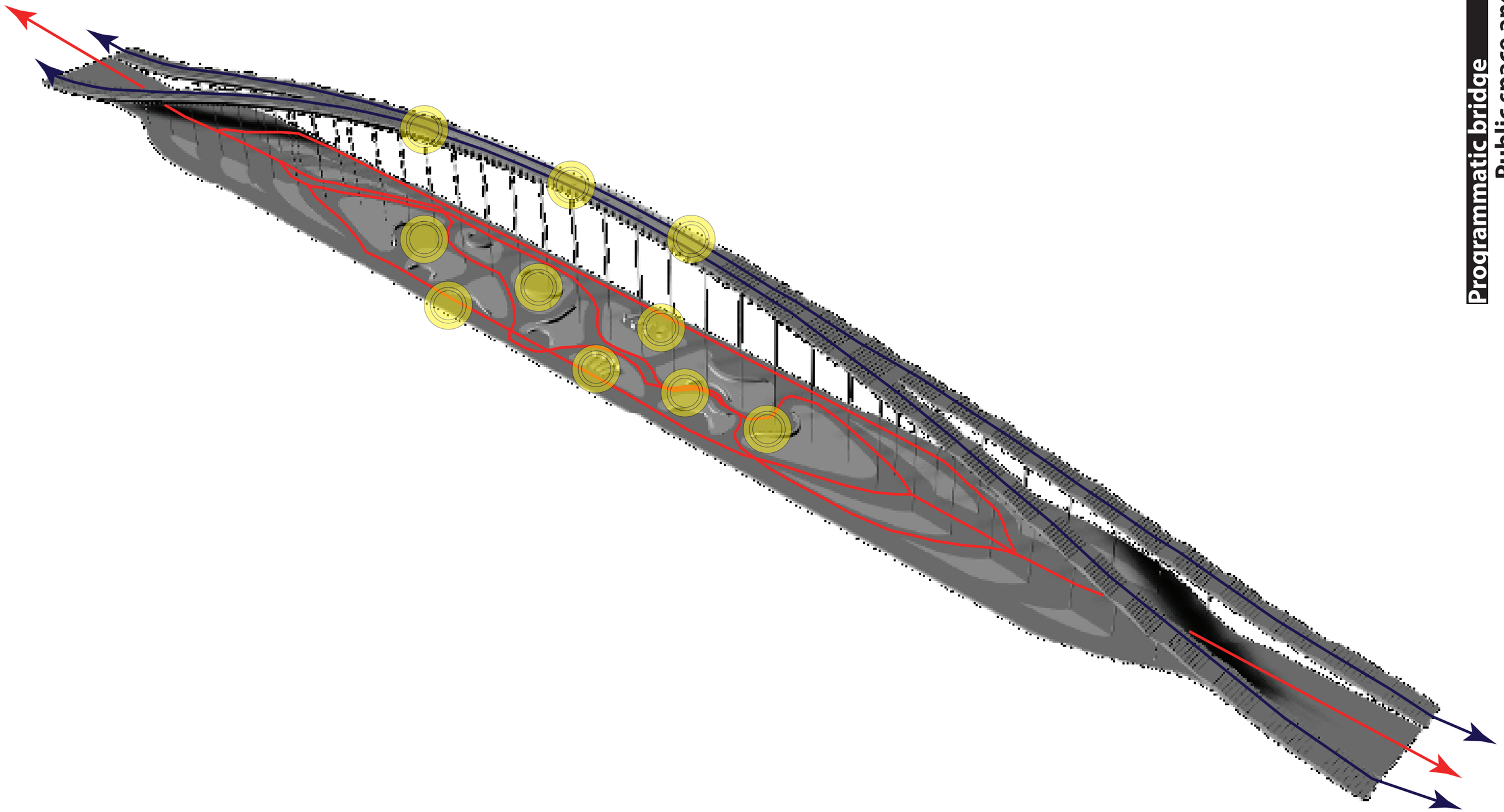
Exploded axonometric
Bridge axonometric



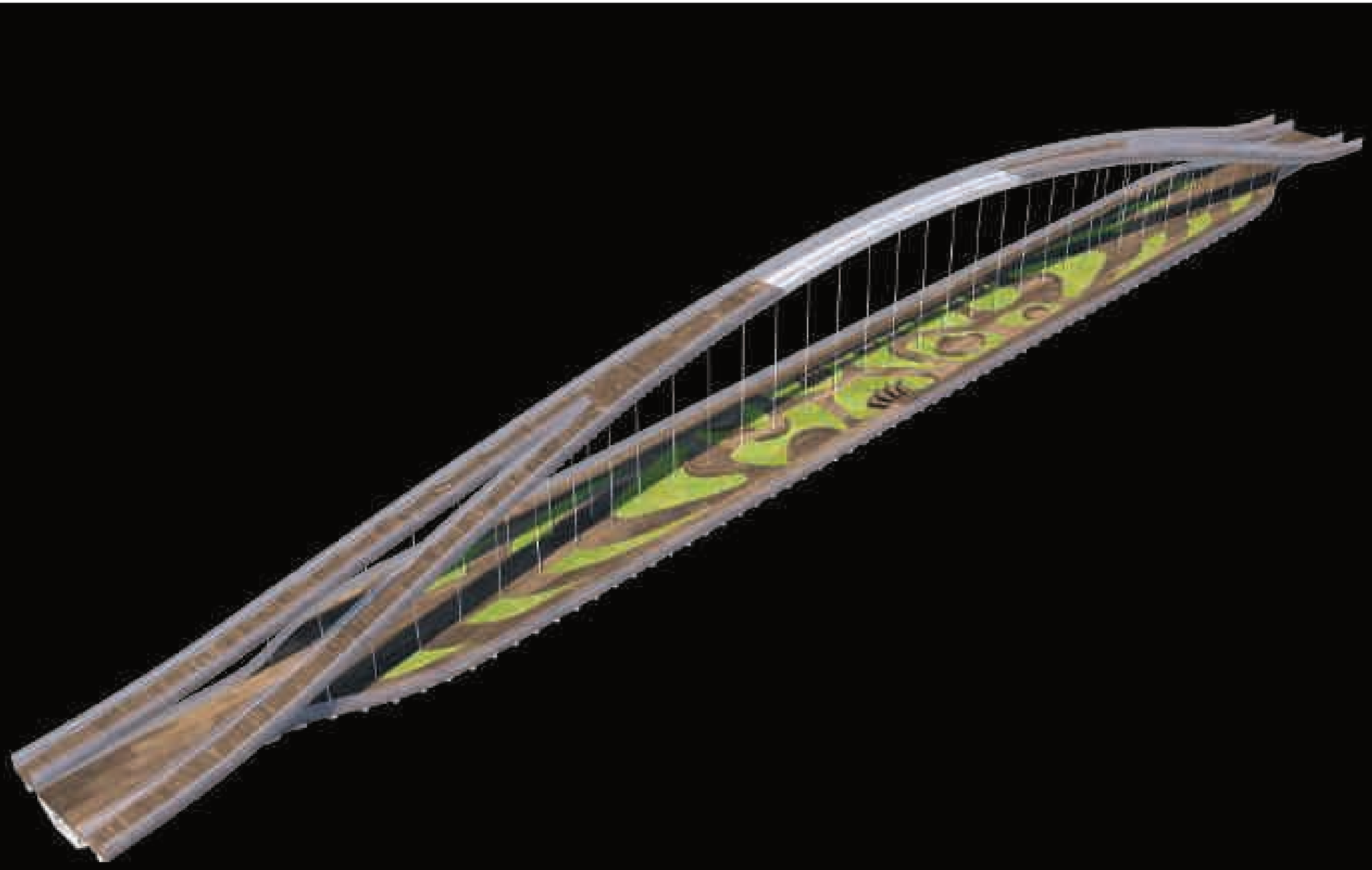
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Programmatic bridge
Public space and flow



Programmatic bridge
Design proposal



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