ROTTERDAM ON THE RISE
P5 PRESENTATION
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RESEARCH QUESTION

Can the mobility problems in the city of Rotterdam be solved with the design of a third bridge across the Nieuwe Maas, with due consideration of the preconditions and requirements on site?

Can a feasible design for a bridge crossing the Nieuwe Maas be found, with due consideration of the preconditions and requirements on site?
METHODOLOGY

- Site analysis
- Nautical activity
- Infrastructure
- Architecture
- Strategic vision
- City of Rotterdam
- Project location
- Strategic guidelines
- Bridge design
- Construction of bridges
- Technical guidelines
- Personal interest
- Bridge analysis
- Bridge structures
- Landings
- Openings

City of Rotterdam
SITE ANALYSIS
SITE ANALYSIS
Design

Sustainable transport

Focus on public spaces

Connection with existing bridges

Complement current and future ensemble

Connection with the water
SITE ANALYSIS
SITE ANALYSIS
SITE ANALYSIS
SITE ANALYSIS
SITE ANALYSIS
ANALYSIS RESULTS

Technical demands

Vertical clearance
Nautical traffic

Openable part
Cruise ships

Maximum slope
Different traffic flows
A deck at each end. The cables are typically in two planes separated by the width of the roadway, though numerous bridges have been built with a central plane of stays between the two opposing lanes of traffic. This requires a torsionally resistant superstructure. The cables are straight, resulting in greater stiffness than a suspension bridge. By anchoring the cables to the deck, compressive forces are applied to the deck, resulting in it participating in handling those loads. This can be problematic should deck replacement be necessary. In general, a cable stayed bridge is less efficient in carrying dead load than a suspension bridge but is more efficient in carrying live load. The most economical span length for a cable stayed bridge is 100–350 m, though some designers have extended this range to as much as 800 m. There have been some problems with cable excitation during rain/wind events, particularly on the longer stays. A cable stayed bridge is very modern and pleasing in appearance and its extremely well in almost any environment.
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A visual representation of the data presented here can be seen in Figure 18.6, where the possible and optimal span lengths for various bridges are presented.
BRIDGE ANALYSIS

- Swing bridge
- Vertical lift bridge
- Retractable bridge
- Pontoon bridge
- Swing bridge
- Bascule bridge
- Draw bridge
- Transporter bridge
New entrance to the city of Rotterdam
New entrance to the city of Rotterdam
Allow cruise ships to enter the city center
Connection with current bridges
Design of a vertical lift bridge
Interesting routes for different traffic flows
Interesting space on public quays
DESIGN EXPLANATION

Research

Concept

Design
Crossing the Nieuwe Maas
Crossing the Nieuwe Maas
Designing the route
Designing the route
Designing the route
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Designing the route
Designing the route
Designing the route
Designing the route
DESIGN EXPLANATION

Designing the route
Designing the stairs
Designing the stairs
DESIGN EXPLANATION
Designing the towers
Designing the towers
Designing the towers
Designing the towers
Designing the towers
Designing the towers
Designing the towers
Designing the towers
Designing the towers
Designing the towers
DESIGN EXPLANATION
Lift mechanism
Designing the towers
Designing the towers
DESIGN EXPLANATION
DESIGN EXPLANATION

Bridge deck
Bridge deck
Building sequence
DESIGN EXPLANATION

Building sequence
Building sequence
DESIGN EXPLANATION

Building sequence
Building sequence
Both the Delfshaven and Waalhaven area, as well as the surrounding areas can benefit from the crossing.

The chosen location is very suitable for executing the aimed mobility plans.

Integration and use of the quays boosts the value of the design.
Bridge deck
DESIGN EXPLANATION

Bridge deck
DESIGN EXPLANATION

Designing the route
Designing the route