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WEITERLEITEN BRIDGE FORWARD, THROUGH UNITY

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INTRODUCTION

The proposed design is only one of an infinite number of ways that the banks of the river Spree can be linked or communicated with. Waisen was our site of choice. It represents the ideas and influences that we have identified in the Berlin context, in order to guide the Engineering and Architectural language of the design.

CONCEPT

The concept is made up of the following elements:

1. German Reunification

This represented the process in which the German Democratic Republic (GDR/East Germany) joined the Federal Republic of Germany (FRG/West Germany) to form the reunited nation of Germany, and when Berlin reunited into a single city.

In the proposed design, it is represented by the **three** Decks that are **united** around a single vertical element (*Figure 1*).

The structural equilibrium that is achieved through the three anchor points also reflects the unity of Berlin into a single city.

2. Communication

This element is represented by the Vertical Pylon of the bridge which symbolises the Berlin Television tower. It reflects something about the dualism between physical communication (something that can be blocked by a wall) and digital communication which knows no boundaries. The stay cables represent invisible lines of digital communication from the vertical (tower) element.

3. Site Context

The Waisen site was chosen because it suited the concept ideas for the design. Site lines and pedestrian flow informed the angles of the decks. The Berlin city fabric (molecular man, shapes in the landscaping of the Television tower, graffiti, concrete and steel) guided the palette of materials for the design. Solid versus void, penetrable and impenetrable elements (subtle references to the Berlin Wall) of the city are represented by the balustrades.

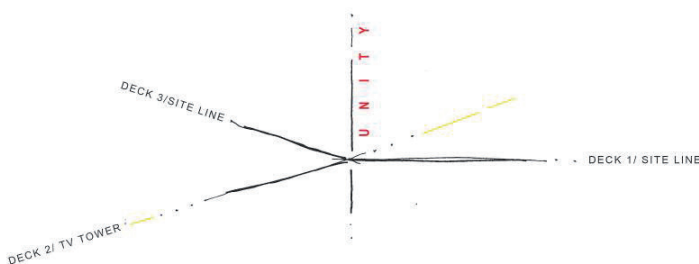


Figure 1: Concept sketch.

FOUNDATIONS AND SUB STRUCTURE

The U-Bahn (underground railway line) tunnel passes east of the proposed bridge site. The northern abutment will be sized to have a minimal effect on the U-Bahn tunnel. The foundation design will consider the long term

consolidation and secondary creep of the peat present in the spree. The pylon will be founded using piled foundations, do to the high water table and potential collapsible nature of the sandy soils.

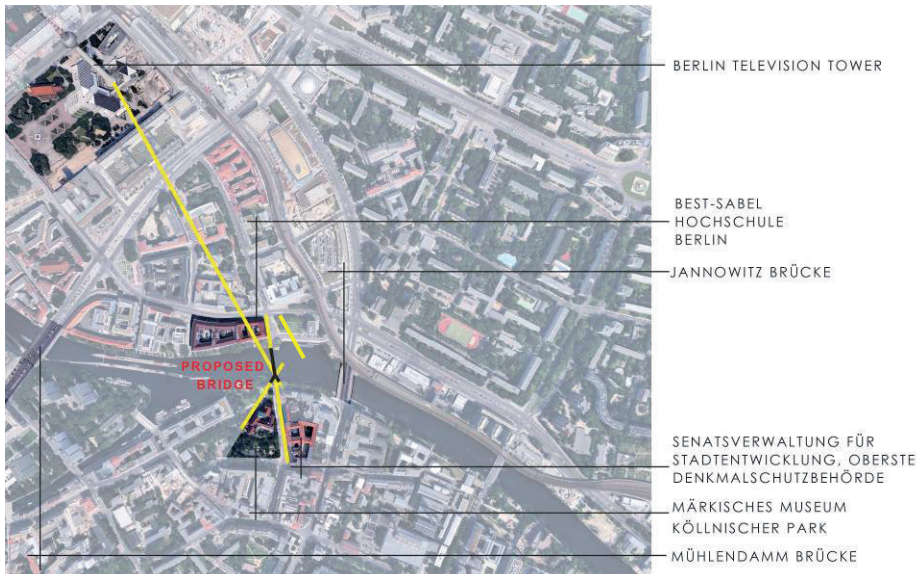


Figure 2: The Waisen site, indicating site lines, surrounding context buildings and the bridge position.

SUPER STRUCTURE

The super structure consists of a Y shaped deck. The back span balances the main span thus allowing the pylon to only resist axial loading. An Echo pontoon protects the pylon against ship impact whilst providing habitat to marine life.

DECK AND STAY CABLES

The deck consists of a steel box girder, supported from the centre with stay cables at 4 m centres, allowing pedestrians to pass on both sides of the stay cables. The deck is 3.6 m wide and 400 mm deep. The steel box girder has diaphragms at the abutments to resist the torsion loads. Locked coil rope, as was used in early stay cable systems in Germany (Svensson, 2012) is used. Locked coil ropes has high modules of elasticity, and resistance against surface pressure due to the constantly closed surface and therefore good cable core protection against corrosion.



Figure 9: The bridge in its context.

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