

MEANDER 057

NINE ELMS - PIMLICO BRIDGE

'We build too many walls and not enough bridges'
Isaac Newton

A new bridge across the Thames celebrates an important moment in London's evolution. It provides opportunities for neighbourhoods and communities to enjoy newly established proximities and to establish new links across the greater city. The proposed new pedestrian and cycle bridge linking Pimlico to Nine Elms and Battersea will transform each of these areas and will have an extraordinary impact on how a broader range of outlying communities use the city and connect to the river.

Location
The proposal for the new bridge is based on a concept that has the flexibility to be successfully located in any of the preferred selected locations. Illustrated on site 1, it terminates the large formal gardens of St George's Square and is approached through Pimlico Garden and Shrubbery. In the urban context, these open spaces provide an attractive and appropriate pedestrian and cycle route to and from Victoria to the north and link to the south bank's evolving communities and transport interchanges. The new bridge will have a clear public presence here, connecting to the established cycle network and will serve a wide range of users including joggers, runners, skateboarders and dog walkers.

Design Concept
London's bridges have a symbolic presence in the city, and their role is heightened now that the Thames is recognised as the principal public space for national celebrations and events. The design concept looks to provide an elegant resolution to the requirements of the new crossing, with a timeless form that can become a familiar and distinctive presence on the river.

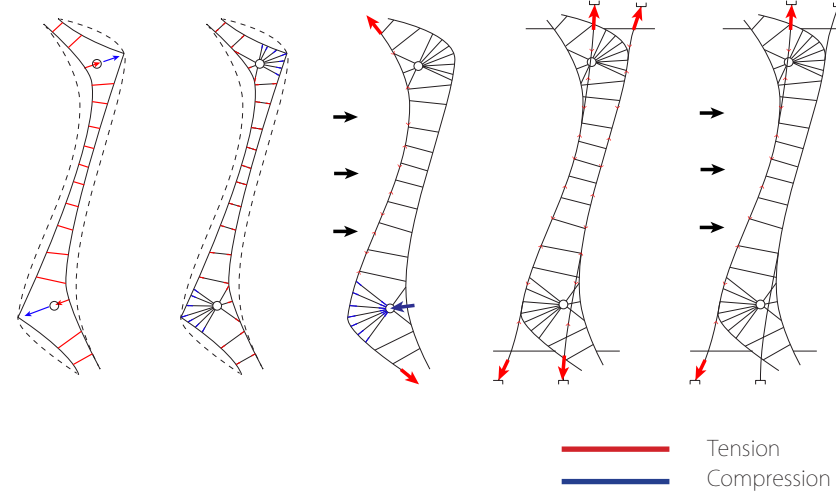
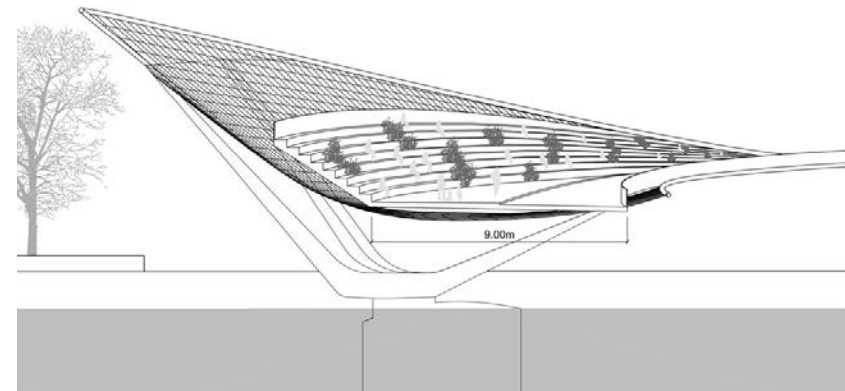
'In nature shape is cheaper than material'

Based on a shaped hyperbola, the stretched and twisted form of the new crossing provides a highly efficient structure for forces in tension. This results in the use of less material with a reduced depth of structure, providing cost efficiencies in its fabrication and erection - a super-light structure with a distinctive fluid form. Designed as a steel mesh fabric, the shaped hyperbola provides a highly efficient support for the new bridge across its longest span, with a timber deck designed as a separate yet integrated element, where the structure efficiently supports compressive forces. The use of materials that are selected to perform to their highest efficiency establishes and underpins the design. The curved form and length of the new crossing achieves the required levels and clearances on the river and the statutory access gradients for pedestrians, the disabled and cyclists. It provides a simple termination at each end that avoids complex access arrangements to the existing pavement levels and the 'elbow' changes of direction provide outlook points up and down the river.

Community
The new crossing is designed as part of the existing public domain and is carefully integrated into the urban fabric. It established the direct physical link across the river, but also establishes areas for viewing the city sky-line with places to sit and contemplate the river and extensions to the landscape amenities along the river, connecting the successful and much-used riverside walks. It also looks to support existing public facilities such as the Westminster Boat Club, a sailing amenity used by young people. Opportunities exist to extend Pimlico Gardens into the river, in the form of tiered gardens, to buttress the existing river wall and to provide closer access to the river.

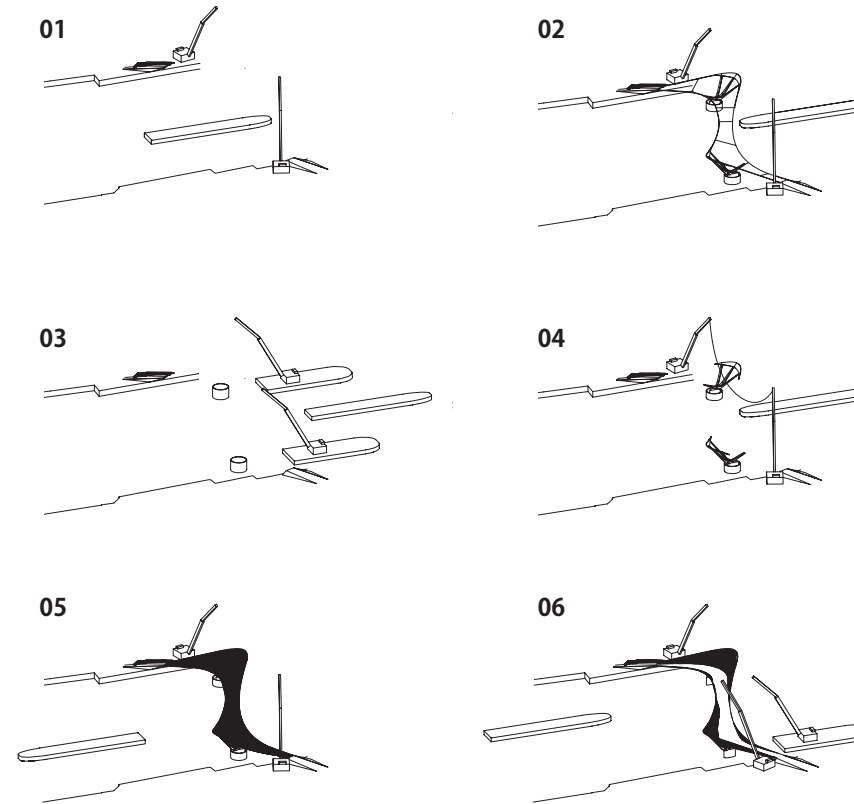
Access
The bridge approaches at either end are integrated into the existing landscaped Thames embankment. The river crossing is fully accessible to all and pedestrians are separated from cyclists, with footpaths and cycle ways having their own finishes and gradients. A cross-over point at mid-river is expressed with an open grillage to view the water below. To further establish links to the existing urban fabric, it is proposed to extend the new paving to connect to existing landscaped spaces, providing opportunities for traffic calming along Grosvenor Road and Nine Elms Lane.

'The new bridge will highlight and serve the communities on both sides of the river and will provide an inspired and uplifting new landmark river crossing for London.'



Structural Concept

The Meander Bridge is designed as a system of cables that span across the river from pier to pier - initially positioned as a single cable, then joined together, weaving into place the fabric that forms the basis for the structure. Once tensioned with masts that pull the fabric into place, the stiff fabric becomes the basis of the timber and steel bridge structure that is built off the main fabric. The structure is based on Caisson Piles driven into the riverbed and inclined mast piers designed to provide the support structure that will resist the forces of the cable net and bridge. Tension cable termination will be in the buttress and access ramps will form the mass needed to resist the stress of the cables through tension piles in the banks of the river. The bridge is designed to have a minimal impact on the river and on the communities that overlook the Thames, where possible protecting existing views.

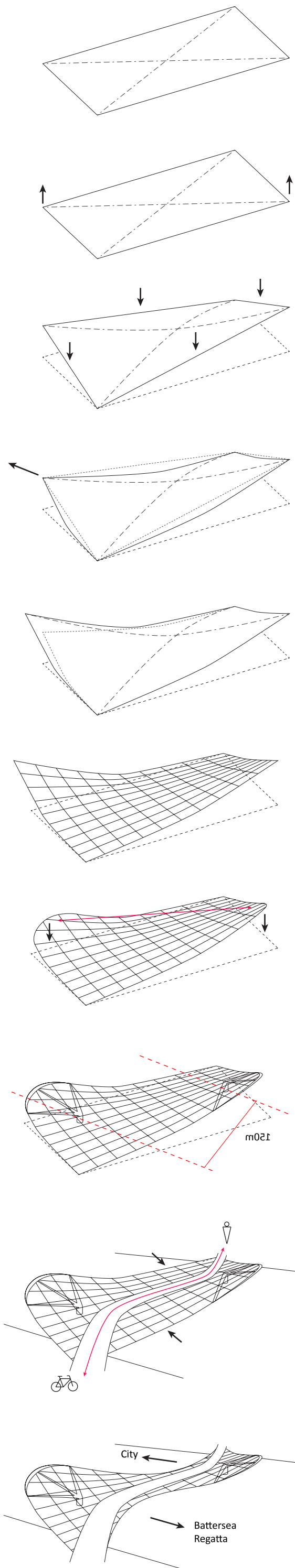
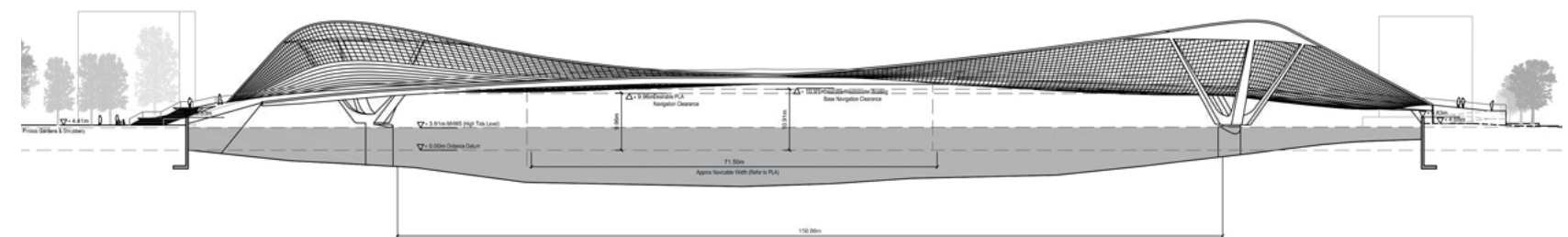
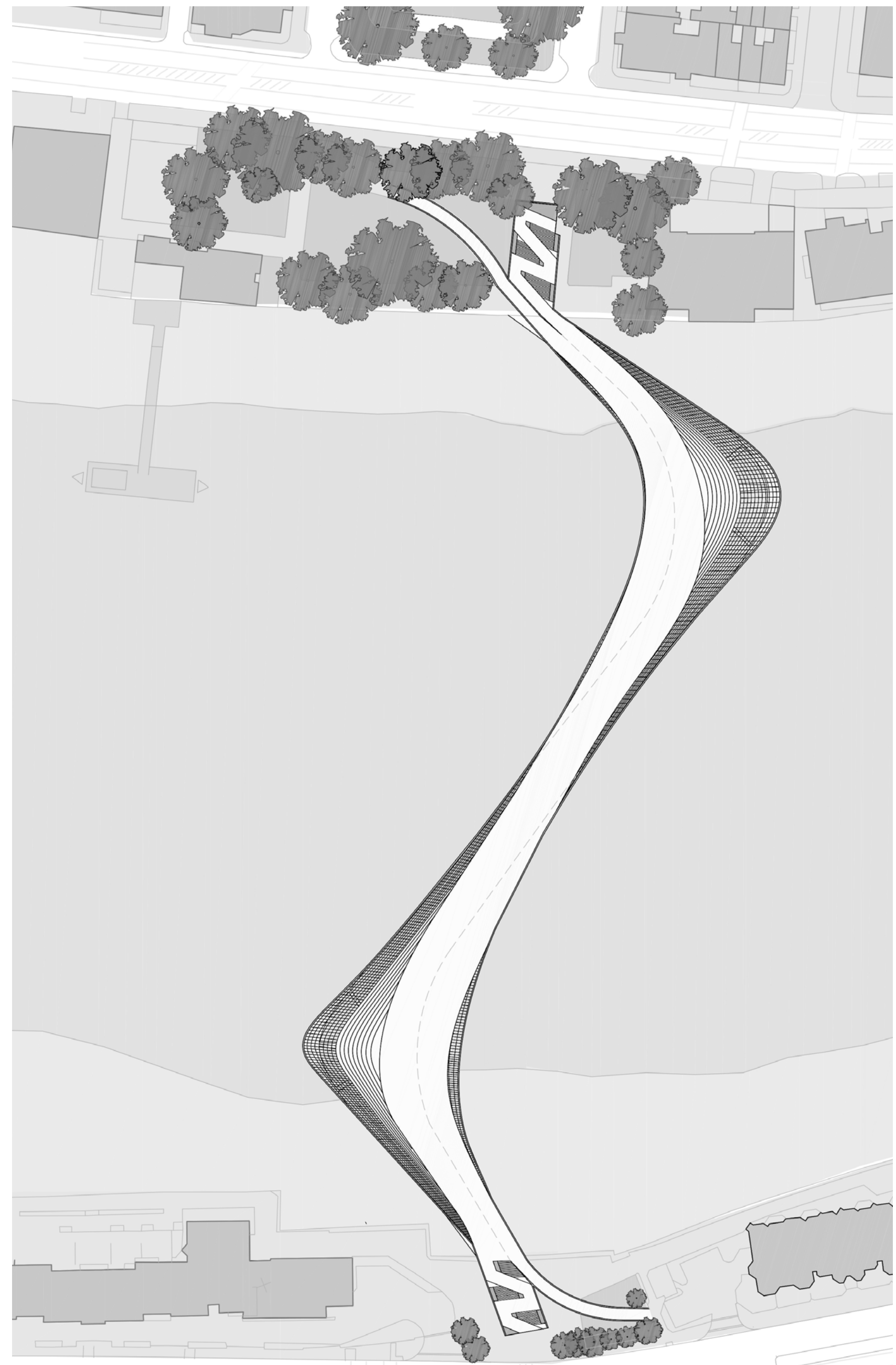


Construction Sequence

The Meander Bridge has been designed so that its build programme is minimised and have the smallest impact on boat traffic during construction.

1. Building the riverside abutments and marine preparations for piling in the riverbed.
2. Building caisson piles and water diversion structures. Installing tensioned bridge piers.
3. Installing pier caps and tension support arms. Align cables across the river tensioning in to place.
4. Tensioning the base cable net in place over the river.
5. Building up the cable net from base cable tension and aligning the net into proper position.
6. Installing timber deck structure from river crane and abutment cranes, materials supplied from river barge.

Finally, the cranes and temporary works would be disassembled, completing the construction of the bridge without interruption to boat traffic.





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