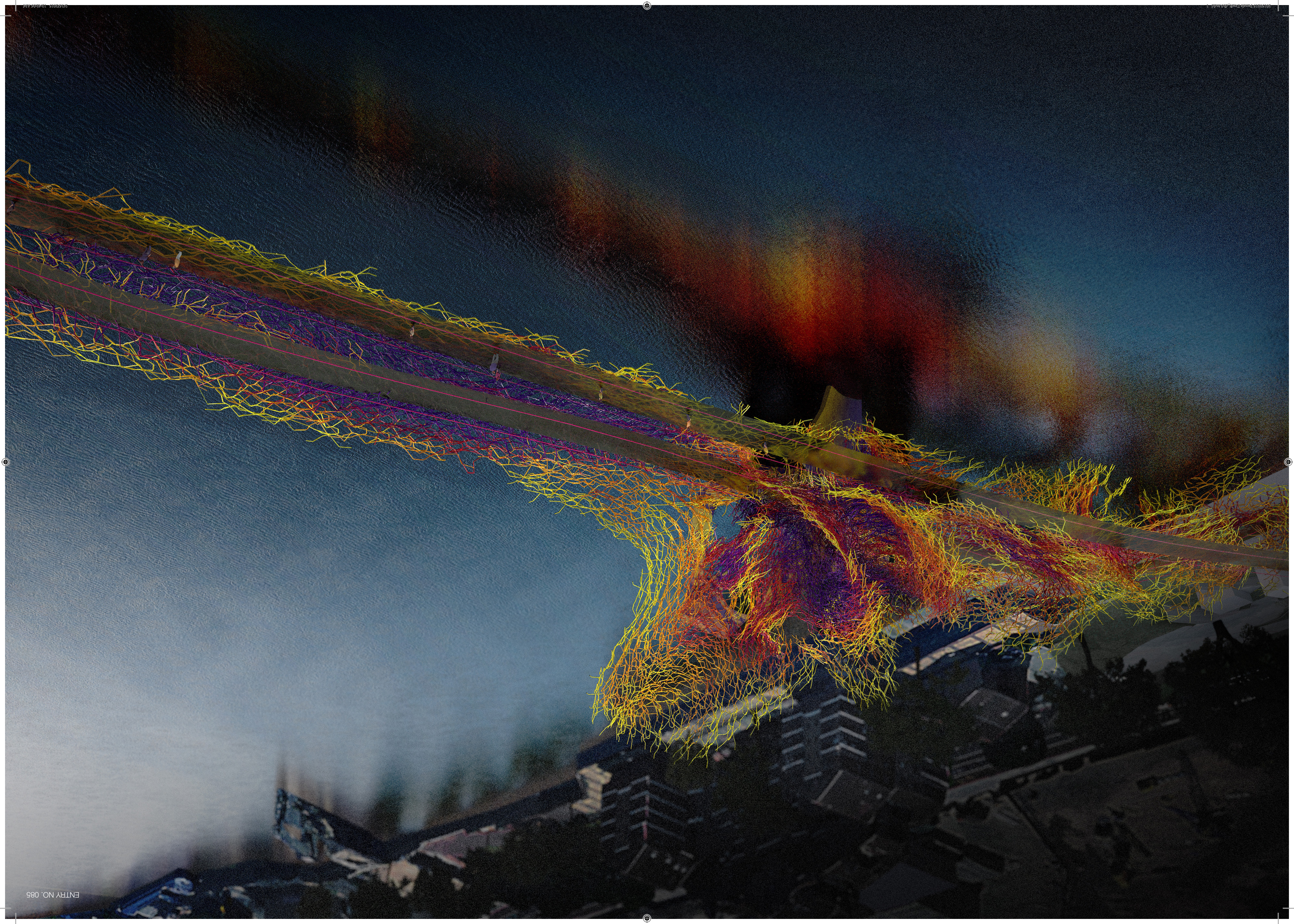


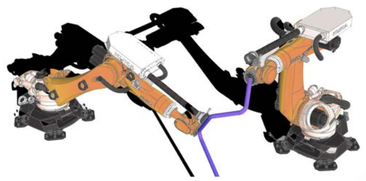
ENTRY NO. 085

ENTRY NO. 085

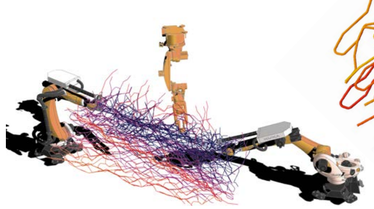
PEDESTRIAN DECK - PLACEMAKING

NORTH LANDING - PLACEMAKING

ROBOTIC FABRICATION PROTOTYPE



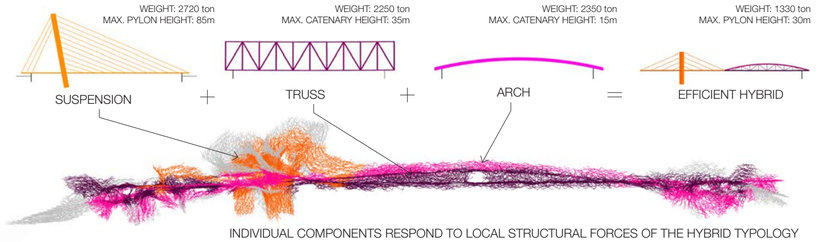
ROBOTIC BENDING



ROBOTIC ASSEMBLY + WELDING

TUBULAR STEEL
COMPONENT ASSEMBLY

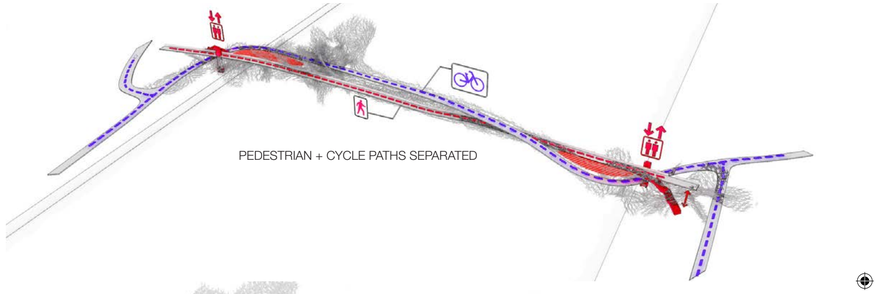
FABRICATION LOGIC



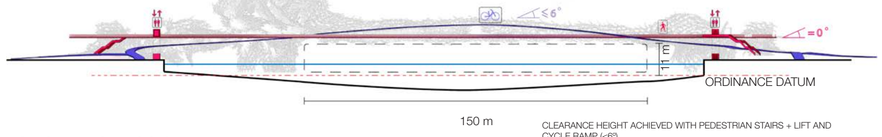
INDIVIDUAL COMPONENTS RESPOND TO LOCAL STRUCTURAL FORCES OF THE HYBRID TYPOLOGY

TENSION / COMPRESSION FORCES

STRUCTURAL LOGIC



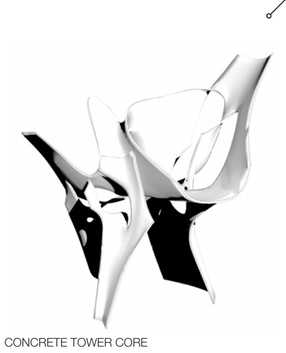
PEDESTRIAN + CYCLE PATHS SEPARATED



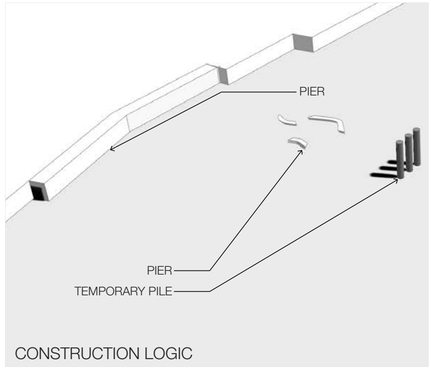
CLEARANCE HEIGHT ACHIEVED WITH PEDESTRIAN STAIRS + LIFT AND CYCLE RAMP (<6°)

CIRCULATION LOGIC

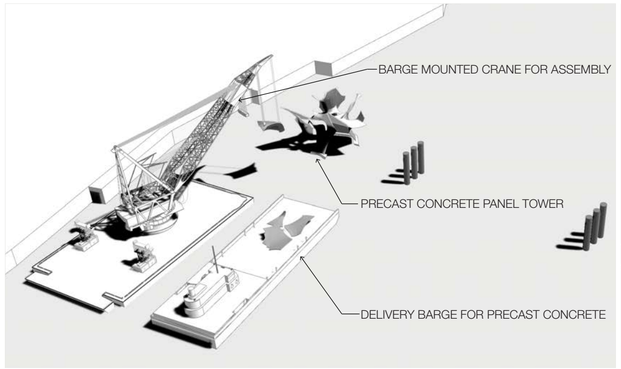
CONCRETE STEEL TRANSITION



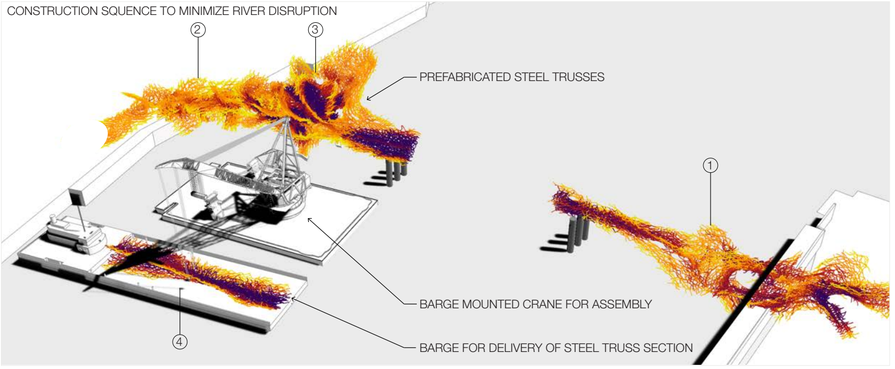
CONCRETE TOWER CORE



CONSTRUCTION LOGIC



CONSTRUCTION SQUENCE TO MINIMIZE RIVER DISRUPTION



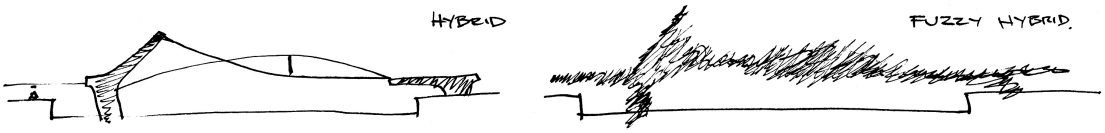
[ENTRY No: 085]

NINE ELMS TO PIMLICO BRIDGE COMPETITION

HYBRID CLOUD / PROJECT DESCRIPTION

The Hybrid Cloud bridge proposal creates an expressive landmark that challenges conventional interpretations of bridge design. It is a unique symbol for this emerging area of London. The bridge creates an experiential field of changing colour and intensity. The profile of the bridge shifts along its length as it wraps around pedestrians and cyclists to create a diversity of spaces and experiences while opening up to specific views of the river and city.

A new bridge type was developed for the project. Rather than applying a known model such an arch, truss or cable suspension bridge, a new hybrid was developed. This hybrid structure blends between an arch, truss and cable, creating an innovative structural model and opening up new possibilities for architectural expression. This hybrid has been calculated to operate significantly more efficiently than equivalent arch, truss or cable models.



This hybrid structure does not apply specific elements to structural roles (such as cable, mast etc), instead these various structural roles operate through a cloud of components – a fuzzy hybrid. This blurred condition masks the structural logic and instead focuses attention on the experience of this immersive space. The components each take on a specific configuration depending on what local structural role they are performing. Consequently the components are more linear and bundled when they are operating in tension and more compact and rigid when they are operating as part of a truss or space-frame.

The tower at the southern edge of the river creates both a visual icon for this emerging neighbourhood while providing the necessary height for the cable suspension portion of the hybrid model. The core of the tower is to be constructed of pre-cast concrete panels that blend into the steel structure through a blurred spray concrete connection.

Each component is fabricated from three steel pipes that form unique shapes. This cloud of components generates a lightweight lace-like network. In order to fabricate this cloud of components a robotic fabrication technique has been developed and tested in our laboratory to automate the bending, assembly and welding of the pipes - enabling this intricate assemblage to be fabricated cost-effectively. This fabrication technique ensures no waste material or off-cuts, and no formwork or temporary structure. Large truss-like assemblies of these steel components would be pre-fabricated and lifted into position by a barge-mounted crane.