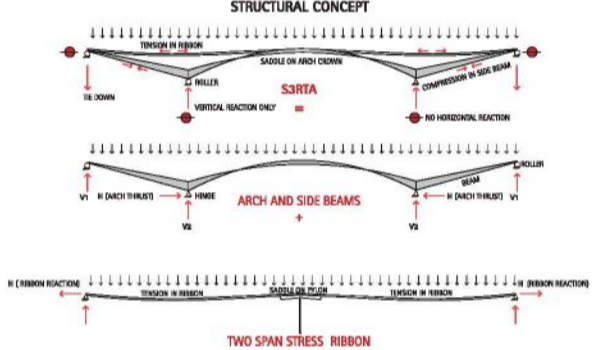
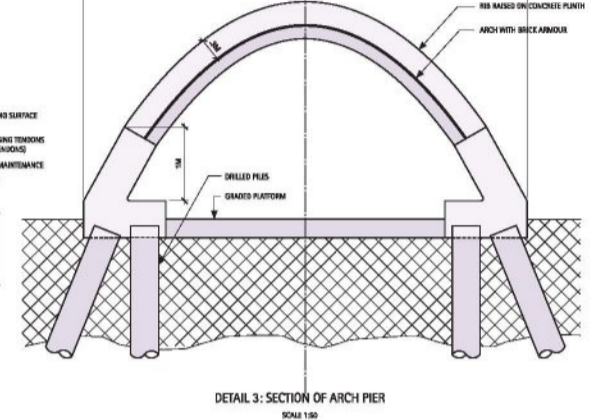
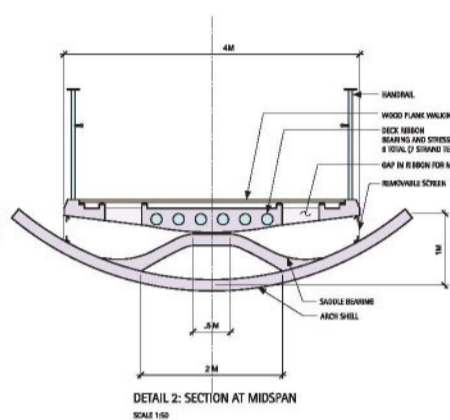
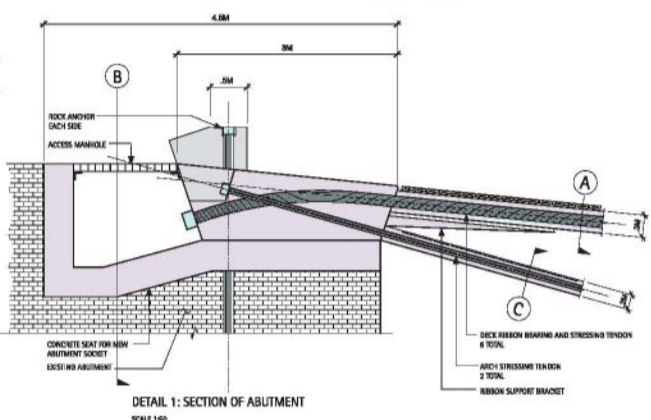
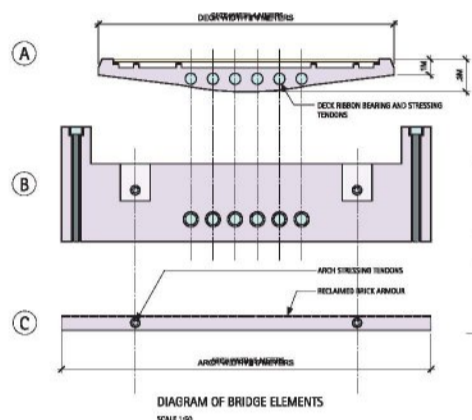
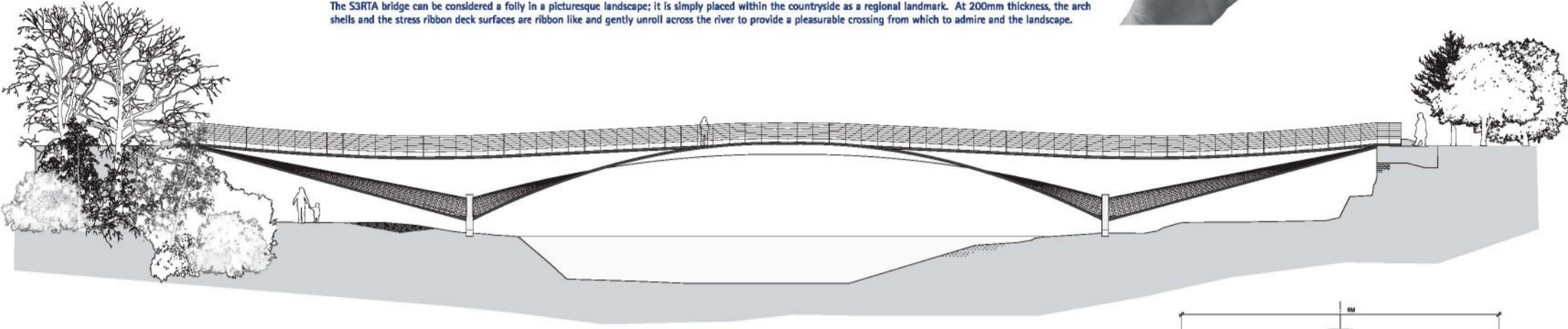


3S SIMPLY SUPPORTED STRESS

Our objective is to design a simple and beautiful footbridge based on a direct and pleasurable alignment to and a careful coordination of the River Douglas site constraints in order to provide an elegant crossing which is welcomed and sustained by the Lancashire and surrounding Greenway communities.

Our bridge pairs a stress ribbon foot deck with a post tensioned shell arch. The combination of these two structural elements allows us to achieve a simply supported bridge in a site where soft soil conditions would not otherwise permit an arch nor a stress ribbon bridge. This is because the tensile forces in the stress ribbon effectively tie the arch and therefore all horizontal forces are maintained within the hybrid structural system itself. Thus, our solution alleviates the necessity for extensive and costly foundations and geo technical stabilisation which would have to be integral to the bridge if either a stress ribbon or an arch bridge was employed independently.

The S3RTA bridge can be considered a folly in a picturesque landscape; it is simply placed within the countryside as a regional landmark. At 200mm thickness, the arch shells and the stress ribbon deck surfaces are ribbon like and gently unroll across the river to provide a pleasurable crossing from which to admire the landscape.



MATERIALS

Concrete
The primary components of the bridge are made entirely of precast concrete panels. These include the arch shell segments and the deck ribbon panels. Since the concrete work will be prefabricated and placed on the abutments and bearing tendons, costs will be kept to a minimum and extensive site work will be avoided.

Steel
The tendons are multi-strand, grip anchored and sheathed in HDPE covers to resist corrosion and allow for cable adjustment and replacement.

Brick
The application of a brick armour to the face of the precast concrete shells honours the masonry tradition construction in northern England. Reclaimed local brick is saw cut to 30mm thick tiles and cast into the top surface of the arch during fabrication. Over time, this textured surface will take on lichen, mosses and vines so that the surface of the bridge will only increase in character and enhance its natural placement in the bucolic setting.

Wood
The wood plank deck with a non slip surface treatment enhances the organic qualities of the bridge. Additionally, the 1.5 m tall parapet and the handrails will combine wood elements with a woven steel mesh to create a safety fence which does not compete visually with the slender deck.

