



Focus on Architecture

Salcey Treetop Walk, Northamptonshire

Back to nature

By Iqbal Johal

A spectacular walk on high towers through mature woodland has been created by Forestry Civil Engineering (FCE)*. It is suitable for all abilities and provides a unique experience for all ages. The structural concept incorporates new innovative techniques, (some based on new UK research) and uses sustainable materials, recycled steel and traceable timber, to provide an engineered environmental harmony.

The objective of this project was to create a free-to-use experience to enthuse the public, particularly children, about trees and forests and at the same time take advantage of new government funding aimed at improving the nation's health. The designers used Mechanical Stress Lamination within the project, to demonstrate an innovative way of making large structures from small timbers by building an arch bridge and the first Stress Laminated Timber (SLT) roof in the UK.

The walkways and platforms were made from local timber, however to ensure minimum maintenance and maximum strength, the main towers and spans were all built from galvanised steel.

This provided stability with slender members which reflected the scale of the surrounding trees.

The walkway starts at ground level and rises to 15m above the ground via a number of 24m span bridges at a 1 in 12 slope.

These spans are made from off-the-shelf aerial galvanised mast towers to form bridge beams (a structure patented by the designer). This span structure has a fundamental natural frequency of 2.8Hz which provides an eventful shaky walk loved by children.

The top tower has a platform at 20m which is accessed by an external stair. This adds to the fear factor!

A minimum number of trees were felled during construction so that the completed

experience is walking up and under the trees and eventually out through the canopy. The towers were made triangular so that every span exited the tower in a different direction so that each span was a unique walking experience with trees at both ends.

Adjacent spans are all set out at an angle to each tower to ensure overall stability of the walkway, with the individual spans deliberately designed to give a lively dynamic response for the enjoyment of users. This also helped the stability of the overall structure.

The slatted deck and handrails are made from treated but unpainted local timber, which should require a minimum of maintenance since they do not retain any standing water and are exposed so that rain will dry off rapidly.

The manufacturer of the patented aerial mast system became the fabricator of the main towers. A good fit at high-level demonstrated the need for accurate setting out, accurate fabrication and good design to ensure that the use of tolerances could be maximised.

Well-fabricated galvanized steel proved to be an excellent product choice for the project as it allowed the design team to keep to an increasingly tight construction deadline.

The walkway has a spectacular entrance over the Elephant bridge – so named because it curves around and over a pond built during the 2nd World War for zoo elephants borrowed to haul timber as part of the war effort.

The bridge has a 30m clear span and is hung from 20mm diameter ropes all suspended from one mast. The bridge structure was built in galvanised steel and was designed and constructed in two months.

This innovative structure has become a local attraction and is available to the public, free of charge, 365 days a year.

*This project would not have been possible without the commitment and determination of Dr Freedman of FCE.

Photos: Dr. Geoff Freedman, Forestry Civil Engineering

