

RATIONAL GEOMETRICAL PARAMETERS OF CABLE TRUSS FOR SUSPENSION BRIDGE

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Suspended cable structures are characterized by reduced dead weight and increased span due to efficient geometrical shape, when all elements are tensioned and can't lose their stability. But the initial shape change under the action of non uniform load is the problem of suspended cable structures. Increasing of structural weight is probable way to fix a problem. But using of this method suppress usage of modern materials with increased specific strength in civil and bridge engineering.

Prestressed cable truss usage is another way how the problem of shape change under the action of non uniform load can be fixed.

The cable truss with cambered top and bottom chords was offered instead of single cable for prestressed suspension bridge. The rational geometrical parameters of cable truss shape and web were found. The structure was checked under the different types of loading.

It was shown, that usage of cable truss (Fig.1) as the main load-bearing structures of suspension bridge allows reducing the vertical displacements up to 32% in comparison with the single cable in case when the traffic load is applied to the half of suspension bridge span and the relation of traffic load and permanent load is equal to 1.4. In the case of uniformly distributed load single cable is preferable.

The results were checked on the physical model of cable truss for suspension bridge.

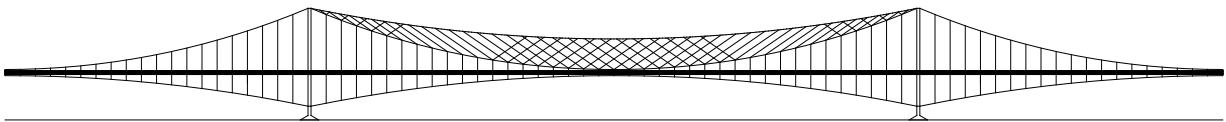


Figure 1. Rational Structure of Cable Truss for Suspension Bridge