

CABLE TRUSS ANALYSES FOR SUSPENSION BRIDGE

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One of the main problems of suspended cable structures is initial shape change under the action of non uniform load. The problem can be solved by increasing of weight of construction or by using of prestressing. But this methods cause increasing of materials consumption and make difficult usage of modern materials with increased specific strength.

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

The cable trusses with the vertical and inclined suspensions, cross web and single cable were analyzed as the main load-bearing structures of suspension bridge. The suspension bridge was checked under the action of a different variants of non uniform loading in longitudinal and transversal directions.

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 rational position of load bearing elements in transversal direction also was found.

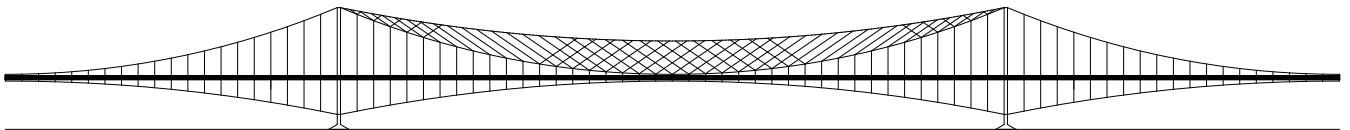


Figure 1. Rational Structure of Cable Truss for Suspension Bridge