

Calculation of the complex cable-rod structure on the basis of discrete conception and modified method of approximation by parabola

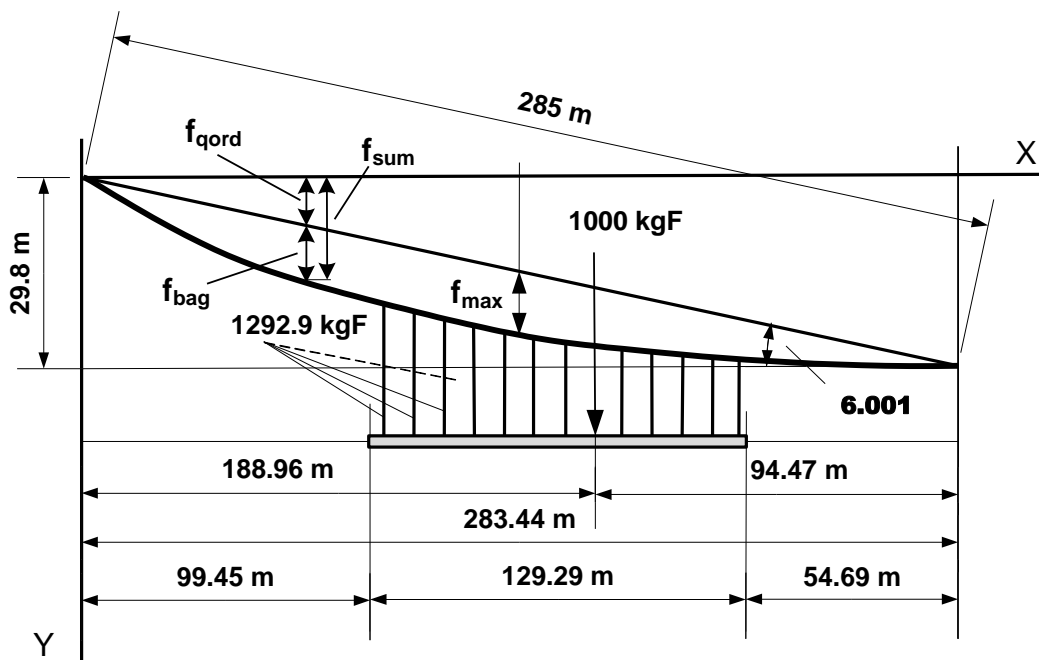
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The engineering method of calculation of the arbitrarily loaded hung cable, based on the analogy with the bending moments of correspondingly loaded beam and on the cable geometry, has constraints [1] pre-conditioned mainly by the approximation error of loading of the cable. Besides, in practice, it is customary to calculate the hung cable by means of solving a cubic equation. By that the desired state is determined on the basis of the given other well-known state [2].

On the basis of the so-called approximation by parabola method the iteration method suggested in the present lecture directly (i.e. without considering of two states) enables to calculate with an increased accuracy the state of the arbitrarily loaded hung cable taking into account elastic and temperature extensions. The reliability of this iteration method has been checked by means of comparison with results obtained on the basis of computer realization of the method of discrete presentation of the cable and the corresponding algorithm [3] and also with the results obtained by means of computational program complex "Lira".

The checking calculations have been carried out on the specific example of the guy pipe-line crossing. See data on the figure.



References

1. Berkman M.B., Bovski G.N., Kuibida G.G., Leontief Iu.S. Cable ways. Moscow, Mashinostroenie, 1984
2. Dukelskii A.I. Cable ways and cable cranes. Moscow, Mashinostroenie, 1966
3. Pataraiia David The calculation of rope-rod structures of ropeways on the basis of the new approach, WORLD CONGRESS of O.I.T.A.F., RIO DE JANEIRO, BRAZIL, October, 2011, 24 – 27, PAPERS OF THE CONGRESS; <http://www.mining.org.ge/develop/pataraiia-dmr/index.html>