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ANALYSIS OF PARTLY STIFFENED SUSPENSION BRIDGES TYPE - 2F

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An opinion was expressed in the annual session of Punjab Engineering Congress 1922 that bridges must either be stiffened in the orthodox way or left unstiffened altogether. The author disagreed with this view and showed how stiffness of most of the bridges in the Punjab Hills depended on the rigidity of their floors. This paper attempts to give a solution of the general case where the moment of inertia of the stiffening system may vary from zero to infinity.

The method used in this paper is not new. According to the author of the "Framed Structures" the bending moment is not proportinal to the load and the use of influence lines is, therefore, inadmissible. This objection is not practical. The bridge designers are relying more and more on influence lines. The author has restricted himself to the methods of drawing these. The special case of small Moment of Inertia or what is sometimes referred to as the stiffened floor has also been dealt with. No attempt has been made to treat the general case of continuous girder and suspended side spans. The practical example taken up in the paper is of a bridge with free ends at the towers and straight back stays.

The basic assumptions are : (i) the moment of inertia is uniform for all parts of the span, (ii) there is no bending moment and (iii) no end reactions are produced under dead load. Mean temperature has been assumed for the analysis. Thrust computation is based on the assumption that deflection is negligible which is same as assuming a