ducted, the estimated cost stands at $3,066,400 for a single track bridge, leaving it, however, still the most expensive structure on the list.

VI. The plans submitted by E. W. Serrell & Son provide for a suspension bridge, the cables of which are composed of wrought-iron links, which, together with a system of diagonal stays, sustain a stiffening girder, as shown on plate VI.

We are unable to agree that this design fulfils the requirements of the specifications, which require that the structure should be so designed as to provide for the maximum strains which can by any possibility come upon any part of the bridge.

The designers assume that all the dead weight of the structure in the long spans will be carried by the chain, which is so far right; but they also assume that, in that portion over which both systems extend, all the live load will be carried by the stays as far as they go, and that the chain will carry the remainder—i.e., that portion of the live load which comes between the ends of the stay-rod systems. There is no proof satisfactory to the entire Board of the correctness of this assumption.

Of course, in planning a compound structure in which several systems are expected to carry the load, as in the case of a chain and diagonal stays, or that of an arch and truss, it is natural to assume that the load will be divided in some ratio between them, but in such cases it is absolutely necessary for safety that each should be made strong enough to bear all the load which can by any possibility come upon them; and, as in the case under consideration, both the dead and the live loads are mainly concentrated on the same floor, it is probable that strains resulting from both will follow the same law of stability and take the shortest available road to the top of the towers, as governed by the location of the loads and the adjustment of the bridge.

The calculations of strains from the effect of the live load carried by the cable between the ends of the stay-rod systems and those due to the wind strains for the towers of the river spans leave much to be desired.

The stiffening trusses, as designed, are only 12½ feet in depth. This is thought by some of us to be too shallow, and