inch. For this load, with the maximum attainable speed of about 15 miles an hour, the impact increment in trusses of bridges with clean concrete floors and smooth timber floors for reasonably hard solid rubber tires, is below 25%.

As impact is important as a factor in design, only when the total unit stresses approach design values, and as the results show that impact decreases as unit stresses increase, 25% is apparently the maximum impact for which it is necessary to provide even for short spans under normal unit stresses. A higher impact due to obstructions, which might be suggested by the data in table 1 might be recognized as possible and be provided for by an increased unit stress.

Existing data are too meagre to establish a relation between impact and span length. The established reduction in impact for increased spans for railroad bridges may be the best guide for reductions for highway bridges and perhaps an adequate one for practical purposes.

Culverts

A series of experiments conducted by the Engineering Experiment Station of Iowa State College[1] reported in bulletin 79 of that organization, indicate a very wide range of impact factors on highway culverts under shallow depths of cover. These factors vary from zero in the case of smooth roadway surfaces to several hundred percent of the static load effect for various obstructions in the path of a truck wheel. The impact factor when considered as a percentage of the static load effect on the culvert, does not vary appreciably with the depth of cover. However, the static load effect decreases quite rapidly as the depth of cover increases so that for the greater depths, the increase in effect on the culvert due to impact is quite small in relation to the actual wheel weights.

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[1] Co-operative work with the U. S. Bureau of Public Roads.