

Apart altogether from the consideration of road surfacing is the damaging effect of heavy loads on the numerous wooden bridges on which we must rely for many years to come. The overloading which obtains on so many timber truss bridges gives cause for grave concern. Sealed road surfaces which fail and break up can be converted back to gravel, and with some "feeding in" of metal, combined with grading, can be kept open to traffic, but if bridges are loaded to failure, vital communications will be completely broken, with disastrous results to the community.

The Board has been criticized for not controlling the loading of the highways, and it is therefore necessary, in defence against such criticism, to make it quite plain that, except for sub-standard bridges, the Board has no more than a nominal say in the classification of highways and, of greater importance, has no say at all in the enforcement of heavy traffic regulations.

Until highways can be sufficiently strengthened, all steps should be taken to ensure that the existing pavements are not destroyed by loadings beyond the capacity of the pavement. Not only will this call for energetic enforcement, but also penalties for overloading will have to be greatly increased if the fines are to act as any deterrent. At present the financial return from hauling one overload will frequently more than pay the fines which are inflicted by the Courts.

In view of the increasing numbers of large vehicles, in addition to the classification of roads as to their capacity to carry heavy loads, it would seem that our highways should also be classified as to the length of vehicle which should be permitted to traverse them. There is a tendency to operate the same length of truck or bus in the difficult as in the easy topographical areas. A long vehicle on a wide road of good alignment is of no particular concern, but if the same vehicle operates on our many narrow tortuous roads not only does the road suffer undue verge damage, but also such a vehicle is a menace and a danger to other road-users.

It would also be desirable to limit the width of vehicles on the narrower roads and highways, but the 8-ft.-wide truck and bus have now become too firmly established to permit of any width limitations without causing considerable economic loss to operators.

The Board has a full appreciation of the vital importance of road transport to the economy of New Zealand, and consequently, in so far as it is physically and financially possible, the Board is anxious to provide roads which will allow of the cheapest transport, and in this connection it is necessary to bear in mind that the cost of road transport is the cost of vehicle operation or direct haulage costs, *plus* the cost of roading. Only by the recognition of the pertinent facts and by the good will and co-operation of all interested parties will it be possible to build and maintain our roading system so that over-all transport costs will be a minimum.

HIGHWAY ENGINEERING AND DESIGN

The steep increase in the gross weight of goods vehicles operating on the highways during the past two or three years has made it quite plain that a more careful selection of mineral binders for the metal or gravel courses will have to obtain in the future if the sealed highways are to withstand the heavy traffic of to-day.

In the pre-war years it was the policy throughout the newer countries of the world to build what was called "low-cost" roading with light sealed surfaces, in preference to expending all the roading funds on short lengths of expensive pavements. To obtain the greatest length of dustless surfacing, ordinary pit gravels with or without added clay as a binder were used extensively to form the metal crust of base and top course. Fairly plastic clays were often accepted as the binder so that the water-worn and rounded gravel was strongly bound together. Such metal crusts when sealed provided very