

a hundred millions of dollars, representing public interest and as of paramount importance, where a benefit or an injury to a part is a benefit or an injury to the whole.

The 3% Highway Grade

The city is well within right and fairness in claiming reservation for itself of a 3% grade as against the 1% prevailing on the railway. The 3% grade adopted for this system of roads was arrived at by first determining the objective points and their relative elevations. This means by finding a central common controlling point of highest city elevation and joining it in the most direct and continuous manner with the lowest central controlling common point of mountain tableland elevation.

Climatic Conditions

The climatic conditions of generally mild winters, little snow, occasional rain and intermittent freezing result in frequent periods of glare ice on the mountain grades.

I have observed the general difficulty, often impossibility, and the ever-constant danger of negotiating the existing mountain grades—even motor chains unable to grip—and there is a chapter of fatal accidents to their discredit.

Surface Paving

Steep grades as now existing preclude satisfactory paving and efficiency in maintenance. Observation of traffic on John St. in the vicinity of the Arkledun turn, in bad or frosty weather is convincing proof of the futility of smooth permanent pavement on such heavy grades.

Observation of the lack of pavement under similar conditions, say, the Jolley Cut, shows that rain and drainage scour the unprotected surface and materially heighten its resistance to traffic.

Three per cent. grades would allow of permanent pavement to the minimum of inconvenience and danger and maintenance, to the maximum of comfort, safety and tractive efficiency.

Importance of Motor Traffic

The advent of mechanical transport has brought the problem of highway haulage under the same principles for economy and efficiency as heretofore prevailed for railways and upon which railway grade reductions are figured and justified.

The "Good Roads" efficiency for mechanical transport is the beginning of what might be termed the democratization of transportation—independence for the individual.

Whoever owns a boat may place it upon water with the freedom of the seas, and compete in the markets of the world. Whosoever owns a motor truck may, in the near future, place it upon a national highway and compete freely for the traffic of the country. This already obtains between Toronto and Hamilton as the index of coming expansion, and is welcome warning to the community that it carefully nurse the efficiency of its public highways.

There are said to be 5,000 locomotives in Canada, also 250,000 automobiles (including motor trucks). If the number of locomotives be multiplied by 300, it would represent 1,500,000 h.p. hauling all the passenger trains and freight of Canada. If the autos and motor trucks be averaged at 20 h.p., it would represent 5,000,000 h.p. on our highways.

Trailers in the Future

Now, whilst this illustration is given with the candid admission that auto power to date is largely light traffic, yet it points to the growing power on our highways and to the future doubling, trebling, quadrupling, within measurable grasp, of motor traction and the economic advantage of its use with trailers.

Whilst disclaiming any inherent virtue in any particular grade, except in its relation to the economics of any particular case, on its merits, the fact stands out that the future of highway transportation enjoins upon cities the responsibility of determining at least the best ruling grades that its circumstances afford, and justifies communities in claiming that such be absolutely respected in any intersection with any railway or other transportation device.

Reverting to Hamilton: A good five-ton motor truck will barely haul itself and load up the "Jolley Cut." The same motor truck would haul itself and load and three trailers up the proposed mountain grades, in all 15 to 20 tons, according to surface conditions.

If the building up of the Mountain Top as a suburb be considered, this means cutting to a third, or better, the cost of delivering up there all bulk materials, brick, sand, lumber, coal, etc. This means cheaper "housing" and keeping down the capitalization of the "home."

These 3% grades also mean that degree of efficiency in the radiation of Hamilton's highways to all the country between it and Lake Erie; increasing the quantity and lessening the cost of produce receivable, lessening the cost of long haulage and expediting the city's industrial production.

Town Planning and Arterial Highways

The synthesis of organic town planning is, first, solution of the railway problem; secondly, determine arterial highways; thirdly, zoning, that planning may be to purpose.

Regarding the great provincial arterial highways and their subsidiary collection and distribution of the traffic they carry, it may be well to note that the motor world is coming to accept the 5-ton truck as the standard haulage unit.

This truck can be unwisely overloaded to 7 tons; it can be made advantageously to haul 4 trailers on level roads, an aggregation of 25 tons. Individual or special trucks or trailers will be loaded with boilers, machinery, and other items exceeding 10 tons.

It is manifest that a city cannot provide all its pavements for the indiscriminate admission of such loads, and must determine certain routes throughout its mesh of streets for heavy haulage with special foundation and maintenance for same, or risk having all its pavements in a generally crushed and disintegrated state.

Anticipating such routing (a further argument for zoning), I have endeavored to provide a level road across the base of the park, south of the present Toronto, Hamilton & Buffalo trackage, as a collecting channel for the main north and south heavy arteries, which are about half a mile apart—Kenilworth, Ottawa, Gage, Sherman, Sanford, Wentworth, Victoria, Wellington, and the principal streets between this latter to and including James, in the present report. These arteries will no doubt in time come to be dedicated for heavy traffic bearing and be provided with deep concrete bases.

May Expropriate Railway's Land

A peculiar situation arises in connection with the mountain base road referred to, being that not only would an extension of Kinnear Yards, as previously attempted, prevent the carrying out of this provision, but that the further use of the adjacent property by the Toronto, Hamilton & Buffalo Railway Co., and now owned by them, would also prevent proper access to the whole Mountain Road system for nearly a mile and a half between Ottawa and Sanford Aves.

It may be that this land outside of the right-of-way which may be taken by franchise is still but railway real estate, and, failing its having been authorized by the Dominion Railway Board as "extra land," can be taken by the city under the ordinary provisions of Municipal Act for highway and for park purposes. In any case, the matter should be submitted to the Dominion Board for discussion and authorization of the road system as road diversions, and for protection of necessary supporting physical conditions for accomplishing same.

Park Development

The topography of the Mountain Park is such that its natural treatment will be one of terraces. The road system proposed for economic purposes so happens to be admirably adapted to further this particular style, for which the park contains many magnificent opportunities.

The street railway tracks on the two main grades from James and from Kenilworth Streets should, where within the park, be at the curbs, in order that passengers may enter and leave anywhere without slowing or interrupting the passing motor traffic.