

ROAD DEVELOPMENT IN TRANSVAAL.

(Continued).

conditions prevailing, and that these conditions are harmful to the roads.

Organization.

The superintendent of roads and local works is the senior technical officer of this division of the provincial administration, headquarters being in Pretoria. There are an assistant superintendent and two chief inspectors of roads attached to headquarters staff for road purposes, the chief inspectors having general supervision over defined areas.

The outside or district inspectorate consists of fifteen permanent officials, assisted by sub-inspectors when and where circumstances justify extra supervision charges. These inspectors are supplied with motor cars for travelling purposes.

With a view to keeping in close touch with local requirements, there are advisory boards in each magisterial area. These boards are comprised of the magistrate as chairman, with three or more local inhabitants nominated by the administrator. There are twenty-four such boards.

System.

The system in force to-day is departmental gangs, consisting of natives under white supervisors (gangers) on all works of a scattered nature. In most cases where the work is of sufficient magnitude to justify calling for tenders, and is of such a nature as can be specified in detail and paid for at schedule rates, the job is put to public tender. Only in cases of emergency are inspectors authorized to let informal contracts, and then not for sums exceeding \$250 for any one job.

Laws.

The Roads Ordinance of 1912 embraces all legislation governing rural roads in the province.

Apart from the inspection of certain sections of roads within municipal limits, with a view to the payment of a small annual subsidy which is voted towards the upkeep, the roads division of the provincial administration does not concern itself with urban road matters.

Under the Roads Ordinance all public roads within the province (beyond municipal limits) are vested in and remain under the control and charge of the administrator.

These roads are classified as follows:—

- (a) Main roads, width 100 Cape ft.
- (b) Branch roads, width 50 Cape ft.
- (c) Bridle paths, width 15 Cape ft.

Bridges form portions of the road for the purpose of the ordinance.

The administrator has power to reduce these widths when he is satisfied it is necessary to do so.

The ordinance prohibits the use of traction engines or other heavy mechanically-propelled vehicle, or any wagon or vehicle weighing more than 8,000 lbs. (gross), unless permission has first been obtained from the administrator to exceed these limits. This is a necessary provision in view of the fact that, though all the bridges erected subsequent to the British occupation are designed for heavy loading, there are many of the earlier structures that would not carry such loads.

General Considerations.

There are at present 18,000 miles of recognized public roads in the province (outside municipal limits). These roads or tracks are essential for daily public use, and the mileage increases as the country becomes more populated. Of this length of road (or track) some 400 miles have been hardened, mostly with gravel surface, the balance being kept passable as far as funds will permit.

It has been necessary to "cut down" in order to keep the track surface passable, this policy having been unavoidable owing to lack of funds. It has been an old practice and a

very pernicious one. The result is that quite 40 per cent of the roads to-day are below surface level and cannot be drained. Imagine what this means during our wet season.

The time having arrived when definite steps to build up our roads system are essential, it is a matter for consideration as to what course this building up should take. Care must be taken not to exceed the economical limits of the capacity of the community to pay, both for construction and maintenance, and the immediate needs of the country must be met.

The volume of weight of traffic to be dealt with is not great. The movement of stock along main roads is not a serious factor as is the case in many farming countries, but climatic conditions are unfavorable.

The general contour of the country is favorable, and presents no difficulties in the matter of grading. There being comparatively few parts involving costly cut and fill work, practically all the money provided for new construction could at once be applied to surface improvements. Having in view the traffic to be served over an extensive area, and the amount of work to be done, the question arises as to how much the country can afford to spend on its roads.

It would be necessary to construct roads having a life coinciding approximately with the loan period if the work is carried out on borrowed money. To justify long period loans, high-class roads would be necessary. While such roads would undoubtedly afford an incentive to the use of mechanical haulage and thus open up isolated parts of the country, their cost would place a heavy burden on the taxpayer.

The writer is of opinion that while it is most desirable to have roads to suit modern transport, conditions in this country necessitate limiting high-class roads to areas where traffic is heavy enough to warrant their cost. In other areas present and future needs of the country can be met best in opening it up by means of gravel roads within a limited period and thereafter gradually improving the standard.

Costs.

Water-bound macadam roads are costing as much as \$16,500 per mile for an 18-ft. roadway including culverts.

The specification provides for 4-in. thickness of crushed stone (after consolidation) laid on natural formation. (It is seldom necessary to provide for stone foundations.)

A fair average for this class of road when material can be had within a mile or two of the work is:—

One mile of road as above, initial cost.....	\$16,500
Twenty years' maintenance (included once re-surfacing) @ \$1,000 per annum.....	20,000

Total	\$36,500
Average cost per year, \$1,825.	

The above is an estimate only in so far as upkeep is concerned, being based on observations over periods from six to fourteen years.

There are many miles of gravel road in the province which can be maintained to original standard for \$320 per mile per annum. On the other hand there are similar roads quite incapable of carrying the traffic, and should be replaced by a better class.

Such a road extends a distance of some 60 miles.

Traversing municipal areas from end to end this road carries more traffic than any other road in the province, if not in the Union.

Owing to the nature of the subsoil, it has not been found necessary to lay heavy foundations throughout. Increased traffic has, however, necessitated the strengthening of the road, and 4 miles have recently been reconstructed by prison labor.

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