

## A brief history of transport infrastructure in South Africa up to the end of the 20<sup>th</sup> century

# Chapter 8: The development of a national road system during the second half of the 20<sup>th</sup> century

### SLOW PROGRESS AND SHORTAGE OF FUNDS

Chapter 3 of this series (*Civil Engineering*, April 2014, p 41) described the building, up to the start of the Second World War, of a foundation for a country-wide transportation network. In this eighth chapter, the development of a national arterial road system from the mid-20<sup>th</sup> century up to its end will be described. This development of a good road system following the “get out of the mud” rudimentary network of earlier years was necessary because of the increasing role road traffic was beginning to play in the economic and social life of the country.

Up until the mid-20<sup>th</sup> century expenditure on, and attention to, roads had lagged behind that of rail. By 1959 total investment in roads outside of towns had reached R750 million, whilst investment in railways and harbours had reached R1 224 million in rand values at the time. There was thus a tremendous backlog after the Second World War in rural or intercity roads – a problem facing the central government’s road authority, the National Roads Board (NRB).

However, in 1948 the Board was disbanded and its roads powers transferred to the National Transport Commission (NTC). Initially, the NTC resisted pressure for the original 1935 roads scheme to be extended, and concentrated on completing the NRB Programme of national roads. In order to respond in part to pressures for extensions, certain so-called “Special Roads” were constructed to serve areas not well served by rail freight facilities. For these roads the NTC bore 70% of the cost, with the remainder being met by the provincial road authority concerned.

By the end of March 1961, 25 years after the original five-year scheme for national roads had been started, some 94% of the network of the declared routes had been provided. The poor

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rate of progress during the war years, and friction between the Board and the provinces had played a significant role in the poor progress, as did the continual shortage of adequate funds to meet programmed progress in national road construction.

Up to 1971, the implementing agencies for the national road programme were the then four provinces which carried out the work in consultation with, and under the direction of, experienced inspecting road engineers of the NTC and its chief engineer, Mr P A de Villiers. This was not an arrangement which was very easy to manage or conducive to the interests of the development of the national road network. There were various reasons for the friction, including major disputes regarding route location – the different parties had different interests in this regard. An additional influence in the generation of friction was that, to a large extent, the senior engineers from the five authorities had been colleagues occupying senior military positions in engineering units during the war and they did not mince their words, having during the war been accustomed to decisive action, and not protracted negotiations. For example, the chief engineer of the NTC is reputed to have said of his regular visits to the Provincial Roads Engineer of the Cape Province that he went to Cape Town for “insultation, not consultation”.

In 1961, a new programme was drawn up incorporating, for then, modern road planning philosophy such as double carriageways, bypasses around towns and cities and, where justified, freeways. On 25 April 1961 the Minister announced an extension of the existing programme involving total estimated expenditure of R100 million (in 1960 rand values).

Once again, there was soon a shortage of funds to meet the national roads needs of the country. Revenue accruing to the National Road Fund was not sufficient for the national roads system to be rebuilt to the new standards before long stretches of the existing road surface started breaking up. This meant that it was essential for the Commission to pass on to the provinces its financial responsibility towards most of the then existing system of limited-access national highways which were not part of the new planning. But the provinces were loath to accept that burden and this placed the Commission in a dilemma. As long as the existing, or old network of declared national roads remained, the National Road Fund would be encumbered with the cost of maintaining a network of deteriorating roads that could not be reconstructed on the same alignment to the standard required by modern traffic at the time. Nor could the existing roads ever be abandoned, since virtually every section of national road was also serving local traffic, and under the legislation in force, the Commission was powerless to act without the concurrence of the provinces. Unless there were radical changes in government policy regarding the provision of roads and the powers of the provinces in this respect, the assets of the National Road Fund would very quickly be dissipated in rebuilding outmoded roads not conforming to a new national road network.

## CHANGES TO POLICY

The vehicle for these changes of policy on the provision of roads was the report of the Commission of Inquiry into the Coordination of Transport in South Africa. The Commission *inter alia* recommended that, after completion to black-top standard of the then accepted national and special roads programme, the National Road Fund should be used for the establishment of a new national road system for the Republic. Except for those sections

of the existing national road network planned or constructed as freeways, and which would form part of the new national system, all existing national and special roads were to be de-declared upon completion and provision was to be made to financially assist the provincial administrations with the future maintenance of all such de-declared national roads. Control in all its facets of national roads was in future to be vested in a central organisation.

The subsequent 1971 National Road Act (Act 54 of 1971), which came into operation on the first day of October 1971, assigned the exclusive responsibility for national road planning, construction and maintenance of the primary road network to the National Transport Commission, a body with the powers of an independent road authority, and without the previous reliance on the provinces. This new Act also enabled the Commission to build up its own road engineering capacity vested in the Chief Directorate of National Roads in the Department of Transport. Thus began two golden decades for the construction of new national roads in the country. The Chief Directorate of National Roads was later, in 1998, commercialised to become the South African National Roads Agency (SANRAL).

The eventual scheme of national roads on which the Commission anticipated spending some R1 250 million (in rand values of that time) for the ensuing ten-year period until 1982, was in hindsight ambitious, and financial problems were soon encountered. In less than three years, it became evident that there were no prospects of finding sufficient finances to complete the programme. Also, the outlook for road transport at that time was one of gloom as a result of the so-called fuel crisis and the restrictions intended to reduce fuel consumption; at the time the National Road Fund's income was based on a dedicated fuel levy on motor fuel consumption. In April 1974 the Commission abandoned the earlier programme in favour of a drastically revised three-year plan.

A fundamental reassessment of which routes should become national routes, as well as of appropriate standards, was thus made. It was acknowledged that the roads in this system might be of different standards according to the needs of the route. The national road network represented at the time only 5.4% of all roads and 20% of all paved rural roads in the Republic, although it carried 40% of all traffic.

## THE GOLDEN YEARS OF NEW ROAD BUILDING

This period was, notwithstanding financial restrictions, an exciting and productive period for road building in the country, especially the so-called golden years of new road building during the 1970s and 1980s. Despite the permanent shortage of funds, judicious planning, both financial and physical, as well as careful management, allowed the most essential road needs in the national system to be met. Projects such as the Durban and Johannesburg ring roads (which were equal to any in the world at the time), and full freeway bypasses of most major cities in the country, were developed.

During this period up to the 1990s attention was primarily focused on national roads in and around the major metropolitan areas of the country, particularly on the N3 route between Durban and Johannesburg, and the N1 between Cape Town and Johannesburg. This period also saw major road improvements on the N2 from Cape Town to Port Elizabeth along the Cape coast, as well as between the Umtamvuna River and Durban.

The Garden Route section of the N2 was, however, the setting for major confrontation between the NTC and environmental-

ists. Despite the heat generated in the debate, the roads engineers supported the preservation of our natural environment and many millions of rands were spent on maintaining as pristine an environment as possible on new roads under construction. Probably up to R100 million (in rand values of the time) additional expenditure was incurred, and more in-design changes to accommodate environmental concerns.

The period also saw the completion of the Johannesburg Ring Road, a major undertaking which was originally planned some 30 years earlier, as well as the completion during the late eighties of the 4 km long Du Toit's Kloof (now Huguenot) road tunnel at a cost in excess of R120 million. Substantial progress was also made on sections of the N4 route, and to an extent the N5, thus providing good road connectivity for the major regions in the country.

The period also saw the advent of developments such as:

- The growth of the contracting and consulting engineering industries
- The construction of ring roads and bypasses around cities and larger towns
- Modern standards being adopted for roads, and the advent of freeways
- The development of concrete roads, asphalt-treated bases and asphaltic-wearing courses of varying kinds
- The concessioning of certain national roads to the private sector
- The introduction of toll roads to supplement the demands on the National Road Fund, enabling many strategic road projects

to be built, which would otherwise not have been built from taxation revenue

- Environmental protection awareness amongst road engineers
- Statistical quality assurance of road construction
- Soil engineering mapping being applied to road design
- Strategic financial planning for roads
- Development of the road network management concept.

The period between 1990 and the turn of the century was again a period of growing demands, with still declining funds – the dedicated National Road's income had been discontinued by the Treasury and replaced by annual appropriations which never met needs. Whilst it was necessary to properly maintain the existing primary road network, a vast growth in demand, in excess of 4% per annum, stimulated the need for improvements in the road network and for new roads, particularly in the burgeoning metropolitan areas.

In the environment of rapid socio-economic development and increasing difficulty in financing construction and maintenance, it was realised that sound financial planning, integrated with realistic physical planning, was essential, and it was necessary to redirect the financial planning process to one based on supply (rather than demand-led), which would be properly integrated and coordinated to make optimum use of the limited resources.

Recognising the necessity to provide leadership in strategic planning for roads, engineers in the National Roads Division had for some years been conducting fundamental research into the

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enhancing the quality of life

financing of roads in South Africa.

This began in the early 1980s with a broad overview of the salient issues in this field, such as:

- Should road provision be financed by the price or the tax route?
- What are the country's real road needs?
- What sources should be used to acquire the necessary road funds?
- How should available funds be best allocated?

A road-needs study for the entire rural road network of South Africa indicated a vast backlog of billions of rands in road funding, as well as the need to substantially increase annual expenditure on roads. Also, an investigation was carried out into the desirability of the introduction of toll roads into South Africa to assist with the financing of national roads.

### THE INTRODUCTION OF TOLL ROADS

Following the report of a Select Committee of Parliament into the matter, toll roads were introduced in the South African national road network. The first toll road pilot project opened in 1983 on the Garden Route section of the N2 – the Tsitsikamma Toll Road. This endeavour was successful and during the ensuing 20 years has led to major developments in this field. From a system of originally exclusive and successful state-run toll roads, through a period of attempted privatisation of certain sections on the N3 and N1 by the companies Tolcon and Tollway (which was prevented by political machinations within

the Tricameral Parliamentary system of the time), to the start of private toll road concessions in the early 1990s, toll roads have played a significant role in the development of the national road system.

During the same period, Tolcon and Tollway (then successfully accepted as toll road concessionaires) incurred major road building expenditure on the Warden to Villiers section of the N3, and the Springs to Krugersdorp road respectively. The N1, as a freeway, was also completed between Pretoria and Warmbaths, involving interesting and innovative construction techniques to counter the heaving clay phenomenon.

In 1982 at the request of the NTC, a transport policy study commenced. One of the recommendations of the study, which was accepted by government, was that the roads function of the NTC be assigned to a new Roads Board broadly representative of all sectors in the roads industry. The new South African Roads Board was thus created in 1988.

### AN ERA OF NEW STRATEGIES

The era of the nineties saw a revised philosophy in the provision of primary roads in the country. Whereas previously the accent was on handling the traffic demand between the main centres of the country, and the links to neighbouring states, under the influence of national transport policy studies in the eighties and nineties, a new strategy emerged. This new strategy was directed towards the promotion of the development of export-related freight movements both locally and internationally, and

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also towards improving mobility in metropolitan areas. The necessity for efficient and safe linkages between the main towns and cities of the country did not diminish, but merely assumed a lesser priority.

Further features of this era were the involvement of central government in low-volume road provision and the development of emerging contractors. This latter endeavour is promoted through the requirement that a percentage of the work of all large construction and maintenance projects be entrusted to small emerging contractors.

## A COMMERCIALISATION APPROACH

The commercialisation approach towards the provision of primary roads had also seen the growth of road provision concessions to the private sector. Whereas the original Tolcon and Tollway concessions were primarily intended for a very limited period, because of the inability until 1996 to obtain enabling legislation, the new approach embraced long-term (20 years or more) concessions for the financing, construction and operation of sections of national roads.

The first such project (with a less stringent risk profile for the concessionaire than the next three concessions) was for the section of the N1 route between the then towns of Warmbaths and Pietersburg (now Bela-Bela and Polokwane respectively). A further three concessions were awarded during the 1990s as follows:

- An eastward road linking the primary industrial area in South Africa (Johannesburg) with the port of Maputo in Mozambique, which formed the cornerstone of the Maputo Development Corridor;
- A westward road linking the same industrial area with, eventually, the port of Walvis Bay in Namibia and traversing Botswana and Namibia (although the portion through Botswana and Namibia does not form part of the concession for the so-called Platinum Toll Road); and
- A road linking Johannesburg, South Africa's industrial heartland, with its major port, Durban, 650 km southeast of Johannesburg. This national route (N3) is by far South Africa's primary motor vehicle and freight corridor and probably carries in excess of 60% of rural freight tonnage conveyed in South Africa (excluding bulk iron ore and coal movements).

In 1998 the National Roads Agency, formed out of the Chief Directorate, National Roads, in the Department of Transport, was created as an implementing agency for national roads answerable to the Minister and Department of Transport. Starting off with some 7 000 km of national roads under its control it has expanded its network to some 20 000 km in extent – a very similar network to the national road network during the period of the fifties to the eighties, before a large part of the network was de-declared as national roads and taken over by the provincial authorities during the nineties. This network parallels to a large extent the 1971 network of the national and special roads, though, of course with considerably different standards. This probably reflects the fact that from being a developing network in the first part of the 20<sup>th</sup> century, the primary road network of South Africa, as we enter the 21<sup>st</sup> century, is now a mature one. Attention in the future will thus need to be devoted to ensuring, by whatever administrative arrangement, that the necessary capacity and structural upgrading keeps pace with

demand. It is unlikely that any significant new greenfields national road in a remote location will be built for the foreseeable future; such a possibility is left to future generations to consider and implement.

The national road network, at the start of the 21<sup>st</sup> century, remains a bright star in South Africa's transport infrastructure, and as described above, is the result of sound engineering by many hundreds, if not thousands of competent road engineers, from both the public and the private sectors during the preceding half century or so. □

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