

IMPROVING INFRASTRUCTURE TO PROMOTE THE SAFETY OF NON-MOTORISED ROAD USERS IN SOUTH AFRICA

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ABSTRACT

Pedestrians and cyclists are very vulnerable road users and accidents involving them usually result in fatalities or major injuries. Pedestrians, in particular, represented for many years a major part of road casualty statistics in South Africa. Although their percentage involvement in road accident fatalities has decreased from about 48 per cent to about 42 per cent of all road fatalities per annum in recent years, they still represent a significant component of road casualties in South Africa. Annually, more than 5 000 pedestrians are killed and another 30 000 injured, of which about 10 000 sustain serious injuries.

Many factors contribute to this sad and undesirable state of affairs. This includes the *human element* through the undisciplined behaviour of pedestrians and drivers, the lack of effective *traffic law enforcement*, an inadequate *road environment* which in many cases do not cater for the needs of non-motorised road users, especially in the previously disadvantaged areas where facilities to walk alongside or to cross roads are often lacking. The lack of co-ordination between *transport and land-use planning* also results in pedestrians and other non-motorised road users having to cross major roads and freeways at-grade with grave consequences. Although the human element plays a major role in the incidence of these casualties, *it is a proven fact that the lack of facilities for pedestrians and cyclists to cross roads or move alongside roads is contributing to these road casualties*. This is especially the case in the less developed urban areas as well as on rural roads with high traffic volumes.

Recently, a new set of guidelines, titled Pedestrian and Bicycle Facility Guidelines manual, was published by the National Department of Transport for the provision of safe pedestrian and cyclist facilities on South African roads. The purpose of this new manual was to evaluate, review and combine the existing Bicycle and Pedestrian Manuals into one, practical, user-friendly manual and to add new relevant, efficient and cost-effective standards and guidelines. The purpose of the paper is twofold. *Firstly*, it gives a brief overview of the facility guidelines contained in the new Pedestrian and Cyclist Facility Guidelines Manual, the appropriate design parameters to be used for pedestrian and cyclist facilities in South Africa and the methodologies to be used for pedestrian and cyclist network planning. *Secondly*, it illustrates how this manual could be used as a tool to support the implementation of government strategies and initiatives such as Moving South Africa (MSA), National Bicycle Programme, Integrated National Disability Strategy, Road to Safety Strategy 2001 – 2005, Integrated Development Planning (IDP), Integrated Sustainable Rural Development Strategy (ISRDS), Urban Renewal Programme (URP), and others.

1. IMPROVING INFRASTRUCTURE TO PROMOTE THE SAFETY OF NON-MOTORISED ROAD USERS IN SOUTH AFRICA

1.1 Introduction

Pedestrians and cyclists are very vulnerable road users and accidents involving them usually result in fatalities or major injuries. Pedestrians, in particular, represented for many years a major part of road casualty statistics in South Africa. Although their percentage involvement in road accident fatalities has decreased from about 48 per cent to about 42 per cent of all road fatalities per annum in recent years, they still represent a significant component of road casualties in South Africa. Annually, more than 5 000 pedestrians are killed and another 30 000 injured, of which about 10 000 sustain serious injuries.

Many factors contribute to this sad and undesirable state of affairs. The *human element* undoubtedly plays an important role, for example the undisciplined behaviour of pedestrians crossing the road at unsafe places; drinking and walking; jaywalking; and/or crossing red traffic signals. On the other hand, drivers are often equally guilty through speeding; drinking and driving; and committing other traffic offences, which endanger pedestrians and cyclists. This poor behaviour of road users is often worsened by the lack of effective *traffic law enforcement*. It is however also clear that the *road environment* often does not cater adequately for the needs of non-motorised road users. In many instances, particularly in previously disadvantaged areas, facilities for walking alongside or for crossing roads are often lacking. In addition, the lack of co-ordination between *transport and land-use planning* also results in pedestrians and other non-motorised road users having to cross major roads and freeways at-grade with grave consequences.

The lack of proper public transport facilities within disadvantaged communities due to poor road infrastructure, direct many pedestrians to major roads, even freeways, to utilise public transport. This leads to high potential conflict between pedestrians and motorised transport. Integrated Public Transport Plans (PTPs) need to consider this aspect.

The National Department of Transport (NDoT) has realized that the needs of non-motorised transport users need to be addressed. The NDoT has addressed this need by focusing on non-motorised transport at various levels and in partnership with other roads authorities. At strategic level, the NDoT has developed the Road to Safety Strategy 2001- 2005, which seeks to promote and ensure safety on the roads; and the Rural Transport Development Strategy, which intends to streamline rural transport with a strong focus on non-motorised transport systems. At programme level, the NDoT has developed programmes such as the Arrive Alive programme, the Shova-Kalula programme, the access roads development programme, and the national pedestrian business plan for hazardous locations.

Regulations can and should be used to mandate the planning and provision of pedestrian and bicycle infrastructure when roads are being developed. This will ensure that pedestrians and cyclists are provided with adequate facilities when roads are constructed. Such regulations will support the pedestrian and bicycle facility guidelines and ensure that they are used widely and streamlined into conventional transport planning. The Road Traffic Act, for example stipulates that cyclists should wear protective head gear when using a public road. More can be added about for instance where cyclists should ride in roads without cyclist facilities etc.

National government established and continues to promote the policy of integrated service delivery. This is currently being entrenched at the various levels of government through the framework of the Integrated Development Plans (IDPs). This paper will show how this principle can be applied through the implementation of the Pedestrian and Bicycle Facility Guidelines Manual.

2. OVERVIEW OF THE PEDESTRIAN AND BICYCLE FACILITY GUIDELINES MANUAL

2.1 Introduction

Prior to the year 2003, two manuals available reflected the current practice with regard to the planning and design of pedestrian and bicycle facilities in South Africa. These were the 1982 “Manual for the Planning and Design of Bicycle Facilities in Urban Areas” and the 1993 “Pedestrian Facility Guidelines: Manual to Plan, Design and Maintain Safe Pedestrian Facilities”. Some of the recommendations contained in both manuals however became outdated over time and were thus no longer compatible with the current needs and conditions in South Africa. A decision was made to revise and integrate these manuals in the interest of safety in the road environment.

The revision and integration of these two manuals incorporated the evaluation and updating of the current contents and the addition of new developments. The methodology followed was to conduct a gap analysis through a literature review and a consultative process, i.e. a review of international and local literature, a survey in the form of a questionnaire and a best practices review. In addition, a review of the various government policies and imperatives; legislation; and manuals and guidelines was done to determine their impact on the revision of the two manuals. This process culminated in the publishing of the new Pedestrian and Bicycle Facility Guidelines Manual.

2.2 Objectives of the Manual

The new Pedestrian and Bicycle Facility Guidelines Manual provides guidance on aspects such as the following:

- The type, location, and layout of pedestrian and cyclist facilities (across or alongside roads) to be provided under specific conditions.
- The safeguarding of pedestrians at different places such as public transport termini, pedestrian malls, construction sites and other pedestrian orientated areas.
- The process of planning pedestrian and bicycle facilities, including the identification of hazardous locations and the establishment of facility inventories.
- The accommodation of persons with special needs, such as the disabled, elderly and children in the street environment.

2.3 Composition of the Manual

The manual is divided into a number of main parts.

These are:

- Part A: Design controls important to the design of pedestrian and bicycle facilities. These controls include accommodating the needs of pedestrians and cyclists; safety concerns; and basic characteristics of pedestrians and cyclists.
- Part B: Pedestrian and bicycle crossings, either at mid-block locations or at road junctions. Pedestrians and cyclists are at their most vulnerable when crossing roads and streets, and attention must be given to improving the safety of such crossings.
- Part C: Pedestrian and bicycle ways, including sidewalks, walkways, bicycle lanes and bicycle roads are very important facilities that can improve road safety.
- Part D: Pedestrian and cyclist amenities and support facilities that can improve the experience of walking and cycling. Aspects such as road lighting and traffic calming are addressed.
- Part E: Pedestrian and bicycle places where priority is given to pedestrians and cyclists, while vehicular traffic is discouraged.
- Part F: The planning process and considerations aimed at ensuring the successful provision of pedestrian and bicycle facilities.
- Appendices in which information is given, including road traffic signs and markings used at pedestrian and cyclist facilities, as well as a bibliography of available information on pedestrian and bicycle facility planning and design.

3. PLANNING FOR SAFE NON-MOTORISED TRANSPORT NEEDS

South Africa's socio-political history is such that transport planning has traditionally not been integrated with land use and development planning. People stay far away from areas of economic and social activity and facilities for non-motorised transport are often not provided or adequate. In communities, there usually isn't adequate space provided for non-motorised transport facilities on the road reserve. This often results in competition for transport space, safety is compromised, and the risk of accidents increases. The Rural Transport Development Strategy seeks to promote the integration of transport and land use and it also calls for the streamlining of non-motorised transport systems in transport planning. Elevating the profile of non-motorised transport from only a service to a system will ensure that adequate provision is made during planning for non-motorised transport infrastructure.

The manual focuses on the importance of integrating transport planning with land use planning and spatial development. Residential areas should increasingly be integrated into the urban development framework of towns in order to ensure that the roads are laid out into an integrated network with access restricted to appropriate transport systems supported by adequate facilities. Planning should ensure that pedestrian and bicycle facilities; and public transport facilities are integrated in order to avoid an unregulated sprawl of such facilities along major routes. This is particularly necessary in previously disadvantaged communities where townships are scattered adjacent to freeways and major arterials, posing a serious danger to non-motorised road users.

4. APPLICATION OF THE PEDESTRIAN AND BICYCLE FACILITY GUIDELINES MANUAL

4.1 Background

The South African Government has introduced various policies, strategies, and programmes to improve the physical and social environment for citizens in urban, rural, and deep rural areas. Some of the initiatives include the White Paper on National Transport Policy (1996), the White Paper on Integrated National Disability Strategy (1997), the Department of Transport's Moving South Africa agenda, the Integrated Development Planning (IDP) process; the Urban Renewal Programme (URP); the Integrated Sustainable Rural Development Programme (ISRDP), the Department of Transport's National Bicycle Programme, the Road to Safety Strategy 2001 – 2005; the Arrive Alive campaign, and so on.

4.2 Role of the Manual in Supporting Government Strategies

The above initiatives present a platform for the application of the pedestrian and bicycle facility manual to address the challenges that face non-motorised transport.

4.2.1 White Paper on National Transport Policy (1996)

One of the major policy aims of the White Paper on National Transport Policy (1996) is to promote public transport. This policy aim is fully supported by the provision of pedestrian facilities. Public transport (rail, bus and minibus taxi) generates heavy pedestrian traffic, which means that the pedestrian environment at nodal transfer points must be properly planned.

The Pedestrian and Bicycle Facility Guidelines Manual cater specifically for the needs of these road users. The manual provides details on the layout of bus and mini bus stops to safeguard pedestrians and cyclists. It also covers public transport termini and railway stations where existing infrastructure normally cannot accommodate peak pedestrian flows.

4.2.2 White Paper on Integrated National Disability Strategy (1997)

The rights of people with disabilities are protected by the South African Constitution. The White Paper on Integrated National Disability Strategy states with regard to transport that the ability of people to use services, or attend school or work, is largely dependent on the ability of people to get there, the lack of accessible transport is seen as a serious barrier to the full integration into society of people with

disabilities.

The Pedestrian and Bicycle Facility Guidelines Manual cater extensively for the needs of people with disabilities. It provides specifications for kerb ramps design and layout at pedestrian crossings, subways and footbridges, the positioning of road side furniture on sidewalks, protruding objects that might hurt blind persons, the texture and maintenance of side walks, minimum clear space required by wheelchairs, the positioning of gratings and other covers on sidewalks. It also provides for the use of audio tactile devices for the blind and deaf. These are all guidelines that municipal and consulting engineers should include in their road and sidewalk designs.

4.2.3 Moving South Africa: Towards a Transport Strategy for 2020

In 1998, the National Department of Transport launched Moving South Africa. The purpose of this project was to develop a strategy for ensuring that the transportation system of South Africa meets the needs of the country in the 21st century, and that it would contribute to the country's growth and economic development. This importance of walking and cycling is confirmed in the strategy.

4.2.4 Integrated Development Planning (IDP)

Integrated Development Planning (IDP) is a process through which municipalities prepare a strategic development plan for a five-year period. It results from an integrated development planning process. It is the principal strategic planning instrument that guides and informs all planning, management, investment, development and implementation decisions and actions in a locality and it supersedes all other plans that guide local development.

In addition, the Municipal Systems Act (MSA, 2002) requires of all municipalities (metropolitan councils, district municipalities and local municipalities) to adopt a single, inclusive plan for the development of the municipality which:

- “Links, integrates and coordinates plans and takes into account proposals for the development of the municipality;
- Aligns the resources and capacity of the municipality with the implementation of the plan;
- Forms the policy framework and general basis on which the budgets must be based; and
- Is compatible with national and provincial development plans and planning requirements that are on the municipality in terms of legislation”

In most municipalities in South Africa, the needs of non-motorised traffic are not adequately addressed. This is reflected both in the lack of policies regarding non-motorised transport and appropriate infrastructure for pedestrians and cyclists to cross roads or to move safely alongside roads. While the IDP is inter alia focussing on the provision of municipal infrastructure, the need to provide safe non-motorised transport infrastructure (e.g. sidewalks, footbridges, subways, refuge islands, traffic signals) has not yet been addressed. It is thus imperative that increased focus is given to non-motorised transport planning within the IDP framework. The Pedestrian and Bicycle Facility Guidelines Manual should be used as a reference.

In terms of the National Land Transport Transition Act (NLTTA), Act No 22 of 2000, municipalities must prepare Integrated Transport Plans (ITPs). The ITPs should form an integral part of the IDPs for each municipality. Each ITP should in turn contain a Public Transport Plan (PTP) and Infrastructure Plan, which should address all infrastructure requirements for transport users. The pedestrian and bicycle facilities manual should be used to inform municipal planning and to ensure that such facilities are integrated into the integrated infrastructure plans for municipalities.

4.2.5 Urban Renewal Programme (URP) and the Integrated Sustainable Rural Development Programme (ISRDP)

In October 2000, the President announced the inception of the Integrated Sustainable Rural Development Programme (ISRDP), as well as the appointment of the Independent Development Trust

(IDT) for the implementation of this 10-year programme. Altogether, 13 nodal areas were identified for the ISRDP. At the same time, the Urban Renewal Programme was also announced with 6 nodes.

The nodal approach was introduced in order “to conduct a sustained campaign against urban and rural poverty and underdevelopment (and to bring) all the resources of all three spheres together in a coordinated manner” The URP and the ISRDP aim to address economic growth and development objectives, *infrastructure development*, social development as well as enhancement of institutional and service delivery capacity within nodes. Work has already commenced on 108 anchor urban projects and 137 rural anchor projects.

Many townships are still lacking basic non-motorised transport infrastructure. Many people living in rural areas are very poor and often have to walk long distances for various purposes. Investment in pedestrian and bicycle infrastructure can be of great benefit to such people and speed up service delivery in rural areas. Again, in this regard, the Pedestrian and Bicycle Facility Guidelines manual should form a reference for municipalities on how to improve the conditions for pedestrians and bicyclists in urban and rural areas.

4.2.6 Road Infrastructure Strategic Framework for South Africa (RISFSA)

The strategic framework calls for a focus on access roads development in view of the harsh realities that are faced by people living in rural and isolated communities. The provision of access opens up opportunities for Local Economic Development, connection with economic centres and allows social services to enter communities. Since rural communities are often characterised by poor public transport systems and inferior standards for roads, there is significant reliance on non-motorised transport systems. The Pedestrian and Bicycle Facility Guidelines manual will play a significant role in ensuring that the needs of non-motorised transport users are addressed during the development of access roads.

4.2.7 National Department of Transport’s National Bicycle Programme

The Department’s National Bicycle Programme is focussing on a national bicycle transport initiative known as Shova Kalula (Ride Easy). The programme is aimed at disadvantaged rural and urban people who have to walk long distances to access services. The intention of the project was initially to procure low-cost new and used bicycles and develop a delivery chain for the distribution of the bicycles. The programme has since been expanded to include bicycle infrastructure, thus completing the system. The Pedestrian and Bicycle Facility Guidelines manual fully supports the Shova Kalula programme. In addition, to the eleven demonstration projects throughout South Africa, the South African Netherlands Transport Forum (SANTF), is running an urban and rural pilot bicycle project that would broaden the existing guidelines as contained in the Pedestrian and Bicycle Facility Guidelines Manual.

4.2.8 Road to Safety Strategy 2001 – 2005, Arrive Alive Campaign, and National Pedestrian Business Plan

- *Road to Safety Strategy 2001- 2005*

The Road to Safety Strategy identified pedestrian safety and fitness as one of the six interlocking and overlapping focal areas requiring intervention in terms of both systems and structures. The Road to Safety Strategy states: “We want safer pedestrians. . . .”.

The actions listed to be implemented to achieve this goal are:

- Full provincial and local authority implementation of the new Pedestrian and Bicycle Facility Guideline Manual, the South African Road Safety Manual and the Manual for Setting of Speed Limits.
- The commitment by provinces to carry out planned, continuous, multi-disciplinary upgrades of identified urban and rural pedestrian hazardous locations, with community participation via democratically structured Road Safety Forums.

The major short to medium term pedestrian safety interventions of Road to Safety 2001 to 2005 Strategy is based on a number of supporting strategies and actions, which are:

- Actions in the Arrive Alive Business Plan 2000 – 2004
- National Pedestrian Business Plan

▪ *Arrive Alive*

The Arrive Alive road safety campaign was initiated by the NDoT in October 1997 as a Short Term Implementation Plan (STIP) of the 1996 Strategy to improve road user compliance with traffic laws through increased law enforcement and communication activities and to reduce road traffic fatalities by five percent in comparison with the corresponding period in the previous year.

The pedestrian problem was partially addressed during Arrive Alive Phases 1 to 4 through Law Enforcement and Communication/Publicity. However, it was only during Phases 5 to 7 that the improvement of pedestrian hazardous locations came into prominence.

In Arrive Alive Phase 5 (October 2000 to June 2001), the Pedestrian again featured as one of the main themes with the focus on Communication (Pedestrian and Vehicle Visibility) and Law Enforcement (Jaywalking and Speed). In addition, each province was tasked with identifying at least ten (10) high traffic volume high-risk pedestrian locations; and addressing the problems through better policing, improved administration and the introduction of low cost infrastructure improvements in accordance with the Pedestrian and Bicycle Facility Guidelines manual, by the end of June 2001.

In Arrive Alive Phase 6 (October 2001 to October 2002), the Pedestrian again featured as one of the main themes with the focus on Pedestrian and Cycle Safety; and Pedestrian, Cyclist and Motor Vehicle Visibility. In addition, an amount of R1,5 million per province, totaling R13,5 million was dedicated to the identification and improvement of hazardous pedestrian locations as contained in the NDoT/CSIR Joint Venture Report on Pedestrian Hazardous Locations. Each province had to keep a continuous rolling record of the top “highest risk” pedestrian accident locations from which the top three are to receive the required treatment at any one time.

The role that the Pedestrian and Bicycle Facility Guidelines Manual have to play in the upgrading of pedestrian facilities at these hazardous locations is obvious. While some of these hazardous locations have already been improved, it is possible that the Pedestrian and Bicycle Facility manual may not have been used for various reasons. It is thus critical to ensure that the manual is used henceforth.

▪ *National Pedestrian Action Plan*

The objective of this project was to develop a business plan for the National Pedestrian Action Plan as required by the Road to Safety 2001 – 2005 Strategy. Altogether 356 pedestrian hazardous locations were identified countrywide. The information for each site was collected by means of checklists. The checklist was developed in close collaboration with the road authorities and distributed to all road authorities for completion. The main finding of this project is that an amount of R520m - phased over a five-year period - would be required for the implementation of the recommended counter-measures at the 356 hazardous pedestrian locations.

Again, the role that the Pedestrian and Bicycle Facility Guidelines manual has to play in the upgrading of these 365 pedestrian hazardous locations by the national provincial and local road authorities is clear.

5. FUTURE ACTIVITIES

5.1 Promotion of Manual Among Stakeholders

From the discussion above, many stakeholders can be identified whom should be aware of the contents of the Pedestrian and Bicycle Facility Guidelines Manual. This manual provides the means by which the implementation of many of the government strategies could be supported. The NDoT intends to hold a workshop to orientate stakeholders regarding the content of the manual.

The stakeholders that should be exposed in more detail to the Pedestrian and Bicycle Facility Guidelines Manual include the following:

- Provincial and municipal road authorities (metropolitan, district and local authorities)
- Department of Provincial and Local Government (DPLG)
- Independent Development Trust (IDT)
- Office of the Deputy State President (ODSP) - Disabilities
- Consulting engineers

5.2 Revision and Updating of Manual

The manual covers the latest local and international expertise and best practices regarding the provision of pedestrian and bicycle facilities. During the revision of the manual, it was identified that there are aspects that are unique to South Africa that need to be developed further; these include the provision of facilities for cyclists in rural and deep rural areas. A pilot project is currently being implemented in a deep rural area in collaboration with the IDT to provide facilities for non-motorised road users. The manual would thus need to be expanded to incorporate the findings of additional studies in such areas.

Critical to the adoption and use of the pedestrian and bicycle facilities manual is the securing of funding for the provision of such facilities. Government is reforming the financing of municipal infrastructure through the integration of conditional grant funds into the Municipal Infrastructure Grant (MIG) fund. The MIG will be targeted at eliminating infrastructure backlogs in communities. As has been highlighted, pedestrian and bicycle facilities constitute a serious backlog in township. Through the MIG and sector specific initiatives the Department of Transport will ensure that such facilities are taken into account when the road backlogs are quantified for elimination.

The Pedestrian and Bicycle Facility Guidelines manual is/will be distributed both in CD ROM and hard copy to roads authorities, and will be available for distribution to other interested stakeholders. The NDoT has agreed to allow a one-year implementation period (1 July 2004 to 30 June 2005) during which the stakeholders should apply the manual, give feedback on the usability of the guidelines, and identify areas where the manual should be expanded or modified.

6. CONCLUSION

Pedestrian and bicycle safety continue to present a serious challenge to the sustainable development of communities, particularly the rural and isolated communities. This can be attributed to several aspects including the lack of integration in transport and land use planning and the marginalisation of non-motorised transport systems.

The NDoT has upgraded the previous pedestrian and bicycle facility manuals into a practical, user-friendly manual, titled the Pedestrian and Bicycle Facility Guidelines Manual, and also added new, relevant, efficient, cost-effective standards and guidelines. Currently, there is still a major backlog in the provision of facilities for pedestrians and cyclists in most communities countrywide, especially the urban townships and rural communities. This manual provides the tools for road authorities, other government departments and agencies, and the private sector (consulting engineers) to assess the needs for these facilities in the different areas.

Various government strategies focus on the accelerated development of infrastructure in previously disadvantaged communities, however the provision of safe infrastructure for non-motorised transport road users is often omitted or neglected. The Pedestrian and Bicycle Facility Guidelines manual can support the various government strategies by addressing this specific shortcoming.

The NDoT will distribute the new manual and it encourages practitioners to apply the manual in road transport service delivery in order to provide feedback on its effectiveness, the gaps that are found in it and its user friendliness. This feedback will be used in later upgrades of the manual in order to ensure that the manual becomes more comprehensive.

The reduction of casualties in the category of non-motorised transport users will significantly reduce the negative social impact of accidents on families, reduce the burden of road accidents on the economy, positively contribute to LED and ensure that communities have safe access to economic and social opportunities.

7. REFERENCES

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