THE EVOLUTION OF ACCESS MANAGEMENT AT THE SOUTHERN TIP OF AFRICA

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1. ABSTRACT

The Western Cape is one of nine provinces within the Republic of South Africa and is situated at the southernmost point of the continent.

During the mid nineteen nineties the need to properly define a safe and consistent approach for dealing with property access applications was identified. To this end a unique approach was adopted in an attempt to find a balance between the demand for access to encourage development and the need to protect the rights of the wider community for sustainable transportation, more particularly road infrastructure development, while at the same time ensuring adequate mobility in support of accessibility to economic opportunities.

In 1996 a document "Road Access Guidelines" (RAG) was published. These guidelines used a simplified categorisation approach when defining the road, the development environment and the desired access type. Selected criteria were then used to facilitate the decision making process.

This paper describes the scope and content of the RAG focusing on the principles involved and how they were applied to determine the access spacings that are recommended on the different road categories and in different development environments. The oral presentation will present the outcomes achieved using these Guidelines in the form of several case studies including individual developments, new town planning and retrofitting through access management of existing arterials.

During August 2010 a review process of the RAG was commenced, taking into account developments that occurred since the production of the original documentation. These include the introduction of a new functional road classification system on a national basis and the preparation of access management guidelines by the national Committee of Transport Officials (COTO).

The approach adopted by the authors of the National Guidelines differs from the Provincial document and a qualitative comparison between the two approaches and international practice is discussed, leading to some preliminary conclusions on the approach to be adopted for the revised Western Cape Province RAG.

2. INTRODUCTION

The Western Cape is one of nine provinces comprising the Republic of South Africa. It is located in the south-western corner of the country and has a land area of 129 370 km^2 (10.6% of the whole country and similar to the area of Greece) and a population of approximately 5.2 million people (2010 estimate) which is 10.4% of the national total. It has the third largest provincial economy within South Africa which at R335 billion (US$ 48 billion) (2009) represents 14.0% of the national economy. Nearly 80% of the provincial population lives in the metropolitan area of Cape Town with the remaining population living in smaller towns and rural areas throughout the province.

The rural road network, excluding municipal roads and streets comprises about 34 000 km of roads of which the Provincial Premier is directly responsible for the management and control of about 32 000 km. In addition to this rural network there is an urban municipal network of main roads comprising 450 km in the Cape Town metropolitan area and 190 km in the municipal areas of the other towns in the province. Due to powers given in terms of the relevant legislation, the Premier's approval has to be obtained for, *inter alia*, the change of land-use on properties abutting these roads as well as access to the entire rural road network and the municipal main road

network. This gives the Premier responsibility for the control of access on 32 640 km of road in the province.

It is naturally primarily the urban network which requires the more intensive management and control of access as a result of developmental pressures. Where any change in land-use is envisaged for a particular property, application for appropriate access to the road network forms part of the required development application process.

3. NEED FOR GUIDELINES TO MANAGE ROAD ACCESS

Cities and towns in the Western Cape, as in the rest of South Africa, are developing at a rapid rate as the economy grows and greater numbers of previously poor citizens improve their standard of living. The expansion of wealth coupled with a consequent increasing car ownership has promoted public and private sector developments across cities and towns to cater for expanded residential areas, new shopping centres, industrial areas and office developments. Many of these developments take up land adjacent to existing roads and seek new accesses to and from the existing road system, placing a burden on the road authority responsible for decision-making on managing the road system and protecting the functions performed by roads – movement or access or a combination of these, depending on their classification.

During the mid nineteen-nineties the need to properly define a safe and consistent approach for dealing with property access applications was identified. To this end a unique approach was adopted in an attempt to find a balance between the demand for access to encourage development and the need to protect the rights of the wider community for sustainable, safe transportation. The sustainability of transportation requires appropriate road infrastructure development, while at the same time ensuring safety and adequate mobility in support of access to economic opportunities.

This approach called for the research for and development of guidelines for the determination of appropriate criteria and characteristics of access from the road network to any new land-use development. This guideline document was intended not only to serve individual land-use change proposals but also to better inform road and town planning practitioners involved with larger scale planning. The guideline document that was developed was then published as Road Access Guidelines for use by transportation and land-use planning professionals involved with such proposals as well as provincial and municipal officials charged with the scrutiny and approval of land-use change applications.

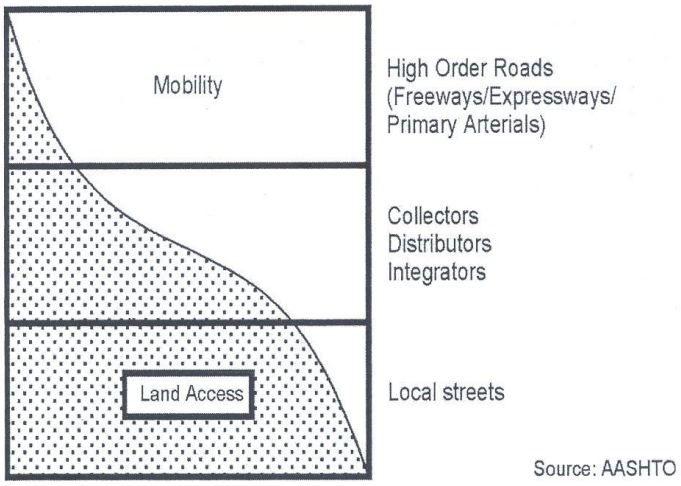
Officials within road authorities responsible for decision-making when accesses were applied for had, prior to the development of the RAG, little technical guidance on which to base important decisions on whether to grant an access and under which conditions access should be allowed.

The new (1996) Constitution of South Africa under which the new democracy is structured created a multitude of local authorities throughout the Western Cape Province, each with its own road authority decision-making function over arterial roads, and this created the potential for standards that were inconsistently applied depending on the authority making the decision.

The scarcity of experienced professional engineers in South Africa in general and in particular professionals with skills to manage the road system was a further constraint, and coupled with the rapid pace of urban development required a practical set of tools to equip decision-makers and traffic engineers working in the consulting sphere as part of professional teams on developments. It is considered that these factors make the South African context somewhat different to environments in the highly developed EU countries or North America, and more akin to developing countries in South America, Africa and the East.

4. THE "RAG" APPROACH

The approach adopted by the RAG is based on the concept of "access and mobility" coupled to the concept of "Roadside Development Environment". Fundamental to the use of the RAG is acknowledgement of the complex interaction between land use and transportation. This is viewed as an interaction of the activity system relating to people's social, leisure and economic activities and the movement system that facilitates the movement or passage of people between such activities and specifically the road network. The RAG recognises the concept of a functional classification of the road network and the sometimes conflicting demands for both mobility and access in relation to land use and economic activity. In this regard it is based on the widely accepted concept that higher order roads have primarily a mobility function while lower order roads have primarily an access function.



Functionality, Mobility and Land Access

Road Classification

"Access and mobility" criteria are based on the functional classification of the road network. The functional classification and road access hierarchy used in the development of the RAG is shown below:

Road classification system adopted for RAG

Road Access Hierarchy	RAG Functional Classification
Freeway Expressway Other Primary Distributors	Primary Distributor
District Distributors Activity Spine	District Distributor
Local Distributors	Local Distributor
Access Streets	Access Streets

The classification system shown above has not been universally used in South Africa and numerous variations thereof have been developed over time. In an attempt to introduce a standardized road classification system two important documents have been developed in recent times, namely the Road Infrastructure Strategic Framework for South Africa (RISFSA) and the South African Road Classification and Access Manual (RCAM)[1].

Roadside Development Environment

The concept of "roadside development environment" was introduced into RAG recognizing that the urban and rural form, development density and the transport system are interdependent and should be supportive of one another. Thus in an urban area where the development density is high, access spacing may be closer together than along a road of equivalent classification in a rural area. As an extension of the principle, a hierarchy of roadside development environments graded from urban to rural was selected to facilitate the decision making process. These include, in descending order of development density, urban, intermediate, suburban, semi-rural and rural environments. The density criteria associated with each is based on the intensity of development, be it farmland, residential, industrial, office or a combination thereof.

The five Roadside Development Environment definitions were given density values and are defined in the table below:

[1] Developed by the Department of Transport and South African National Roads Agency Limited

Definition of roadside development environment

Environment	Description
Urban Development Environment	Typical "Urban" roadside development is dense ie, in excess of 10 000m^2 GFA per hectare with residential and/or commercial development occurring within activity nodes or along activity spines. Typical operating speeds are 50km/hr.
Intermediate Development Environment	Typical "Intermediate" roadside development is relatively dense ie. Between 3 000m^2 and 10 000 m^2 GFA per hectare. Typical operating speeds are 60km/hr.
Suburban Development Environment	Typical "Suburban" roadside development densities vary between 1 000m2 and 3 000m^2 GFA per hectare. The residential areas within this environment are normally served by a very coarse system of local distributors linking to district and primary distributors. Typical operating speeds are 30 – 60km/hr.
Semi-Rural Development Environment	The "Semi Rural" roadside development is typically at the edge of an urbanized area. Very little roadside development is present ie, less than 1 000m^2 GFA per hectare.
Rural Development Environment	The "Rural" development environment is typically beyond the likely development fringe of an urbanized area and consists of natural, extensive and intensive agricultural areas. Typical operating speeds are 80 – 130 km/hr.

Intersection and driveway categories

At-grade intersections are permitted on all classes of roads except freeways, where access is allowed by interchange only. With regard to intersection classification the focus of the RAG is to provide criteria to determine the type of at-grade intersection or access and what level of traffic control system would be appropriate for a particular purpose. Spacing standards in RAG indicate at what spacing a side road or driveway access should be located relative to adjacent intersections or accesses. An intersection is defined by the RAG as a connecting point between two or more public roads while an access (driveway) provides an access to property.

Of relevance to this is the traffic flow which is expected to use the intersection or access. A difference is recognised between intersections with three or four approach legs; priority control or traffic signals; and low and high volume driveways. Since an access to a large scale development could generate as much traffic as may use a public road intersection the RAG has a mechanism for equating a particular access to an equivalent public road intersection. This allows the suitable spacing to be determined on a like-for-like basis.

Driveway categories

Driveway Category	Development Environment				
	Urban	Intermediate	Suburban	Semi-rural	Rural
	Vehicles per peak hour				v.p. day
Low generator	< 50	< 50	< 50	< 50	< 50
High generator	> 50	> 50	> 50	> 50	
Equivalent Local Distributor	> 250	> 125	> 100	> 50	> 50
Equivalent District Distributor	> 450	> 375	> 300	> 150	> 500

The category of access which would normally be permitted onto each functional category of road is dependent on the roadside development environment as well as the functional road classification, as shown in the table below.

Access category normally permitted

<table>
<tr><td rowspan="2">Development environment</td><td colspan="5">Road functional classification</td></tr>
<tr><td>Freeway</td><td>Expressway</td><td colspan="3">Distributors</td><td>Access Road</td></tr>
<tr><td></td><td></td><td></td><td>Primary</td><td>District</td><td>Local</td><td></td></tr>
<tr><td>Urban</td><td rowspan="5">ZONE 1</td><td rowspan="3">ZONE 2</td><td colspan="3" rowspan="2">ZONE 3</td><td rowspan="5"></td></tr>
<tr><td>Intermediate</td></tr>
<tr><td>Suburban</td><td colspan="2"></td><td></td></tr>
<tr><td>Sem-rural</td><td colspan="3" rowspan="2"></td></tr>
<tr><td>Rural</td></tr>
</table>

Zone 1: Access by interchange only
Zone 2: Access by public road and equivalent side road driveway permitted
Zone 3: Driveway access permitted

Signalized intersection spacings

The primary consideration in determining suitable intersection spacings is the spacing between the major intersections on the primary arterials in a network. It is taken that these intersections would be controlled by traffic signals and hence the green-wave progression of traffic flow is the ideal outcome. The analysis of traffic flow under these conditions follows the classical approach of maximising the through bandwidth by determining the ideal signal spacing. This is a function of assumed cycle times, green splits and travel speeds and would lead to different spacings in different Roadside Development Environment's and on different classes of road.

The methodology recognises that the theoretically ideal spacings would not always be achievable and hence some loss of bandwidth would have to be accepted in practice. As isolated signalised intersections are not the norm it envisages a hypothetical series of five successive signalised intersections and sets standards for acceptable bandwidth loss over the series. It then determines what deviation in spacing distances would result in a loss of bandwidth less than the acceptable limits.

Suggested Acceptable "Percentage Throughband" for Signal Location

Development Framework	Road Category			
	High Order Arterials		Distributor	
	Expressway	Primary Distributor	District Distributor	Local Distributor
Urban	35%	30%	25%	20%
Intermediate	40%	35%	30%	25%
Suburban	45%	40%	35%	30%
Semi-rural	45%	45%	40%	35%

Unsignalized signal spacing

Unsignalised intersections are permitted in circumstances where traffic to and from side streets and driveways can operate safely and without undue delays to traffic. In these circumstances access spacing is determined in order to separate conflicts, broadly classified as follows:

- Main road traffic vs access traffic.
- Traffic exiting one access vs traffic exiting an adjacent access
  - Functional boundary distance (FBD)
  - Stopping sight distance (SSD)
  - Left turn (right turn for USA and Europe) conflict (LTC)

- Access vs Access (egress conflict) (EC)
- Driver communication (CC) (related to signage)
- Weaving distance on freeways (WD)

Each of these six criteria are analysed individually to determine what would be the minimum spacing required to satisfy the selected acceptance scenario. The following briefly describes each criterion:

Functional boundary criteria: In order to reduce multiple conflicts and provide adequate reaction time, the functional area should be determined by the manoeuvre distance to perform lane changes and deceleration, plus any storage length required.
Stopping sight distance criteria: Stopping sight distance should be maintained in all situations, including on the approach to sidestreets/driveways, so as to allow a driver in a through lane to monitor only one driveway at a time, and if necessary, to stop to avoid conflict. This reduces accident potential.
Left turn conflict criteria: Left turn conflict refers to the conflict between a through vehicle and a vehicle turning left out of a side street/driveway. LTC spacing criteria assumes that the driver of a through vehicle must perceive the egress vehicle and decelerate to avoid a collision. This spacing requirement is lower than for stopping sight distance because the through vehicle is not required to decelerate to a stop.
Access vs access (egress conflict) criteria: Vehicles entering the traffic stream from adjacent driveways have equal rights of way. Frequently neither is able to predict the intended manoeuvre of the other. Unless sufficient spacing is provided between adjacent driveways the two vehicle's trajectories may conflict requiring some evasive manoeuvring (e.g. braking).
Communications criteria: At certain locations on a road network it is necessary to consider the influence of information transfer to the driver, and to ensure that this is transmitted to and managed by the driver in the appropriate manner. The driver must process a variety of information including information and regulatory road signs, requiring navigating, traffic interaction and rule compliance.

The table below indicates the minimum operational criteria used to derive these values for side streets/driveways that are high traffic generating (another table in the RAG gives criteria for driveways that are low traffic generating), which would be applicable in normal situations.

Normal minimum operational criteria for access spacing (side streets/high traffic driveways)

Development environment	Road functional classification					
	Freeway	Expressway	Distributors			Access Road
			Primary	District	Local	
Urban	WD	SIG	SSD	FBD	SSD	EC
Intermediate	WD	SIG	LTC	FBD	SSD	EC
Suburban	WD	SIG	FBD	FBD	SSD	LTC
Sem-rural	WD	SIG	FBD	FBD	SSD	SSD
Rural	WD	CC	CC	CC	CC	SSD

WD - Weaving Distance
SIG - Signal Progression
CC - Communication Criteria
EC - Egress Conflict
SSD - Stopping Sight Distance
FBD - Functional Boundary Distance
LTC - Left Turn Conflict

Variations from the spacing guidelines
Consideration is also given to the consequences of a variance in intersection spacing and non-optimal signal positioning and phasing as well as a number of special cases. With the presentation in the RAG of this material and method of analysis, professionals and officials can assess the potential consequences of deviations from the preferred spacing which might result from topographic, site and development constraints. This would allow motivated deviations from the recommended spacings to be considered and their implications quantified.

The RAG provides tables of spacings for the various road classifications types and for the grades of side streets/driveways, which are summarized in the table below.

Summary of minimum spacings for access/driveways

Development Environment	Classification of Arterial Road and Access Condition							Access Type	
	Expressway	Distributor							
		Primary		District		Local			
		Full access	Left only	Full access	Left only	Full access	Left only		
Urban	60 km/h	50 km/h		40 km/h		35 km/h		Operating Speed	
		60	60	45	45	25	25	*Unsignalised*	Low vol Driveway
		120	75	60	60	45	45		High vol Driveway
	540	120	90	90	75	60	60		Normal Side Street
	540	375		275		225		*Signalised*	
	540	180		130		100		Median Opening	
Intermediate	70 km/h	60 km/h		50 km/h		50 km/h		Operating Speed	
		90	90	45	45	25	25	*Unsignalised*	Low vol Driveway
		180	100	75	75	60	60		High vol Driveway
	800	180	120	120	90	90	75		Normal Side Street
	800	540		375		275		*Signalised*	
	800	270		180		130		Median Opening	
Suburban	80 km/h	70 km/h		60 km/h		50 km/h		Operating Speed	
						45	45	*Unsignalised*	Low vol Driveway
						60	60		High vol Driveway
	1200	270	160	180	120	120	90		Normal Side Street
	1200	800		540		375		*Signalised*	
	1200	400		270		180		Median Opening	
Semi-Rural	100 km/h	80 km/h		70 km/h		60 km/h		Operating Speed	
								Unsignalised	Low vol Driveway
									High vol Driveway
	1600	400	200	270	155	180	120		Normal Side Street
	1600	1200		800		540		*Signalised*	
	1600	600		400		270		Median Opening	
Rural	130 km/h	120 km/h		110 km/h		80 km/h		Operating Speed	
	600	500	500	450	450	300	300	*Unsignalised*	Driveway
	1600	600	600	450	450	450	450		Normal Side Street
								Signalised	
								Median Opening	

5. THE COTO APPROACH

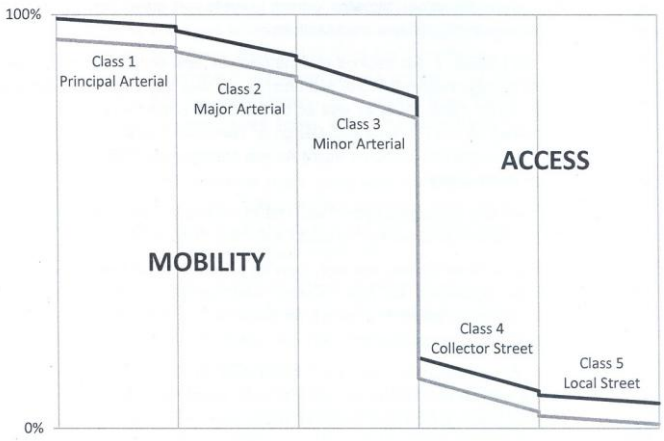
In the period 2005 to 2010 a national standard for road access management has been developed, and is expected to be nationally applied in all nine provinces in South Africa during 2011. The new guideline document entitled "South African Road Classification and Access Management Manual (RCAM)" was developed by the COTO[2]. The approach in the COTO documentation is that roads be classified as being "Mobility Roads" and "Activity or Access Streets".

Mobility Roads are defined as higher speed through routes on which movement is dominant with limited access at widely spaced intervals. Co-author Dr J Sampson describes these roads as being "vehicle priority" or "vehicle only" routes. Activity or Access Streets by contrast cater for all aspects of human activity. The provision of access allows both vehicles and pedestrian entry to and from adjacent land. Operating speeds need to be kept low for safety reasons.

Sampson concludes that the mobility and access routes are incompatible, hence the need for functional road classification systems. The functional classification system adopted by RCAM differs from the AASHTO graph in the a substantial step is assumed between Class3 and Class 4 roads, as shown in the graph below:

[2] Committee of Transport Officials

Functional Class	Description
Class 1	Principal Arterial
Class 2	Major Arterial
Class 3	Minor Arterial
Class 4	Collector
Class 5	Local Street
Class 6	Walkway



This approach is similar to international norms except for the insertion of the concept of "walkways".

The basic premise of the RCAM[3] document is to enable sustainable development in both urban and rural areas through the provision of a safe and efficient road network. The document identifies the benefits of road access management, which include improved level of service i.e. less congestion and more efficient public transport, improved safety for both vehicular and non-motorized transport and efficient use of scarce resources. Better access management also gives greater planning certainty for developers, facilitates integrated land use and transport, has social benefits, provides environmental protection, and promotes economic growth.

The RCAM document defines access management as "the systematic control of the location, spacing, design and operation of driveways, intersections, interchanges and medians". It also involves road reserves, traffic control, traffic calming, pedestrian, cyclist and public transport facilities, parking and loading and indeed every aspect of road environment.

Road Access Management intervention

In terms of the procedures in the RCAM document access management is to be implemented as a phased intervention on existing roads by retrofitting them to conform with access spacings appropriate to each Class of road, as follows:

Step 1: Classification of road system

The first imperative is to classify all roads in the region into Classes 1 – 6 and to commence road access management interventions by concentrating on mobility roads, which are Classes 1 – 3.

Step 2: Create manageable segments

Divide the Class 1 to 3 road network into sections, each section to be defined by the intersection with a Class 1 or 2 mobility arterial, thus creating sections of between 1,5 and 5km in urban areas. Record the spacing between full accesses in each section of the mobility road. Include any property accesses between intersections.

Step 3: Plan the interventions

Ban all parking and loading on the mobility arterials, or construct physically separated service roads or parking areas. Fit a "ruling spacing" so as to include as many intersections as possible around that spacing. The ruling spacing is 800m on Class 2 roads and 600m on class 3 roads, but can be adjusted to no less than 500m to suit site conditions. If the existing spacing of individual intersections is less than 500m on major or minor arterials, closely spaced intersections should be identified and treated in groups. Closely spaced intersections (signalized or not) are those within 120m on either side of the ruling spacing. If the spacing (gap) between intersections or full property access groups is substandard retrofitting should be the first option and not simply a reclassification of the section of road.

[3] Draft South African Road Classification and Access Management Manual, Committee of Transport officials, November 2010

Step 4: Gain acceptance and implement
Through the adoption of the above steps, approved access points on the mobility road network will be known or can be identified. It is important to ensure that the activity routes are not continuous or that traffic does not have to travel more than one kilometre to the nearest mobility route. Check the network against Integrated Transport and Development Plans and make adjustments where necessary.

6. THE REVISION OF THE RAG APPROACH

During 2010 a review process of the RAG was commenced, taking into account developments that have occurred since the production of the original document. The approach adopted in this review has been to consider afresh the approach to the classification of the road network, and the concept of the roadside development environments in the light of the "COTO" National Road Access Guidelines and other international guidelines and practices. The application of the roadside development environments concept in particular is unique to the current Western Cape RAG, and is found neither in the COTO guidelines, nor anywhere else in the world.

Consultation with practitioners and compatibility with COTO
As part of the review process a comprehensive round of consultation took place through interviews with officials from road authorities, transport and town planning consultants involved in developments and academics. Many of these professionals have put the RAG into practice over the past 15 years since RAG was introduced, and through these processes significant parts of the road network and access to them have been transformed through applying the RAG principles. The response in support of the continuation of the RAG principles, and particularly the five categories of roadside development environment, was unanimous. It appears to be generally agreed that the standards of mobility and accessibility, and developments served by the network, have benefitted from the use of RAG. Should such concepts be retained the issue of the compatibility between RAG and the national COTO guidelines that are to be applied nationally, including in the Western Cape Province, will have to be resolved.

Forward planning versus reactive decision-making
While the original intention of the RAG was to facilitate decision-making when road authority officials were required to respond to applications by developers for road access to new developments, its standards were immediately applied along future planned roads serving new expanded urbanization. These new residential, industrial and mixed use developments have been forward planned with spacings of signalized intersections and intersections with side roads and provision for future access using the guidelines in RAG. The forward planning ensures consistency of standards, and assists developers seeking access to new developments as access provision forms part of the local area transport plans. It is envisaged that the revised version of RAG will give greater emphasis to guidelines and a methodology for undertaking forward planning, and will include numerous examples of conceptual layouts on alternative designs of intersections, corridor planning, treatment of U-turns, public transport, pedestrian and cycle users of roads.

Guidelines on designing streets for people
The RAG drew a measure of criticism for concentrating on a hierarchy of roads for use by cars and delivery vehicles, and for paying insufficient attention to guidelines on the sharing of road space by non-car users, namely public transport, pedestrians and cyclists. The society of South Africa, consisting as it does of 70% no-car owners, requires that roads are designed for all people using the road corridors, and from an environmental standpoint where the reduction of the use of cars is national transport policy, this is also an imperative in the current climate. The revised RAG will ensure that guidelines extend to making roads multi-purpose and user friendly places for all people using them.

Bus rapid transit corridor planning
The major urban areas of South Africa are in a development stage of implementing comprehensive bus rapid transit systems to complement the existing suburban rail services. The option of integrating bus and high occupancy minibus-taxi transit into BRT trunk and feeder services has been selected for South Africa due to its relatively low implementation and operational costs for an equivalent coverage and capacity. The success of such systems in countries in South America,

where economies are modest and where tax revenues limit the affordability of building the sophisticated public transport systems seen in the developed economies, was a further reason for the choice.

The implementation of BRT trunk services on exclusive lanes and stations along the medians of existing primary arterial roads and some freeways in the Cape Town metropolitan area has resulted in significant restrictions to turning movements at intersections and the ability to introduce accesses with spacings on arterial roads that would not otherwise have been the case. Pedestrian accesses to stations also require special treatment for them to cross busy roads. The revised RAG will provide guidance on the treatment of BRT exclusive lanes and stations within such road corridors, which will facilitate the future implementation of the BRT system and provide guidance on access opportunities for future development on land alongside BRT trunk sections.

7. CONCLUSIONS

After 15 years of application of the Road Access Guidelines (RAG) in the Western Cape Province, the Provincial road authority considered it timeous to review the principles of RAG so as to ensure consistency of practice with national and international norms. The fundamental difference in approach between the RAG and national body COTO'S RCAM is that the "Roadside Development Environment" concept is not considered in the RCAM documentation. While road authorities outside the Western Cape Province have not devised a system of categorizing the roadside development environment to the detail used in the RAG, practitioners and roads authorities alike using RAG are of the opinion that the system is a valuable tool and should be retained in its current or expanded form.

The revised RAG will address a number of planning issues that have been revealed over the years of its use. Firstly, the need to convert its application from "reactive" use to "proactive" planning of road corridors, so that local area road and transport plans are undertaken throughout the developed areas of the Province. This will provide developers and municipalities with greater certainty on the likelihood and nature of access being granted to land developments. Secondly, the concept of "streets for people" is to be given greater emphasis in the revised RAG so as to ensure that provision for public transport vehicles, pedestrians and cyclists is properly made in an aesthetically appealing and sensitive manner. Thirdly, the superimposition of bus rapid transit in the form of a trunk service in the median of arterial roads and feeder services on suburban streets will be addressed and guidelines included.

The revised RAG will be conceived in consultation with a broad range of professionals and the public so as to ensure that the new version meets all needs and expectations.

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