

**EQUITY IMPACTS AND CHALLENGES OF
HIGHWAY ACCESS MANAGEMENT
IN AN EMERGING ECONOMY -
SOUTH AFRICA AT THE CROSSROADS**

by

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ABSTRACT

As a middle income country, South Africa realizes that it cannot build its way out of every transportation challenge faced. Alternative interventions have a role to play in optimizing the efficiency of the present transportation network while ensuring benefits arising from this optimization are distributed equitably. The implementation of the proposed Guidelines on Road Access Management in South Africa is one such intervention that may “equitably” improve the transportation environment. This paper describes the evolution and status quo of access management in South Africa; assesses the concept and purpose of access management from an equity perspective; considers the efficacy of implementing national access management guidelines while honoring “equity” principles contained in the South African Constitution and other civil laws/regulations; and assesses a selection of access management techniques with respect to their potential equity impacts. Before concluding, identification is made of a selection of obstacles that have frustrated the adoption and implementation of access management principles on a national scale. Inconsistent access management implementation (inevitable where there is no mandated national guideline) compounds the level of inequity manifested by ad-hoc road access permitting and management. Thus, the author concludes, the adoption and implementation of a national access management guideline measurably enhances the potential of “equitably” improving the transportation environment in South Africa.

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INTRODUCTION AND OVERVIEW

As a democracy of just 10 years (as of 2004), South Africa has grasped the vision that the economically sustainable, equitable and prosperous future that has been promised to all its citizens and residents cannot become a reality unless all economic sectors are harnessed for the good of the nation. Indeed, one of several challenges is simultaneously maintaining and improving the transportation infrastructure while distributing available resources (over the whole economy) in an equitable manner; this is made all the more difficult by the pressing demands arising from the new economic and social dispensation.

South Africa also realizes that as a middle income country with finite resources it cannot build its way out of every transportation challenge faced (i.e. predict and provide planning). Thus, alternative interventions and strategies have a role to play in, first; optimizing the efficiency of the present transportation network, and second; ensuring benefits arising from this optimization are distributed equitably. In meeting these criteria, access management is one highway design/planning intervention being considered by national and provincial governments and promulgated by the transportation/ traffic engineering fraternity.

PROBLEM STATEMENT

Enhancing and maintaining the transportation infrastructure for present and future generations requires that appropriate actions are implemented timeously. Professional highway engineers and planners in South Africa are faced with a number of choices: traditional highway design/planning practices can be continued, or new innovative, equitable and sustainable interventions can be pursued. Access management is one intervention that is presently at the crossroads of being adopted and implemented as a national road design/planning standard. Surmounting this has yet to be achieved on a national scale (after more than 10 years of debate) and represents a major challenge in the adoption and implementation of access management principles. This leads to the question (which also defines the problem), “will the adoption and implementation of national access management guidelines ‘equitably’ improve the transportation environment in South Africa?”

PAPER OBJECTIVE

The advent of the new socio-political regime in 1994 initiated a deliberate and continuing reassessment of established norms and policies. This process aims to determine (with respect to professional practices and Government policies) the cumulative potential of realizing South Africa’s socio-economic vision; the level of sustainability and equity that can be achieved and the extent of environmental impacts arising (in the widest sense). Thus, in light of this scenario and through the identification of several access management challenges pertinent to South Africa (and possibly to other emerging economies), this paper seeks to:

- describe the evolution and status quo of access management in South Africa;
- assess the concept and purpose of access management from an equity perspective;
- consider the efficacy of implementing national access management guidelines while honoring “equity” principles contained in the South African Constitution and other civil laws/regulations; and
- assess a selection of access management techniques with respect to their potential equity impacts.

It has taken a considerable length of time to ratify (ongoing as of June 2004) a nationally accepted access management guideline policy. Before concluding, identification is made of a selection of obstacles that have frustrated the adoption and implementation of access management principles on a national scale in South Africa.

EVOLUTION OF ACCESS MANAGEMENT IN SOUTH AFRICA

In a South African context, access management as a definitive road design/planning principle and/or technique came to the forefront in the early 1990’s. Access management may have been indirectly acknowledged and practiced in earlier years (before 1990 and also alluded to by Stander [2000]) by South

African highway/traffic engineers through their adoption and adaptation of U.S. highway geometric design guidelines and subsequent incorporation of these guidelines into South African road design standards. It must also be noted that in the U.S. access management as a discipline may not have been called by that name in the years prior to 1990. Nevertheless, in this period, the highway design/planning profession in the U.S. came to understand that the principle of unfettered road access to any development requesting access is not sustainable if adjacent highways are to function optimally. Thus, the discipline of planning and managing road access points started to emerge, at least holistically.

Between 1993 and 2001, accepting the need to understand how access management may have contributed to sustaining and enhancing the road infrastructure in South Africa, the Department of Transport, National Housing Board and the South African Institute of Transportation Engineers, sponsored research (e.g. “Determining Optimal Intersection Spacing and Access on Arterial Roads,” 1993 - 1994), produced preliminary guidelines (e.g. “Guidelines for the Engineering Services and Amenities in Residential Township Developments,” 1994) and hosted a number of discussion forums (e.g. “Symposium on Road Access Management,” February 1999) on access management. Consensus emanating from these discussions realized “the importance of a formal system to manage access to the road network.” (Omar, 2001) These forums also initiated the codification of the proposed South African access management principles, with a revised draft report of these principles appearing as the “National Guidelines for Road Access Management in South Africa (GRAMSA),” produced in February 2004.

STATUS QUO OF ACCESS MANAGEMENT IN SOUTH AFRICA

Of the nine provinces in South Africa, several adhere to definitive access management policy guidelines. Two provincial examples are:

- Gauteng
 - City Council of Pretoria, “Management and Control of Access to the Pretoria Street System,” 1998
 - City Council of Pretoria, “Guidelines for Access to Filling Stations in the Greater Pretoria Area,” 2000
 - City Council of Centurion, “Access Management Policy,” 1998
 - Procedure Manual: “Application for Low Volume Direct Access to Provincial Roads in Gauteng,” 2001
- Western Cape
 - “Provincial Administration - Road Access Policy,” 1996

In light of the above, it should also be noted that other provincial and local road authorities have adopted some in-house requirements regarding access to provincial roads. Nevertheless, “there is, however, real pressure to relax the standards.” (Van As, 2004) Such pressure compounds the need for consistency in implementing access management techniques on a national scale, which may be achieved through the ratification of GRAMSA (and associated regulations).

TRANSPORTATION EQUITY AND ACCESS MANAGEMENT

“Equity” or fairness particularly related to transportation is concerned with the “fairness in mobility and accessibility levels across race, class, gender and disability.” (Sanchez, 2003) Furthermore, Sanchez notes that the aim of transportation equity is “to provide equal access to social and economic opportunity by providing equitable levels of access to all places.” The case of access management techniques having a role to play in achieving transportation equity (with particular relevance to the current situation in South Africa) are noted in the *Online TDM Encyclopedia*, where it states that, “access management activities can have a number of equity impacts,” such as improving alternative modes and emergency access, and “access management tends to benefit people who are transportation disadvantaged by improving transportation options and creating more accessible land use patterns.”

ACCESS MANAGEMENT DEFINITION AND EQUITY

According to the *Access Management Manual* (AMM) (published in 2003), access management “is the systematic control of the location, spacing, design, and operation of driveways, median openings, interchanges, and street connections to a roadway.” The definition of access management as contained in GRAMSA is “the equitable provision of a safe and efficient road network through the systematic control of the location and design of intersections or accesses.” The subtle differences between the two definitions are important from an equity perspective, as follows:

- **Individual versus holistic road planning**
Implicit within the definition contained in GRAMSA is the treatment of road access in a holistic (and more likely equitable) manner with respect to a road network. Access management on an individual road-by-road basis may lead over time to the suboptimal operation of the highway network and the need to implement retroactive access management interventions to correct network shortcomings. In hindsight, despite the individual road focus in the AMM definition, the need to consider the larger picture of road access management is provided through the development of corridor access management plans, which is also presented in the manual. GRAMSA, by conceding (at the outset) the principles of road access management from a road network perspective, recognizes that current and future road planning has the potential to minimize resource waste and thereby achieve an equitable distribution of resources, as there will be less need to apply retroactive solutions in an ad-hoc manner.
- **Road access and economic empowerment**
An element of the GRAMSA access management definition also includes the need for an “equitable provision” of the road network. The inclusion of this phrase, being made from a spatial perspective, notes the need to redress past transportation infrastructure imbalances prevalent in some areas of South Africa. Furthermore, the equitable provision of road access is a strategy that may help to redress socio-economic imbalances and thereby realize economic opportunity and empowerment. It is accepted that economic empowerment is of a more pressing concern in present day South Africa (when compared to the U.S.), and this reason may have led to its explicit integration into the access management definition.

ACCESS MANAGEMENT PURPOSE AND EQUITY

The AMM states that the purpose of access management is “to provide vehicular access to land development in a manner that preserves the safety and efficiency of the transportation system.” This purpose is compared to that contained in GRAMSA, where it states that “the purpose of access management is to protect communities, while at the same time unlocking the optimum development potential of land by protecting the utility, function, efficiency and safety of the country’s road and street network.” Common ground between these two definitions rests on the safety and efficiency of the transportation system.

Differences in the purpose of access management, especially with respect to South Africa is that the South African definition takes into account the wider functional role that a road may take in a community. Accepting that the inherent function of a road is to provide for mobility (defined, “physical travel that provides basic access” [TDM Encyclopedia]), there has often been the implicit assumption that mobility is primarily effected by motorized vehicles. Depending on the environment, roads can facilitate: social interaction, walking, cycling, and playing. All of these activities, contribute to restoring the balance between mobility versus access, as well as promoting enhanced livability, an implicit ingredient in South Africa’s socio-economic vision. Components of the access management purpose (as contained in GRAMSA) and potential equitable outcomes are presented in Table 1. **[TABLE 1]**

The subtle differences in defining access management and purpose between the U.S. and South Africa accepts that a variety of socio-economic and political issues have contributed in delineating the specifics of access management to each unique highway planning environment. Nevertheless, the differences do not weaken the focus of access management, that of, “efficient and safe road function,”

but enable the discipline to better meet the unique land use/transportation needs prevailing in each country.

ACCESS MANAGEMENT AND CONSTITUTIONAL EQUITY

According to the South African Bill of Rights (Chapter 2, Section 25(5) of the South African Constitution), “The State must take reasonable legislative and other measures, within its available resources, to foster conditions which enable citizens to gain access to land on an equitable basis.” The importance of the equitable facilitation of physical land access (that is made possible by roads) is deemed a human right. Indeed, the Minister of Transport reiterated the importance of roads in providing land access when he stressed that, “the ideal function of the road network is to provide every piece of land and every development with an access route.” (Omar, 2003) Stander (1999) also notes that the subdividing of properties and the possible impairment of access “is prohibited unless the local authority is satisfied that each subdivision has satisfactory vehicular access to a public street.” Thus, any road access management policy implemented in South Africa needs to function within this “equitable accessibility” framework.

Implementing the principle of equity in land accessibility does not simply imply unfettered land access to a road network. In a U.S. context this scenario would be similar to the concept of, “abutters rights,” where a development is entitled to a road access at each and every road frontage adjacent to the development. Equitable access needs to be judged within the context of “the efficiency and safety of the country’s road and street network.” (GRAMSA, 2004) Nevertheless, another challenge impacting the equitable implementation of a national access management policy in South Africa arises as, “there will be a difficult legal task ahead in order to determine how to implement and enforce these guidelines [i.e. , GRAMSA], by means of legislation,” as “provinces have exclusive competence to make laws on provincial roads and traffic.” (Hopgood & Dingle, 2002)

“ACCESS” LEGAL INTERPRETATION AND CHALLENGES

A potential challenge that may be faced by the South African justice system is clarifying the legal interpretation of “direct access” and its compatibility with the constitutional right of “equitable access.” In other words (illustrated through a hypothetical example), if existing developments along a highway have direct access and proposed developments would not (but access would be provided via alternative access routes), could such indirect access be deemed “inequitable” (i.e., unfair)? This scenario could become particularly pertinent to South Africa in an era of Black Economic Empowerment (BEE). BEE represents a strategy that seeks to redress the skewed economic environment prevalent in certain business sectors in South Africa.

Such a legal impasse as described in the previous paragraph could arise where a previously disadvantaged land developer may argue that in order to be afforded the same market area potential (per unit of driving time) as existing developments (with direct access) along an arterial, direct access between the proposed development and arterial must be permitted. The non-granting of such permission, though in accordance with a prevailing access management plan, could be deemed as continuing to give existing businesses an unfair advantage, thus sustaining the skewed business environment.

Could contributing to an equitable business and competitive environment through a flexible (yet inconsistent) application of access management principles, be one of the reasons for the non-ratification of GRAMSA at the provincial level? An answer in the affirmative does not necessarily imply that the situation described is correct, as the continuing lack of national guidelines only sustains the potential for legal challenges to established access management standards. Nevertheless, it may be reasonable to assume that the unwritten flexible approach to access permitting may have been used by local/municipal governments as a “carrot” in attracting business/development to their respective regions.

In reducing the potential of access management appeals (in turn increasing the present need for the ratification of access management standards), Brindle (2002) notes that “because the conditions and the process (and hence the underlying policy and intent) are clearly stated [i.e. through a nationally mandated policy guideline], attempts to water down access limitation through the appeals process should be reduced.”

Stander (1999) highlights another legal factor contributing to the potential provincial implementation of GRAMSA, when he states that a

conflict arises when the relevant road authority exercises its legal authority to deny, control or to alter access points of landowners abutting a road, especially the major roads. In terms of the South African Constitution, it has to be determined whether the extent of closure or alteration of an access to a public street boils down to exercising regulatory powers or whether the authority has to expropriate (i.e., exercise of police power) and pay compensation. As most court cases locally [i.e. in South Africa] have been decided under the previous constitution, and little legal guidance exists, it is considered that guidance will have to be sought from comparative (such as the USA) foreign law.

ACCESS MANAGEMENT TECHNIQUES AND EQUITY

According to Brindle (2002), access management techniques can be grouped into seven types: “frontage controls, driveway controls, local widenings, intersection controls, turn controls, medians and openings, and traffic (including parking) management.” Overarching these techniques is the determination of road functional and access class. A selection of techniques will be presented in this section, with a corresponding discussion of equity impacts that may arise. The lack of access to South African graphical illustrations of access management interventions has necessitated that alternative international examples are used. Before discussion of the techniques, overall equity impacts of access management are presented in Table 2. [TABLE 2]

The description of positive and negative equity impacts of a selection of access management techniques (in the following sections) does not represent an exhaustive analysis. Nevertheless, the exposition of these potential impacts may provide further material identifying potential benefits and shortcomings of a national access management policy for South Africa.

Road Function and Access Class

Road functional classification is “based on the degree to which the functions of movement versus access are served.” (AMM) As already noted, a road can function to facilitate mobility and access, the degree to which it serves both is influenced by its designated function. Accordingly, access classification is “an administrative designation linked to a set of access management standards.” (AMM)

Figure 1 shows two alternative representations of road functional class. The first, put forward by Stover (2002), shows the gradation of traffic flow from a movement function to an access function. The smooth curve “provides for a gradation of traffic flow from the movement function to the access function. This gradation is a continuum and there are no definable boundaries between one road functional class and another.” (Stover, 2002) Such a depiction of road functional class has been criticized, due to its gradation of functional class, which may entail arterials not functioning as major mobility conduits (i.e., their primary purpose), but instead function similar to roads at a lower hierarchal level (where access is a priority). [FIGURE 1]

Accepting that “the fundamental motivation for the functional classification system is the incompatibility between access and mobility,” (PWV Consortium, 2003) Brindle’s approach (see Figure 1), with its sharp delineation between movement and access, schematically is a more realistic representation of road functionality, in the author’s opinion. Furthermore, this Brindle’s approach, also alludes to the difficulty of roads equitably and efficiently facilitating both movement and access simultaneously.

It can be further argued that, with respect to efficient operation, roads function better when fulfilling a minimum of functions than when trying to meet all functional ideals (e.g., walking, cycling). This scenario is likely for roads with a high level of through traffic. A more equitable situation results if it is accepted that there is a greater potential of maximizing functional efficiency if one or two functions are to be fulfilled than in the opposite case, where a multiplicity of functions are expected to be served. It is noted that this conclusion may not be accepted by proponents of new urbanism.

GRAMSA accepts the need for the functional classification of roads but disconnects the implied link between road functionality to road hierarchy. “Over-emphasis of the importance of one link at the cost of another does not only constitute poor design; it can place the network as a whole in jeopardy. In fact all parts of the network require equal consideration.”(Sampson, 2004) Such a strategy falls in line with the holistic and “equitable” road network planning regime striven for in South Africa. Positive and negative equity impacts of road functional classification are as follows:

Positive impacts

- Planning applications
Holistic/systematic road access planning can be undertaken in a consistent fashion. Equity has a greater potential of being achieved under a systematic planning approach.
- Reduction in resource wastage
Adherence to established access management guidelines can minimize adhoc decision making, which in turn may lead to a reduction in resource wastage. Such potential savings can be used on transit, highway or community improvement projects restoring the balance between private and public transportation.

Negative impacts

- Resource allocation
Functional classification may be perceived by some constituents to directly influence the level of present and future resources allocated to a road. It is accepted that existing road networks are fixed in the short term (at least), thus maintaining functionality of the present network will take a higher priority. Nevertheless, the holistic application of access management principles and the corresponding dissemination of information, may mitigate constituent perceptions as to negative impacts arising from such interventions.
- Continuation in road hierarchical status quo
Similar to the previous negative impact, an access management policy guideline may also be perceived as perpetuating the existing road network hierarchy, i.e., maintaining network disequilibrium. Antagonists may argue that such a mandated guideline, is to the detriment of roads in other areas, which may see a functional reclassification of roads as a precursor in attracting development (i.e., access unlocking development potential as contained in GRAMSA [see earlier section ‘Access Management Purpose and Equity’]). Again, the holistic application and information dissemination and community participation are positive strategies muting the impact of these potentially negative impacts.

Frontage Control

Frontage control (also known as reverse frontage) is the technique of permitting access via local/service roads of developments abutting arterials. One of the techniques of access management is the limitation of direct access to major roadways, while respecting the need to allow all developments access to the highway network (though not directly).

Equity impacts resulting from frontage control interventions (not only applying to vehicles but also pedestrians) are summarized as:

Positive

- Environmental safety enhancements
Restricting frontage access substantially reduces crash potential between vehicles traveling with, exiting into, and turning out of high speed traffic (as well as pedestrians conflicting with any of these traffic streams). Allowing unlimited access to arterials not only defeats the high level of service that ideally should be maintained on such highways, but also contributes to weakening the highway/pedestrian safety environment. Vehicles accessing, exiting, changing lanes, etc., substantially increase the complexity and rate of decision making of all road users. Fewer and simpler decisions enable greater focus on negotiating the highway in turn enhancing the highway safety environment afforded to all.

- **Enhancement in aesthetics**

Frontage access restriction may provide opportunities for creating a buffer (i.e., safety) zone. Such zones may be suitable for aesthetic enhancement in the form of landscaping. Such a strategy has a definite application in South Africa, where the landscaping of frontages and medians could be part of local community beautification programs (especially in the high density residential townships). While enhancing highway safety, such an intervention may also generate aesthetic benefits. Brindle (1996) urges caution in interpreting the significance of these “soft” impacts arising from frontage development.

Negative

- **Business sustainability**

A major argument against frontage access control is the potential that it may harm business viability. Business representatives often state that without direct access onto an arterial, their customer base will go elsewhere (see earlier section ‘Access Legal Interpretation and Challenges’). Studies conducted in the U.S. of the economic impact resulting from access management interventions, e.g., medians, generally indicate minimal negative impact. (AMM, 2003) Those businesses that may suffer are those where a significant percentage of the clientele are passers-by. As to whether such a result could be expected in South Africa, further research may shed more light on this issue.

- **Community separation**

The restriction of frontage access must be weighed against the local pedestrian environment. South Africa is a country where the majority of urban and rural households do not own a car, so pedestrian movement along all roads can be significant. In such an environment, the placing of “concrete and other barriers are seen by pedestrians as stumbling blocks that merely impair the individual’s freedom of movement.” (Van Vuuren, 2001) Such interventions that may negatively impact on the transportation equity of pedestrians, i.e., in that their mobility is reduced by having to make longer trips to get around the impasse, have the potential to backfire (subject to enforcement level). Pedestrians and other road users may create alternative short-cuts to overcome the impasse. These makeshift interventions may place the pedestrian in even greater danger, not only affecting their personal mobility but also safety in the process of accessing a site. This further tips the balance of the already disadvantaged road user out of his/her favor.

Medians

A widely accepted access management intervention, medians [non traversable] represent, “a physical barrier in a roadway or driveway that separates vehicular traffic traveling in opposite directions.” (Texas Department of Transportation, 2003). Furthermore, non-traversable medians can take a number of forms including: a raised concrete barrier or a slightly depressed structure (or grassy strip) that runs in the middle of a highway. A summary of the potential equity impacts of non traversable medians is presented below:

Positive

- **Road safety**

Medians can provide a refuge for crossing pedestrians. Such refuges are important from a safety perspective in high speed road networks, heavily pedestrian environments or where roads consist of four lanes or more. Crossing major undivided highways by pedestrians, in most cases present a number of highway safety challenges. Medians improve transportation equity afforded to pedestrians (as vulnerable road users), in that wide roads, which, if undivided may represent an insurmountable barrier, can now be crossed in two stages. Safe mobility is thus restored and the pedestrian can continue with his/her daily travel activities.

- **Transit corridors**

Non traversable medians while facilitating the separation of traffic streams can also be used to demarcate a transit priority lane. Such lanes may be either for the exclusive use of transit vehicles or be shared with other public service vehicles, e.g., taxis. Through the establishment of dedicated

transit lanes, transit travel times may be improved, thus enhancing mobility levels for the non-car owning population.

Negative

- **Barrier**
Non traversable medians may be perceived to reinforce the road as a barrier between communities (see earlier section 'Frontage Control') for further discussion of this negative impact.
- **Mobility**
In some cases, if the a road cannot be widened to accommodate a proposed median, the imposition of a median could be seen as constricting the already limited road space. Through such a constriction, assuming that traffic volumes remain the same, travel speed may well fall. Such a scenario having negative impacts on mobility may well be part of a deliberate Travel Demand Management (TDM) program, encouraging the use of public transit which may have priority on certain divided road sections. Thus, while transportation equity may become deficient by using a particular travel mode (e.g., the private motor vehicle), it may be regained through the patronage of alternative modes, e.g., transit, cycling and walking.

ADOPTION OF NATIONAL ACCESS MANAGEMENT GUIDELINES

For the GRAMSA to become an implemented policy guideline there is a need for it to be accepted by professional fraternities, local governments and the public at large. The professional fraternities represent, highway/road engineers and urban/land use planners. To achieve the buy-in of communities requires, the "participation of those who have all too often been arrogantly 'planned for' and cynically marginalized." (Omar, 2001) Communication between the author and access management experts in South Africa has revealed the following contributory factors slowing down the national acceptance and implementation of GRAMSA:

- **Infighting between professional fraternities**
As already mentioned, the highway engineers and land use planners have a direct role to play in the implementation of access management. Despite the importance of their potentially complementary roles, each fraternity "jockeys" to ensure that they have the greater input into contributing to the development of urban form. Brindle (2002) identified this professional dichotomy in an Australian context, when he observed that "some players in the planning process wrongly assume that access management inevitably means urban environments devised by insensitive engineers: traffic-dominated roads with 'inactive' road frontages, bounded by bland walls and with no pedestrian activity. No such inevitable cause-and-effect exists." Thus, this infighting need not exist, and both fraternities must work towards the ratification of GRAMSA to the benefit of society. Indeed, the successful implementation of GRAMSA will depend on its "acceptability by as many partners as possible." (Hopgood & Dingle, 2002)
- **Drivers of urban form - communities or traffic**
There is continuous debate as to the outcome of access management, whether it be road re-design or development control. The former is the preserve of the road engineer, the latter the land-use planner. In land-use environments where the physical ambience of the urban area is of importance, the physical form of the road infrastructure will take second place to urban design philosophies. The argument here is that communities are made for people and excessive vehicular activity facilitated through roads is both intrusive and unwanted.
Proponents of new urbanism "encourage greater rather than less exposure of urban dwellers to traffic on the ground that to do otherwise relegates non-vehicular movement and activities to subordinate importance." (Brindle, 1996) On the other hand, some have argued that the urban form is dominated by roads prioritizes private vehicle use, contributes to urban sprawl and is an inefficient use of spatial resources, all of which degrade community livability. Indeed, the rigorous application of access management may have contributed to urban sprawl, in that developers seek areas where such standards may be applied with greater flexibility.

- **Functionality of existing policies and methods**
With respect to established developments along arterial roads in South Africa, Stander (1999) notes that “many activity streets developed over the last 50+ years as ribbon development with accesses spaced very closely. Whilst few if any of the [access management] criteria are complied with in these instances, these streets do operate successfully (albeit with considerable side friction). In fact most town planners see this type of street as desirable from their viewpoint and there are limited efforts of retrofitting by the road authorities.” (Stander, 1999) The continuing functionality (to a certain degree) of highways in this instance begs the question, “If it’s not broke, why fix it?”
- **Transferability of North American access management scenarios**
It was noted earlier (see earlier section ‘Evolution of Access Management in South Africa’) that U.S. highway engineers had accepted the relationship between highway access and efficiency before 1990. Since that time, a significant amount of research on access management design principles and resulting impacts has been undertaken. North American successes in the application of access management do not automatically translate into similar success in a South Africa environment. Thus, South African highway engineers, while acknowledging the principles and techniques of access management as from the early 1990’s, continue to refine these techniques to better meet the unique requirements of local environments.

CONCLUSIONS

The principles and techniques of access management from an equity perspective have been reviewed. The acceptance of such principles and techniques is accepted by stakeholders, but there is a hesitation by them in the adoption and consistent application of the proposed guidelines. This seems unfortunate, as consistency in the application of an access management policy guideline can enhance the potential of the equitable distribution of “spatial” resources in South Africa. Indeed, national implementation of GRAMSA is consistent with the sustainable and equitable future environment envisioned for South Africa.

The deficiency in the lack of a national access management framework is further weakened, when noting the forecasted level of urbanization in South Africa (currently 57%, reaching 70 percent in 2030). (United Nations, 2003) Though road safety per se has not been discussed in this paper, with the current high level of highway injuries and fatalities on South African highways and the envisaged rapid increase in urbanization, these scenarios demand implementation earlier rather than later of an access management policy as part of the national and provincial planning process. It should be noted that, with the continuing need for research into access management unique to South Africa, the applicability (in South Africa) of internationally acknowledged benefits of selected access management interventions is not lessened.

There is an urgent need for a consistent access management framework in South Africa, as such a framework has the potential to reduce waste of finite resources as well as improve the level of adherence in access management implementation. In accepting this fact, the Gauteng Department of Transport in its 2001 Annual Report, noted that, “all other Provinces and Metropolitan/Local Councils have numerous requests from developers to relax standards for road access. Standards vary across the board, and inconsistency results in confusing signals sent to the market place, with the resultant degradation of the road system and sustainability only working haphazardly for a short period. This negatively impacts on landuse with urban sprawl as one of the major outputs.” This confused scenario is further exacerbated, as “frequently, there is no consistent and predictable statement of access requirements and restrictions that a development, the road authority or council can rely on.” (Brindle, 2002) This lack of consistency only compounds the level of inequity manifested by ad-hoc road access permitting and management. Thus, it is concluded that the adoption and implementation of GRAMSA measurably enhances the potential of “equitably” improving the transportation environment in South Africa.

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TABLE 1 - Access Management Purpose and Potential Equitable Outcomes

Purpose Aspect/Challenge	Access Management Intervention	Potential Equitable Outcomes
Protecting communities	Removal of non-local traffic from communities, i.e., non-local traffic primarily use arterials.	Enhances community safety - especially relevant in the majority of South African communities which have high pedestrian activity coupled with a low vehicle ownership rate.
Unlocking development potential	Holistic access management - all requests for access impartially determined by mandated guidelines.	Development of access advantages are not perpetuated through continuation of past practices. As standards are now consistent, access decisions are made based on consistent guidelines, i.e. no development is placed at an unfair “access” advantage.
Protecting road utility	Holistic access management - e.g., through the discouragement of extremely permeable road networks with multiple accesses. Brindle (2002) confirms the utility role of access management where he states that “the nature and extent of connections between a given road and abutting land, and its connectivity with other roads and streets in the network, are key parameters in defining a road’s usefulness in the land use-transport system.”	Preservation of road functionality as mobility and/or accessibility is maintained due to the sustainable physical connectivity of the road network. A balanced road network improves the potential of maintaining, if not improving the road level of service.
Protecting road function		
Protecting road efficiency		
Protecting road safety	Demarcating and the management of vehicle and pedestrian access points across roads.	Motorists face fewer decision points in turn reducing traffic conflict potential. Other road users also gain (through reduced conflict potential) as pedestrians benefit from a safer walking environment and bicyclists benefit from a safer riding environment.

TABLE 2- Equity of Access Management Principles (Summary)

Criteria	Rating	Comments
Treats everybody equally.	-1	Some property owners may feel unfairly treated.
Individuals bear the costs they impose.	1	Reduces some externalities (congestion and crash risk).
Progressive with respect to income.	0	No impact.
Benefits transportation disadvantaged.	1	Can improve walking, cycling and transit.
Improves basic mobility.	1	Can improve alternative modes and emergency access.

Rating from 3 (very beneficial) to -3 (very harmful). A 0 indicates no impact or mixed impacts.

Source: TDM Encyclopedia

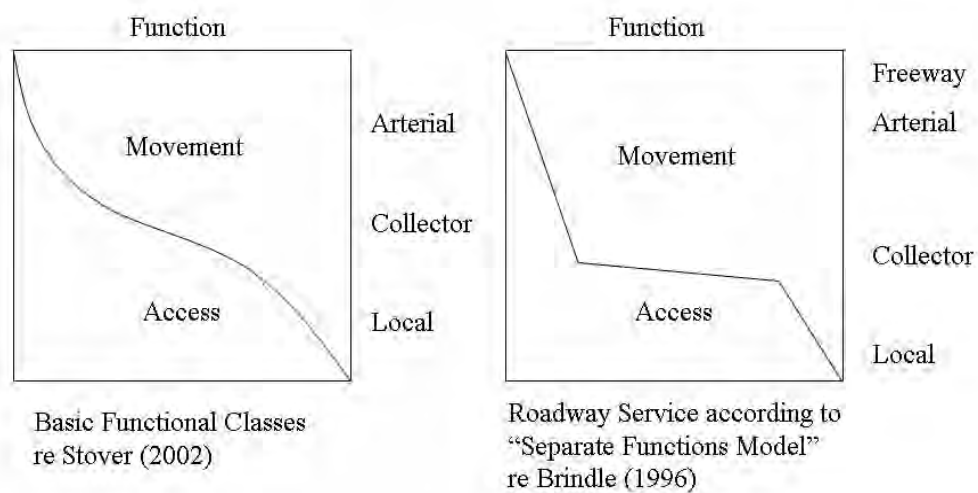


FIGURE 1 - Access versus mobility functions arising from road functional classification