ROAD HIERARCHICAL CLASSIFICATION VERSUS ROADWAY ACCESS MANAGEMENT

Access Management Conference
JULY 2016
Introduction & background

• WCPG guidelines were developed in late 1990’s, and re-packaged 2002, & appear to have been well received in most cases

• This followed by similar work in Gauteng which resulted in National AM guidelines (TRH 26)

• Concern is that insufficient attention is given to the increasingly important role that road based public transport, pedestrians, cyclists and HGVs must play in future in the RSA

• This paper thus offers an interpretation of current ‘road access management’ guidelines as recognized locally & suggests that further work is required
Access opportunity ‘decision model’

Road
Hierarchical Classification
Roadside Development Environment
Access Category

Technical Considerations

Other Influencing Factors

Access Opportunity

RAG 2002
## Road Class Categories & Development Environment

### Road Class Functional Classification
(Source: PGWC RAG, 2002)

<table>
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### Development Environment
(Source: PGWC RAG, 2002)

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<th>Density Criteria Determination</th>
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Problem Statement

Differences exist between the National (TRH 26) guideline approach and that prepared earlier by the Province.

• Is the latter to be totally discounted going forward?
• Which approach offers the better all-round advice?

Access management guidelines, should be based on sound traffic engineering principles

Opportunity missed with TRH 26 South African Road Classification and Access
Aim of the Paper

An attempt at expressing a concern that the approach taken in TRH 26 is too restrictive, and is out of touch with many local urban planning realities.

It does not contribute sufficiently to the delivery of desired livable & sustainable neighbourhoods, towns & cities.

Rethink of the national guidelines urged, with the adoption of a more flexible, and more land-use / transportation friendly approach, which also gives consideration to all transportation modes.
Definitions

**Public road** – that between property boundaries which is available to all modes of transport – the exception being the ‘freeway’ (or motorway)

**Roadway** – being that portion of the road set aside & constructed to accommodate vehicular traffic

**Verge** – the remainder of the road which is the pedestrian realm

**Sidewalk** – that portion of the verge constructed for pedestrians
Through traffic as a component of total traffic

- At no point on the road can traffic truly be described as ‘exclusively’, or ‘predominantly’ through traffic – what is through traffic?
- Whether on a rural or urban road there will generally be a mix of long distance, inter-town & local traffic
- Important is the mix of vehicle & other traffic, and the degree of mobility desired or permitted at any location
Rural arterial traffic characteristics
Urban arterial traffic characteristics
Reach of connectivity & route continuity

• Route continuity & connectivity is important to the traveler, and thus important in route guidance or navigation systems, & plays a big role in the road network optimization process

• Consensus between planners and engineers needed on how a road is to be perceived and managed over time

• Requires a classification referencing that is registered in the Integrated Transport Plan and Spatial Development Framework for that municipality

• There seems to be no logic in changing the road classification number as one progresses down that road. What is likely to change are some of the ‘road’ standards applied along its length
Influence of the development environment

- The ‘through traffic component’ – more local travelers closer to urban area, steady slowing down of traffic operating speeds

- Roadway performance has been impacted on by the surrounding development environment:

- Roadway designer has a choice:
  - attempt to maintain the same geometric (with added traffic lanes) and access standards
  - capitalize on the fact that operating speeds have reduced, and thus there is opportunity to offer a different, possibly less costly geometric and access management solution.
Rural versus Urban Roadway Planning & Design

• Point where rural road enters urban area related to land subdivided into erven

• Location dependent on rate of urban expansion & agreement on the urban edge - moving target

• Most rural roadway design principles apply to urban situations, but there are aspects that do not apply where adjustment is required (E.g., operating speeds generally adjust)
Corridor development – the challenge

STAGE 1 - Connectivity between Urban Centres

CHARACTERISTICS
Accommodates through traffic at
- High levels of service - good mobility
- Low access demands
- Traffic growth & product of material & regional economic activity

OPTIONS
- Road replacement on failure of existing facility
Corridor development – the challenge

STAGE 2 - Increased through traffic plus improved road standards

CHARACTERISTICS
Increased road side activity leads to
- increased demand for access
- increased local traffic
- reductions in mobility standards

OPTIONS
- Add additional capacity to meet demand
- Consider alternate route
Corridor development – the challenge

STAGE 3 - Alternate Route or Bypass option

CHARACTERISTICS
- Changed travel patterns
- Creates significant shifts in urban development
- Possible urban instabilities
- New demand for access to Bypass
- Changed facility ownership
Corridor development – the challenge

STAGE 4 - Integrated Development Essential
Integration & functional use of a road

Source: AASHTO

Marginally adapted version
Integration & the functional use of a road

The functional classification of roads:

✓ vehicular mobility with limited pedestrian activity at the top end,

✓ the middle band provides for increased transportation / land-use integration, with high portions of public transport, pedestrian, goods delivery with reducing private car activity

✓ the bottom end the predominance of access to land at a pedestrian dominant scale.

Does it not follow that the roadway vehicular access management standard to be applied is a different classification to the ‘functional classification’ applied to a road?
Mobility, access and integration

• Few publications dealing with urban street design appear to place emphasis on the traditional ‘functional classification’ approach

• A direct rejection of the AASHTO approach in one notable case
  ✓ Classification of roads as **boulevards, avenues, streets and access roads** - priority for vehicular traffic high for boulevards and very low in the case of access lanes
  ✓ Each of these is then viewed in the context within a **city** (+7 floors), **town** (3-6 floors), **commercial** (1-3 floors), **residential and industrial development environment areas**, then also **streets with no active frontage**

• Refer also to use of ‘Arterial Management Plans’ recommended in RAG
Class 3 – a common denominator

- Class 3 - District Distributor / integrator / collector
- Enjoys a wide measures of mutual understanding between many traffic engineers and town planners as being a common denominator around which the other road classes revolve
- Seen as the ‘activity spine’ in people orientated ‘activity corridors’, thus providing a high degree of people access & mobility
Walkable catchments informing the urban structure
Applied to urban structuring

Source: Western Australia
Example of an integrated plan

Western Australia Government
Primary road network – spatial relationships
New urbanism / Smart Growth
Pedestrian or other use classification

The separate Class 6 of a pedestrian road appears superfluous. All roads are pedestrian roads by legal definition, thus possibly requires that there is in place;

✓ the roadway access management policy & standards

✓ the classified pedestrian network (e.g., pedestrian district, city walkways, local service walkways)

✓ the classified bus network (BRT roadways, preferential lanes, other)

✓ the classified bicycle path network (4-class system used in RSA)

✓ the truck management policies (major & local truck routes, truck districts & truck restricted areas)
Access opportunity ‘decision model’
Conclusions

• It is suggested that TRH 26 misses the mark in assisting local municipal planners, engineers and politicians with the management of the urban and rural road networks.

• There is a confusion between the functional classification of a road, and the roadway access management standard that is applied on any road and / or road segment.

• The basic 5 road class functional classification should continue to hold.

• That the predominance of the motor vehicle is seen to diminish with an increase in number.
## Recommendations – Road class functional classification

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<td>High order arterials, for primary or principle vehicular movement roads</td>
<td>Interchange only</td>
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<td>1(e) Expressways (often the forerunner of a freeway)</td>
<td>Basic 800 m I/S interval, no frontage access, &amp; occasional grade separation</td>
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</tr>
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<td>2 Primary Arterials</td>
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<td>Basic 600 m I/S interval with no frontage access</td>
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<td>3 District Distributors / Integrators</td>
<td>District distributors, integrators / activity spine roads &amp; collectors</td>
<td>Varying I/S interval dependent on development environment &amp; related appropriate targeted vehicle operating speed</td>
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<td>4 Local Distributors / Integrators, including streets in commercial &amp; industrial areas. (Could be viewed as sub-groups of Class 4)</td>
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<td>Individual property access streets</td>
<td>Minimal vehicular access controls other than where joining a higher order road</td>
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Recommendations – development environment

That prominence be given to the role of the development environment within which a roadway exists as illustrated - The classification adopted by the Western Cape Province represents a good starting point, but should be supplemented by density considerations.

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Density Considerations
Recommendations

• That the access rules to be applied to a particular roadway segment be reviewed in the context of the road functional classification and corresponding development environment
• thereby making a clearer statement as to the function the road aims at serving & how it is to be managed
• That the above be the subject of further discussion
Thank you
Jacques Taljaard