

Session 3 - Design of urban roads within public areas



Paper :
Sharing the urban road space

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The paper is based on the work a subgroup of the previous C10 Committee "Urban areas and integrated urban transport". The subgroup was led by Ms. Hillie Talens, Netherlands, and its members were Jürgen Gerlach, Germany, Anne Sigrid Hamran, Norway, Thomas Kieliger, Switzerland, Dominique Thon, France, Naofumi Takeuchi, Japan, Bystrík Bezák, Slovakia and H.K. Srivastava, India

As a part of the PIARC C10 work, Oslo Road Authority, represented by Anne Sigrid Hamran, has engaged Civitas AS, represented by Eli Havnen and Ellen Haug, to analyse and compare a set of guidelines for road design from different countries.

The objective of the report was to give a comparison of different guidelines from different countries, with focus on how they deal with the "urban main street". To reach this goal, a set of documents (standards, guidelines, handbooks and catalogues of examples for road design) was analysed, collected from the different members of the committee.

The group has also made a catalogue with examples of redesigned main streets with the aim to illustrate to road designers, engineers, planners, etc. how the task of combining many different functions in a main streets is solved in different countries. The cases are from Germany, Japan, Norway, Slovakia, South Africa and Switzerland. The oral presentation will focus on these cases.

Definition of an urban main street

It is a (mostly old) street in an urban area leading to a city centre. Along such a street many activities take place; people live in these streets or they work there. There are shops that need to get goods to sell and costumers to buy things and restaurants and resting places. Sometimes you can find schools or religious buildings along the street. And there is through traffic on their way to the city centre.

A main street is a part of the urban area and has:

- *buildings for different purposes(on both sides) that are connected directly to the street; e.g. shops, offices, dwellings, restaurants and cafés,*
- *both through traffic and local traffic*
at least one kind of public transport on street level,
- *(lots of) pedestrian and (hopefully) bicyclists and other slow moving traffic as animal*

- drawn carriages,*
- *more than 10 and less than 50 meter between the opposite building fronts;*
- *no more than app. 50.000 pcu/day (passenger car units (or vehicles) per 24 hour)*

The documents are from the following 15 countries: Norway, The Netherlands, South Africa, Belgium, Switzerland, France, Scotland, Finland, Hungary, Australia, Japan, The United States of America, Germany, Denmark, Canada.

The documents vary greatly in type, size, scope and design philosophy. They also show very different approaches to the planning process and have very different status in the decision making process of the various countries.

It is important to note that while some documents are the main document that determines the design of roads in a country, others are only supplementary. This means that in many of the cases other documents that are more comprehensive on the issue of the design and redesign of roads exist. It has however not been part of the assignment to collect and analyse other documents than the ones collected by the PIARC committee.

The documents are analysed based on two different themes:

1. The type and approach of the documents
2. How the urban main street is dealt with
3. Design philosophy and subjective evaluation

1. The type and approach of the documents

The documents are firstly described according to: a) type of document, b) the status of recommendations, c) the scope of the document and d) the structure of the document with a view to how it is meant to be read or used. The main objective is to give a framework for the more detailed analysis on the urban main street.

The function of the documents can to a great extent be categorised into four different types.

- **Standards:** Documents that give a set of absolute rules for the design of roads.
- **Guidelines:** Documents that give a set of guidelines for the design of roads. There is greater room for discretion and adaptations than dictated by standards.
- **Handbooks:** Documents that explain working methods or give an overview of current knowledge about a theme or set of themes.
- **Catalogue of examples:** Gives examples of projects.

Some of the documents include more than one of these functions. Many of the documents do not fit neatly into one of the defined document types. Instead they often have more than one function. Documents called standards often include guidelines and vice versa (the main difference is that standards are mandatory and guidelines leave room for discretion and adaptation). Additionally, the documents often combine standards/guidelines with elements one would expect to find in handbooks.

Most of the documents are in the form of guidelines. This means that the recommendations are normally not binding but gives a solution that ought to function for the different uses.

Mixing different document types

Where several document types are combined, the document provides information for both strategic planning and detailed design. This could enable the user to create detailed solutions that are consistent with strategic aims. This is highly desirable in complex tasks such as transport- and traffic planning. The Dutch document gives an example of mixing different document types, with presentation of working methods, guidelines and elements for design. The Danish document shows another way of mixing document types, with an overview of knowledge and experience of traffic-calming measures combined with project examples.

Other documents give only the solutions for each road category without discussing the whole road system. For example the Norwegian document gives norms and recommendations for the design of one road category at a time and only has a brief introduction to the classification system. This kind of document is less of an overall tool for transport and traffic planning than documents that take a more holistic approach.

Main and supplementary document

Most of the documents are intended to be the primary document for road design in the actual country. The other documents are supplementary to standards or guidelines not analysed in this project. The supplementary documents are all theme- or area specific, for example on public space (Belgium) or a city centre (Scotland).

There is great variation in the status of the advice given in each document. The variations stretch from legally binding rules (Japan) to suggestions presented for inspiration (France). We found two documents that distinguish between the status of its contents. The Dutch document defines all its recommendations on a five-level scale from binding to suggestion, while the Norwegian document distinguishes between the words “should” (binding) and “could” (recommendations).

All traffic modes in general documents

The general documents (which also are primary documents) normally cover all traffic modes. The theme- or area-specific documents put emphasis on some of the transport modes according to their subject.

Strategic and detailed planning

Some of the documents focus on both strategic planning and detailed design. These are, most commonly, the same as mentioned above and include several document types. These aim at being an overall design tool for transport planning, traffic management and street design. (e.g. The Netherlands and USA)

The documents represent different ways of strategic planning:

- The document functions as a manual, enabling the designer to make choices at both the strategic and detailed level (e.g. The Netherlands).
- Focus on the street's role in the transport system as a basis for the actual design (eg. USA).
- Give recommendations for the stages of the planning process by means of working methods (e.g. Belgium and Hungary)
- To list policy considerations that must be included in the planning process (e.g. Australia).

The approach for detailed planning also differs:

- Give a set of finished solutions that are to be applied (e.g. Japan)

- Show schematic solutions for design of roads within each road category that must be adopted for each situation (e.g. Norway)
- Give a set of solutions for the different design elements that the planner/designer is to choose from and combine at her or his discretion (e.g. The Netherlands, South Africa, Switzerland and Canada).
- Give a range of values for the planner/designer to choose from (e.g. USA).

The discretion open to the planner varies

The way and the degree to which each document allows for discretion also vary.

From the documents with concrete physical solutions, the Japanese document is an example that leaves the planner/designer with little room for discretion. This document is legal and provides regulations for the issues it covers. Exceptions are allowed only if it is impossible to comply with the regulations.

All the guidelines and some of the standards are open for discretion. The description of approach to strategic and detailed planning given above indicates the different ways this can be done.

The Australian document gives large freedom to choose end solutions. It only demands that the policy considerations are considered and included in the process.

The Scottish document delivers a planning framework within which the designer has full discretion provided that she meets the ambitions of the framework.

The discretion for designers is not limited in the French document, which only presents the original concepts in order to provide inspiration to the planning process.

2. How the urban main street is dealt with

The documents are then analysed in more detail in order to uncover how the documents deal with the concrete (re)design and traffic management of the urban main street.

The aim is to uncover different aspects of design philosophy, methods used and overall policy on the relation between urban setting and the different transport functions in the urban main streets. As a basis for this, the documents are examined regarding how different aspects/functions are dealt with. This includes urban setting, transport function, pedestrians, public transport, bicycle and other possible transport modes.

The definition of an urban main street comprises widely different streets

The project's definition of the urban main street includes a large range of street widths and traffic volumes. For example, the streets can vary from two lanes to eight lanes, with correspondingly different dominance of the traffic on the surrounding environment. This gives widely different streets that are different in scale, urban situations and in the challenges connected to securing a balance between the transport function of the road and its urban setting.

The broad definition of an urban main street means that although the different countries both classify and design their urban roads in very different ways, we could normally find one or

two road categories that match the urban main street as defined.

No precise comparison

The comparison of widely different streets cannot be precise and must only be regarded as a way to broadly describe the differences and similarities between how the urban main street is dealt with.

The norm is to divide roads into categories

A common method used for guidance on the design of roads is to classify them. Very few countries have not done this. The Dutch document does discuss classification of roads but does not provide a classification per se. All the remaining documents that do not discuss classification are supplementary to other documents.

Transport function is important for classification

The transport function is important for classification. Three documents base their classification solely on transport function while the rest (five) base the classification on a combination of the transport function and urban setting. Despite this, or may be because of this, most documents stress the need to adjust the design of the road to the adjacent built environment and its functions.

Focus on the needs of through traffic

Another common characteristic of the documents is the focus on the needs of through traffic. The majority of the documents that recommend some priority for the different types of traffic show a high regard for the needs of a smooth flow of through traffic in main streets. A few underline the need to balance between local and through traffic. Most, however, hardly mention the needs of local traffic, with the occasional exception of parking solutions.

Ways to treat the environmental friendly modes

The ways the documents deal with the details for planning/designing for the environmentally friendly modes differs greatly:

- Some documents cover the planning aspects of all the modes as well as the design details. The clearest example is the Dutch document, which gives a thorough introduction to the characteristics and needs of the different modes before guiding the user to the information on physical dimensions etc. The American document has a similar approach.
- Other documents give only the alternative physical solutions e.g. in the form of illustrations. Norway, Finland and Hungary are all examples of this approach.
- A third way to treat the environmentally friendly modes is to give a policy statement regarding how these are to be prioritised. Australia is one example, as are most other countries when it comes to the bicycle.
- Fourthly some documents cover the different issues through legally binding measures. Here Japan is the most prominent as the whole document is legally binding and has policies covering all modes.
- And finally some documents are not concerned with all modes represented in the street. The Canadian document is an example of this. It is only concerned with calming of motorised traffic.

After vehicles, pedestrians are the mode most thoroughly covered. Most of the documents emphasise the provision for disabled people. In Scotland, Switzerland, USA and France such provisions are legally binding.

No strong policy on the provision for bikes

None of the documents is particularly clear on how to prioritise cycling. Most have a statement in the form of a policy such as lanes for bicycles should be prioritised when there is space. The only documents that treat this issue in great detail are the Dutch, Swiss and German documents.

Bus stops are often the only public transport facility mentioned

Not surprisingly, the bus is the most common public transport mode in the urban main street. Planning for buses is a complicated matter. Despite this most documents only give details for the design of facilities and not the planning aspects needed to accommodate the bus. The exceptions are again The Netherlands and USA, which also cover the planning aspects of providing for public transport. Japan and Australia give policies, while the rest just show the technical details – often only of the bus stop.

3. Design philosophy and subjective evaluation

The relation between transport function and urban setting

The design philosophy in documents can be discussed with regard to which extent emphasis is put on urban setting, traffic function or a combination of the two. The only defensible way to do this is to base the discussion and evaluation on our subjective impressions of the documents. Some documents give priority to urban setting, others to transport function or both.

Often urban setting is covered only in the road classification. In other documents this balance is apparent through the way the documents treat the relationship between through traffic and local traffic. It is difficult to differentiate between documents that base the classification/other recommendations on both.

Focus on environmentally friendly transport modes

In addition, the document's design philosophy can be discussed with regard to the degree to which the environmentally friendly transport modes (pedestrians, bicycles, public transport) are treated as equal to private cars. The evaluation is mainly based on:

- a) how thoroughly the mode is treated.
- b) if the documents describe many facilities for the mode (for pedestrians this include universal design)
- c) if the document have policy statements for the mode.

A good design philosophy?

In our opinion a good design philosophy for the urban main street should discuss and give recommendations for both the relationship between urban setting and transport function, and the treatment of environmentally friendly transport modes compared with the private car.

Comprehensive documents

Two documents stand out to us as they seem to include comprehensive descriptions of the

considerations that need to be made to achieve this.

- The German document has a multi-faceted description of the relationship between transport functions and urban setting. This is used as a basis for road classification and the detailed design of the street. This seems to be a good foundation for the planning decisions necessary for a good and flexible design tailored to each unique situation.
- The Dutch document has a different approach and does not discuss in detail the urban setting. Instead it seems to give a good description of the different functional requirements and considerations (the “whys”) for each theme so that the designer has the necessary information to make decisions. At the same time there is a high degree of flexibility and discretion for the designer, which should provide a sound basis for adjustments to meet the objectives of the project.

Both documents discuss, amongst other things, important planning aspects for the provision of environmental friendly modes of transport. In this sense they are highly developed tools for the design of roads since they provide a framework for considerations without being prescriptive. This seems to be the appropriate approach if adjustment to the urban setting is to be highly prioritised.

Also the American document has many of these characteristics. Its design philosophy, however, is dominated by the need to provide for private cars.

Schematic documents

The other primary documents are less comprehensive. They have a more schematic description of the relation between the transport function of the road and its urban setting. The treatment of the different modes is also not as balanced. Some of these documents do, however, include policy statements that demonstrate ambitions for the provision for these modes.

This kind of document can function well if it includes balanced guidelines that cover all functions of an urban main street. It is, however, necessary to combine this with handbooks that can explain the background and reasoning behind the recommendations.

The Japanese document is also a schematic document. It stands out by the weight it gives legally binding regulations targeted at transport function at the cost of urban setting. However, it does give equal emphasis to all transport modes with the exception of public transport.

Theme specific documents

Documents that cover only some themes or areas cannot be assessed in the same way. This is because they exclude many elements and are designed to emphasise one aspect and not balance between aspects.

Further use of the analysis

Many ways to write a guideline

The analysis shows that there are many ways to write guidelines and deal with the urban main street. Reasons for this include variations in culture, legal systems and professional practice for road planning and design. This does not, however, account for all the differences. There is

a high degree of choice open to each country/authority regarding which form would suit their objectives and policies best. Demonstration of the level of variation is the most important result of our analysis.

The limitations of the study (the analysis does not compare the same type of document from each country and does not include the cultural and legal frameworks) means that it is hard to extract and generalise the "good practice" from the documents regarding approach, design philosophy and working methods.

Taken together with other works, this document may be used to support further discussion of how to prepare guidelines. The differences as well as the similarities provide an introduction to the issue. A definitive conclusion must, however, be based upon a more thorough analysis.

The document may also be used to inform discussion of how and with what objectives the needs of different transport modes (private car, bicycle, public transport) are incorporated in urban main streets across the world.