

# Technical and Performance Standards

## Set up standards

According to ISO, the International Standards Organization, “standards are documented agreements containing technical specifications or other precise criteria to be used consistently such as rules, guidelines, or definitions of characteristics, to ensure that materials, products, processes and services are fit for their purpose”.

Setting up an appropriate set of standards relative to the various sectors of the economy, under the authority of the public powers, is a necessity for any modern country. They are the basis for exchanges of products and services. They capitalize on the experience of the best experts and summarize the state of the art in technological progress.

## The standards to be used should be listed in highway contracts

The very general meaning given by ISO to the term “standard” and the nature of the documents determining them varies considerably. With the exception of official regulations made obligatory by law, the strength of these documents varies greatly from document to document and from one country to another. It is therefore necessary that the applicable documents be carefully listed in the contract.

This is even more vital for international contracts in which foreign companies are likely to be involved.

This inventory should be strictly limited to the documents useful for implementing the contract, in order to avoid creating confusion by an over-abundance of superfluous references.

In a PPP-type contract, even more so than in a standard contract, only result and performance objectives should be set, thus excluding all regulations concerning the means to attain them.

## International Standards should be considered

International standardization is developing very rapidly under pressure from globalization. A country which does not have a full standardization system may thus refer to international standards (or national standards of advanced countries).

European Union countries and those which are preparing to join the EU (particularly East European countries) should take into account a certain number of specific obligations. All those concerning more especially the weight and dimensions of the vehicles are mentioned below. They are determined in a European guideline which applies to EU countries and will progressively apply to Central and Eastern European countries.



<http://www.europa.eu.int>

They should therefore be taken into account right now in these countries.

## Geometrical Characteristics

No internationally recognized reference documents exist regarding road geometry characteristics. Information on national rules may be obtained through the national committees of the World Road Association (PIARC), on its central website:



<http://www.piarc.org/en/>

## Design Standards

Design standards describe characteristics of the roadway geometry, such as lane width, radius of curves, and acceptable grade, as well as traffic control devices including signals, signage, and pavement markings. The establishment of design standards for roadways promotes safety and efficiency, since the standards are based on established research on the safety and performance implications of various design features. Uniform designs further promote safety by increasing the predictability of the driving environment, so that the road user knows what to expect in any given situation.

Traffic control devices, including signals, signs, and pavement markings, should be applied in a uniform manner and should have uniform design and meanings wherever they are applied. Design standards for roadway geometry, while also important, can have somewhat more flexibility and can vary depending upon the functional class, projected traffic volume, desired design speed, environmental sensitivity, and other considerations. Standards that are reasonable for roads built on flat terrain, for example, may lead to prohibitively expensive construction costs in mountainous areas. Also, roads with low projected traffic volumes generally do not require design standards as strict as those for high-volume roads. Since design standards have a large impact on cost, they should not be set higher than can reasonably be achieved within the highway program budget. Selection of appropriate design standards should be based on a comparison of the costs of achieving these standards with the benefits to users in terms of safety, travel time, and other measures.

Some useful advice may be given as regards the geometry of motorway-standard roads:

- excessive standards should be avoided, e.g., as regards road/lane width, plane and longitudinal radii, and the size of interchanges. Such over-designing does not result in any great increase in safety, whereas it does induce extra costs, takes up more space, particularly in towns, and makes it more difficult to fit alignments into the landscape.

- the intermediate phases may lead to very dangerous situations and should be specifically analyzed: the case of a future dual carriageway for which only one carriageway is built.
- if road widening is likely to be necessary a few years after opening, an economic analysis should be made to determine whether this should be taken into account at the start of the project, by updating the costs for this second phase of works.

## Maintenance Standards

Reference documents regarding maintenance are rare. It is therefore very useful to know that a work exists published by the World Road Association (PIARC).



Road Maintenance Handbooks, Practical Guidelines for Rural Road Maintenance, PIARC 94.

Originally written for Africa, it can, in fact, be applied to a large number of countries, excepting those subject to severe winter conditions. In addition, it has the advantage of existing in English, Spanish, French, Portuguese and Khmer.

## Signing

Unless it is coherent throughout a country's entire network, signing cannot be an efficient tool for improving driver safety and comfort. Determining national standards which apply to all the roads in a country is therefore a high-priority task.

## Some specific effects to be taken into account

In many of the countries concerned by this Toolkit, taking earthquakes into account is of considerable importance. The ruin of structures situated on the major traffic routes may lead to considerable direct and indirect economic losses. The application of anti-seismic standards should be explicitly recommended/stipulated in the contract. The same remark applies regarding cyclones.