

Preface

Over recent decades roundabouts have become increasingly used when building new at-grade intersections or up-grading junctions all over the world, and when rebuilding existing intersections. However, control of traffic flows at at-grade intersections and up-grade junctions by roundabouts creates unique design problems. The history of researching roundabouts shows that “what is going on” is not always obvious. The first theories and studies were influenced by the existing urban road layouts but changes in vehicles’ constructions, dimensions, and speeds also had a strong impact. Today, after many years of experience, there have been different ideas about the “ideal roundabout”, with little consensus about the crucial effects of the rules on how to negotiate an intersection.

Today, modern roundabouts exist in all European countries and elsewhere in the world. We can now say that modern roundabouts are a world phenomenon. In Europe, there are no uniform guidelines for the geometric designing of roundabouts, which is understandable because the situation in one country is very different from another. A certain solution which would be safe from the traffic safety point of view in one country could be very dangerous in another. Consequently, most countries have their own guidelines for the geometric designing of roundabouts which are, as far as possible, adapted to real circumstances (local customs, habits, traffic culture...) within these countries and are therefore the most acceptable within their surroundings.

Roundabouts in different countries also differ in their dimensions and designs, the reasons for this being the different maximum dimensions of motor vehicles (mostly heavy vehicles), and human behavior.

In the cases of roundabouts, there is not “only one truth”. Therefore, each country needs to “walk its own path”, although this is maybe the slowest and the more difficult, it is also the safest way. Verbatim, the copying of foreign results could be dangerous and could lead to effects that are completely the opposite than expected.

It needs to be stressed that the roundabout intersection has been “at the development phase” since 1902, and this development is still in progress. One of the results of this progress is the several types of roundabouts in worldwide usage today, called the “alternative types of roundabouts”. Some of them are already in frequent

use all over the world, some of them are recent and have only been implemented within certain countries, and some of them are still at the development phase. Alternative types of roundabouts typically differ from “standard” one- or two-lane roundabouts in one or more design elements, as their purposes for implementation are also specific. The main reasons for their implementation are the particular disadvantages of “standard” one- or two-lane roundabouts regarding actual specific circumstances. Usually, these disadvantages are highlighted by low levels of traffic safety or capacities.

Therefore, it was decided that it would be useful to collate in one book some of the alternative types that are already in frequent use today in some countries and those that are “still coming”.

The content of this book is as follows:

Chapter 1 deals with the origins of roundabouts, squares, traffic centers, traffic islands, and their early developments.

Chapter 2 deals with the developments of different roundabout types. The chapter starts with the first trends and then to non-circular islands and larger roundabouts. The remaining part of the chapter is dedicated to the period of intensive experimentation with new layouts, and to some of the research resulting in the implementation in real life of different types of roundabouts.

Chapter 3 presents the modern layout designs of roundabouts, the criteria for the acceptability of roundabouts, as required or recommended in some countries, their geometric design features, the effects of layout design elements on traffic safety, and some European and non-European countries experiences with traffic safety on roundabouts.

Chapter 4 deals with recent alternative types of roundabouts. The chapter starts with their definitions and design characteristics. The remaining part of the chapter is dedicated to some of today’s alternative types of roundabouts.

Chapter 5 presents some of the alternative types of roundabouts at development phases, basic ideas and their characteristics, design elements, and capacities.

Chapter 6 is dedicated to the general criteria for calculating the capacities of alternative types of roundabouts. A short state-of-the-art is presented, three basic models, brief information on each of them, with emphasis on the capacity calculations of alternative types of roundabouts at the development phases.

Chapter 7 deals with non-motorized participants on recent alternative types of roundabouts and roundabouts at development phases.

Chapter 8 presents possible ways of roundabouts’ developments and some directions for future research. This chapter has a more general scope because the situation can differ from country to country, depending on their experiences with existing standard roundabouts.

The book includes several schemes, drawings, and figures that help the reader to better understand the material.

Alternative Types of Roundabouts

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