

## PEDESTRIANS AND THE AASHTO GREEN BOOK

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### Introduction

Those of you in the business of street and highway design are probably intimately familiar with the *AASHTO Policy on Geometric Design of Highways and Streets*, better known as the Green Book (or even by some as “The Bible”). The Green Book has evolved over a period of almost 50 years, originating as a rural highway design guide (the 1954 and 1965 Blue Books), which was later supplemented with an urban street design guide (the 1973 Red Book). The Blue Book and the Red Book were finally combined into one book in 1984, which was logically to become the Purple Book. But I was told that the printer only had green cover stock available, hence the Green Book.

As we learn more and more about roadway design, this book has gotten thicker and thicker. Over the years, in order to try to maintain a relatively reasonable heft to this book, AASHTO has elected to break out basic design elements into separate design guides. Having separate specialty design guides allows a more thorough discussion of all the various design aspects of each particular element. There are now separate design guides covering such items as drainage, roadway lighting, bridges, bicycle facilities, and 15 other specialty areas.

In order to make this divide-and-expand design philosophy work, each of the separated-out elements has to be covered in enough detail in the Green Book to give the roadway designers the policy and basic design guidance they need to make sure that each element is properly included in the overall roadway design. There is always a certain amount of tension between the expert practitioners of each element who would like to see it all in the Green Book and the basic highway engineer who often feels that some of these design elements are just peripheral to the real business of designing highways. Every time a new specialized design guide is published, the Green Book Task Force must then wrestle with what parts of the new guide should be included in the next revision or the Green Book.

Our most recent effort in this process has been the completion (and probable late Spring publication) of a replacement for the *1991 Guide for the Development of Bicycle Facilities*. I anticipate that this summer’s Green Book Task Force meeting will include a working session on how to incorporate the most important elements of the new Bike Guide into the next Green Book.

## Current Green Book Pedestrian References

With respect to pedestrians, AASHTO has never had a separate pedestrian facility design guide. At the present time, pedestrians are included in the Green Book in the following ways:

- There is an eight page section on general pedestrian considerations, including general pedestrian characteristics (such as group walking speeds, time-of-day volume peaks and elderly considerations), physical characteristics (body areas and individual walking rates), walkway capacities for both sidewalks and intersections, and design considerations for persons with disabilities (mobility, visual and developmental impairments). There are also sections on safety commenting on the value of pedestrian refuge islands and protective barrier curbs.
- There are two pages on sidewalks, covering such items as sidewalk justification, separation from the roadway, sidewalk widths, crosswalks, and an entire section on both through and emergency walkways in tunnels and over bridges. There are also another five pages on the use and design of pedestrian-only bridges and tunnels.
- There are 10 pages of text and pictures on the need for and design of curb cuts for crosswalks at barrier curbs, medians and islands, plus another three pages on the consideration of pedestrians at bus turnouts and park-n-ride facilities.
- There are extensive discussions repeating much of the same information in the chapters on Local Roads and Streets and Rural and Urban Collector Roads and Streets, including the appropriate chapter references for further design detail.
- Finally, there are discussions on the effect of large turning radii on sidewalk encroachment and pedestrian crossing distances, as well as the safe design of pedestrian refuge islands and medians on wide streets or complex intersections.

You may be surprised to learn just how progressive the Green Book is in its treatment of pedestrian issues. Following are a few representative quotes:

- “Pedestrians are a part of every roadway environment and attention must be paid to their presence in rural as well as urban areas.” (p. 97)
- “Because of the demands of vehicular traffic in congested urban areas, it is often extremely difficult to make adequate provisions for pedestrians. Yet this must be done, because pedestrians are the lifeblood of our urban areas, especially in the downtown and retail areas.” (p.97)
- “Sidewalks are integral parts of city streets, but few are provided in rural areas. Yet, a need exists in many rural areas because the higher speed and general

absence of lighting increase the accident potential to those walking on or adjacent to the traveled way. The limited data available suggests that sidewalks in rural areas do reduce pedestrian accidents.” (p.349)

- “As a general practice, sidewalks should be constructed along any street or highway not provided with shoulders, even though pedestrian traffic may be light.” (p. 350 and p. 531)
- “Pedestrian facilities such as sidewalks, must be designed to accommodate persons with disabilities.” (p. 350)
- “Sidewalks used for pedestrian access to schools, parks, shopping areas and transit stops, and placed along all streets in commercial areas, should be provided along both sides of the street.” (p. 435 and p. 476)
- In residential areas, sidewalks are desirable on both sides of the street, but need to be provided on at least one side of all local streets.” (p. 435 and p. 476)
- “Sidewalks should be carried across a bridge if the approach roadway has sidewalks or sidewalk areas.” (p. 468)

However, not all of the Green Book is as pedestrian-friendly as the above quotes might lead you to believe. There are numerous locations where the presence of pedestrians is bemoaned because of their interference with access control along busy highways. The desire to limit the number of pedestrian crossings of arterial streets is forcefully expressed, while at the same time recognizing the near impossibility of actually accomplishing this. And there is not enough consideration of the adverse effects of truck turning radii on safe pedestrian crossings at intersections. This latter issue is actually addressed in the section on At-Grade Intersections with the following representative quotes:

- “For arterial street design, adequate radii for vehicles must be balanced against the needs of pedestrians and the difficulty of acquiring additional right-of-way or corner setbacks. Because the corner radius often is a compromise, its effect on pedestrians in combination with vehicular movements should be examined.” (p. 668)
- “Radii dimensions should be coordinated with crosswalk distances or special designs to make crosswalks safe for all pedestrians.” (p. 670)

As can be seen by these quotes, while the problem of large radii at pedestrian crossing points has been recognized and pointed out, there is very little guidance on how to resolve this conflict. There are other similar conflicts throughout the Green Book, and in the many state highway design guides in use across the country.

## NCHRP Study Proposals

Many of these design gaps are currently being filled by a variety of new pedestrian design guides, such as the new ITE *Design and Safety of Pedestrian Facilities* and Washington State's *Pedestrian Facilities Guidebook*. However, these and other new design guides are not in the hands of all the street and highway design engineers. And none of them actually meet the TEA-21 mandate for the US Department of Transportation, in cooperation with AASHTO, ITE and other interested organizations, to develop guidance on the various approaches to accommodating bicycles and pedestrians. Such guidance, to be developed by December 1999, is to include recommendations on amending and updating the AASHTO policies relating to highway and street design standards to accommodate bicyclists and pedestrians.

Accordingly, at last summer's AASHTO Green Book Task Force meeting, it was agreed that once work was completed on the new Guide for the Development of Bicycle Facilities, we should begin work on a similar Pedestrian Facility Design Guide. However, to address the tight time constraints and the already heavy workload on all the Committee members, it was decided that an NCHRP-funded pedestrian design synthesis contract, to be followed by a guide book contract, be sought. It was felt that such a contract could work the same way a similar FHWA contract was used to compile and coordinate all the State Bicycle Coordinator comments on the new bike guide. Two NCHRP Problem Statements were prepared for the synthesis and the design guide and submitted through the AASHTO Subcommittee on Design.

Requests for Proposals for these two problem statements were advertised by NCHRP at the end of last year, and various teams were put together to respond to these proposals. Regardless of who ends up being awarded these contracts, the Green Book Task Force is looking forward to working with them to produce a nationally recognized pedestrian facility design guide that will be used by all street and highway design engineers and planners. AASHTO has already agreed that the development of this guide will be done with the cooperation of a diverse oversight committee, to be made up of various pedestrian interest and advocacy groups.