Guide for Geometric Design of Transit Facilities on Highways and Streets

July 2014

American Association of State Highway and Transportation Officials
AASHTO
The Voice of Transportation

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Publication Code: TVF-1

ISBN: 978-1-56051-522-7

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1 Introduction

In This Chapter:

Public transportation is important to communities in contemporary America. It provides high passenger capacities in heavily-traveled corridors, and allows high employment concentrations in city centers. It permits compact urban developments that are pedestrian friendly, and helps reinforce urban design objectives. It provides mobility for people that are unable to drive or do not have access to motor vehicles. From an environmental perspective, it has lower emissions and energy consumption on a per-capita basis than personal motor vehicles.

Transit vehicles operate in a wide range of environments—both on-street and off-street. Commuter rail and rapid transit operate in exclusive rights-of-way that are frequently grade-separated from intersecting roadways. However, bus routes on public streets and highways and light rail or streetcar operations may share or intersect with the street environment.

Streets and highways often must accommodate transit vehicles as well as motor vehicles, bicyclists, and pedestrians. Transit provisions are best accomplished when incorporated into all phases of street planning, design, and operation. This is essential especially where agencies at the state, county, and municipal level are required to plan, design, or modify streets and highways to accommodate public transportation vehicles and facilities.

Planning and design guidelines, standards, and practices have evolved over the past decade. These include reports prepared by the American Association of State Highway and Transportation Officials (AASHTO), Transportation Research Board (TRB), and Institute of Transportation Engineers (ITE), and those prepared by individual planning and transit agencies. Most, however, encompass a specific mode, such as bus stops, rapid transit, and light rail transit (LRT) and are sometimes prepared in response to specific agency needs. Even so, there are few comprehensive publications that an agency can use for designing streets and highways that accommodate transit services and facilities. Thus, agencies often must develop their own standards. The absence of

a single reference guide makes it difficult to communicate basic design standards to consultants when contracting out work, especially if the consultant is in a different state than the client. The practitioners' need for a single, comprehensive resource that documents and builds upon past and present experience is the basis for this guide.

1.1 PURPOSE AND SCOPE

This guide provides a single, comprehensive reference of current practice in the geometric design of transit facilities on streets and highways. The facilities covered include:

- Local buses, express buses, and bus rapid transit operating in mixed traffic, bus lanes, and high-occupancy vehicle (HOV) lanes, and bus-only roads within street and freeway environments; and
- Streetcars and LRT running in mixed traffic and transit lanes, and within medians along arterial roadways.

These guidelines are based on a review of relevant AASHTO, TRB, and ITE documents, and of design reports provided by various transit agencies. They incorporate findings from targeted investigations conducted specifically to fill voids in the assembled information.

1.2 AUDIENCE

This guide is written for use by public agencies, practitioners, and developers who need to know basic information about planning, locating, sizing, designing, and implementing transit facilities along roadways. The target audience includes:

- Policy makers;
- Highway planners, engineers, designers;
- Traffic/transportation engineers;
- Transit service planners;
- Urban planners;
- Site planners and engineers; and
- Land developers.

The guide provides clear and uniform guidance for the placement and design of facilities and amenities. Transit and highway agencies can adapt these guidelines to meet their specific needs. Practitioners can apply transit provisions to meet specific needs in their plans.

1.3 ORGANIZATION OF GUIDELINES

Chapter 2 contains planning and decision-making guidelines associated with most transit facilities being developed.

Chapter 3 presents bus design parameters and controls. It describes vehicle types and characteristics; geometric design controls; highway and transit capacity considerations and guidelines; and general transit infrastructure considerations.

Chapter 4 addresses bus transit facilities found in controlled-access highway settings (freeways).

Chapter 5 describes bus transit facilities along streets.

Chapter 6 contains guidelines for light rail and streetcar transit operations on streets and roadways.

Chapter 7 contains guidelines for pedestrian and bicycle access.

The appendices contain supporting information, such as information on detailed bus dimensions and turning paths, busways, off-line stations and facilities, and pedestrian and bicycle access. References are provided at the end of each chapter. A complete listing of references is found in the appendices along with a transit facility glossary.

1.4 USING THE GUIDE

Information about each type of facility or treatment is presented in one place to make the guide as user-friendly as possible. Each specific facility presentation provides general planning and design guidance, identifies implementation and operational issues, and provides case studies and examples. The appendices contain additional technical information for selected topics.

The guide presents desirable guidelines, but in restrictive situations, minimum guidelines have been used successfully and may be necessary.

1.5 REFERENCES

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