

INTRODUCTION

PURPOSE OF THIS MANUAL

A design manual is a consolidated source of information governing the technical content of plan sets and outlining the steps required in the plan development and approval process. This manual provides a tool for answering designers' questions, training new employees, and documenting the design process.

This manual is intended to act as a guide in the development of Signing and Pavement Marking plans, Signal plans and Lighting plans. It documents the design procedures and steps required to bring a project from the Design Request stage through final PS&E documents. This book is not a standards manual, and does not duplicate information found in other State and Federal manuals. Instead, it is intended to be used in conjunction with the applicable standards noted below. When using tables, charts standards and figures from this manual, always check with the Traffic Engineering Design Division to ensure that you are using the latest version.

GOVERNING STANDARDS

All designs for new signing and pavement markings, signals and sign or highway lighting must comply with the latest edition of the following guidelines:

All Traffic Control Devices

- *Maryland Vehicle Law*
- *Maryland High-Voltage Line Act: Article 89, 58-63, Annotated Code of Maryland*
- *Specification for Consulting Engineer's Services, Volume II, Section VIII, "Traffic Engineering"*.
- *AASHTO's A Policy on the Geometric Design of Highways and Streets.*
- *AASHTO's Roadside Design Guide.*
- *AASHTO's Standard Specifications for Structural Supports for Highway Signs, Luminaires and Traffic Signals*

- *AASHTO's Highway Safety and Operations Guide*
- *MSHA's Supplement to the Manual on Uniform Traffic Control Devices (MUTCD).*
- *MSHA's Book of Standards.*
- *MSHA's Standard Sign Book.*
- *MSHA's Standard Specifications for Construction and Materials.*
- *MSHA's General Provisions for Construction Contracts.*
- *MSHA's Procedures and Standards for Commercial, Industrial, and Subdivision access to State Highways.*
- *MSHA's Special Provisions Inserts, Special Provisions, and General Provisions for Construction Contracts.*
- *FHWA's Manual on Uniform Traffic Control Devices (MUTCD), latest edition.*
- *NFPA's National Electric Code (NEC)*
- *IEEE's National Electric Safety Code (NESC)*
- *One Call Concept Statute "Miss Utility".*
- *FHWA's Roundabouts: An Informational Guide.*
- *MSHA's (HDD) Accessibility Guidelines for Pedestrian Facilities along State Highways*
- *MSHA's Bike Lane Design Guide*
- *MSHA's (OOTS) Roundabouts Design Guide*
- *TRB's Accessible Pedestrian Signals: Synthesis and Guide to Best Practice*

Signals Only

- *International Municipal Signal Association (IMSA) Specifications for Traffic Signal Equipment.*
- *Institute of Transportation Engineers (ITE) Specifications for Traffic Signal Equipment*
- *MSHA's Median Area Analysis for Traffic Signal Pole Locations, April 2003.*

Lighting Only

- *Illuminating Engineering Society of North America (IESNA)*
- *American National Standard for Roadway Lighting, IES, RP-8*
- *American National Standard for Sign Lighting, IES, RP-19.*

- *American National Standard for Tunnel Lighting, IES, RP-22.*
- *AASHTO's Information Guide to Roadway Lighting, 1984.*
- *Roadway Lighting Handbook, FHWA*
- *Pedestrian Lighting Policy*

ORGANIZATION OF THIS MANUAL

This manual has been written for the designer. As discussed previously its primary purpose is to define how traffic control devices (TCD's) are designed in Maryland. To that end, it is organized in a way which discusses overarching traffic design topics first then individual TCD Design topics i.e., design of signing and pavement markings, signals, and finally sign/highway lighting. The Appendices have been reserved to capture those items that support the designer to produce high quality designs.

Overarching traffic design topics are those traffic engineering basics which govern no matter what TCD is being discussed.

Specific TCD design elements are organized by the steps in which we recommend design taking place. For example, the first and most important step in approaching the design of any TCD is the field review. The first major milestone that will minimize re-work (not eliminate) is the development of a concept plan.

Appendices have been reserved for the glossary, accepted practices for applications of TCD's, sample plans, CPM charts and process definitions, etc. The Appendices should be edited frequently once standards are approved and adopted into the supplement or book of standards.