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Subject: FOIA Request 2014-0351 - Request for FHWA Style Manual

Per your FOIA request sent to the Federal Highway Administration (FHWA) on June, 20, 2014, attached are two internal documents that the FHWA uses as a reference guide: Order 1710.4 Publications and Printing Handbook and the FHWA Editorial Style Guide. As indicated, these documents are used solely as a reference guide only. The FHWA follows the standards as established by the U.S. Government Printing Office Style Manual and the Chicago Manual of Style.

If the FHWA can be of further assistance, please let us know.

Regards,

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HSPD-12 Coordinator and Division Chief,  
Publishing and Visual Media Division  
Management Services  
HAMS-20 - E61-304



U.S. Department  
of Transportation

**Federal Highway  
Administration**

# Order

Subject

PUBLICATIONS AND PRINTING HANDBOOK

Classification Code

H 1710.4

Date

December 23, 1987

- Par. 1. Purpose  
2. Cancellation  
3. Scope  
4. Action

1. PURPOSE. To establish and transmit the Federal Highway Administration (FHWA) Publications and Printing Handbook.
2. CANCELLATION. This issuance cancels the following directives: Administrative Manual, Volume 33, Chapter I, Publications and Chapter III, Printing and Reproduction; and FHWA Order 1710.1, Procedures for Obtaining Publications and Visual Aids Services in the FHWA Headquarters, dated November 26, 1975.
3. SCOPE. The provisions and requirements of this Handbook are applicable to all the FHWA offices.
4. ACTION. Attention is directed to the responsibility of Associate Administrators and Staff Office Directors to appoint contact persons to monitor overall expenditures for printing services obtained through the Working Capital Fund as stated in Chapter 4, paragraph 1d, and to submit a Planned Publications Report each fiscal year, as stated in Chapter 4, paragraph 1a.

Daniel Markoff  
Associate Administrator  
for Administration

DISTRIBUTION: Headquarters  
Special: Regions  
Divisions

OPI: HMS-24

PUBLICATIONS AND PRINTING HANDBOOK  
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Attachment 1.	Form FHWA-850, Order for Audio Visual Services and Special Reproduction
Attachment 2.	DOT F 1700.8, Duplicating Request
Attachment 3.	JCP Form No. 2, Commercial Printing Report
Attachment 4.	DOT F 1700.7, Technical Report Documentation Page
Attachment 5.	Form NTIS-79, Accession Notice
Attachment 6.	Form FHWA-1113, Clearance Request for Publication, Film, Exhibit, or Visual Presentation
Attachment 7.	Form FHWA 1528, Authorization to Proceed to Printing/Reprinting

## CHAPTER 1. GENERAL

1. PURPOSE. To prescribe the responsibilities for and the management of the Federal Highway Administration (FHWA) Publications and Printing Program.
2. AUTHORITY AND REFERENCES
  - a. Office of Management and Budget (OMB) Circular No. A-3 (Revised), Government Publications, dated May 2, 1985.
  - b. Government Printing and Binding Regulations No. 24, Published by the Joint Committee on Printing, Congress of the United States, dated April 1977.
  - c. Department of Transportation (DOT) Order 1210.5, DOT Public Affairs Management Manual, dated December 22, 1977.
  - d. DOT Order 1360.1A, Identification of Printing and Typed Materials and Visual Aids, dated July 31, 1972.
  - e. DOT Order 1360.5, Policy and Procedures Governing DOT Printing, Duplicating, and Copying, dated August 29, 1979.
  - f. DOT Order 1360.6, Graphic Standards for the U.S. Department of Transportation, dated March 18, 1981.
  - g. DOT Order 1700.18B, Acquisition, Publication and Dissemination of DOT Scientific and Technical Reports, dated March 8, 1976.
  - h. DOT Document DOT-TST-75-97, Standards for the Preparation and Publication of DOT Scientific and Technical Reports.
  - i. DOT Order 1700.24A, Printing, Duplicating and Copying - Program to Reduce Costs and Volume, dated July 31, 1978.
  - j. FHWA Order 2-4, Clearance and Release of Public Information Material, dated February 7, 1972.
  - k. DOT Order 1710.2B, Copying and Duplicating Services in the Headquarters Buildings, dated November 2, 1976.

1. DOT Order 1300.4, Procedures for Withdrawal of FHWA Publications, Directives, and Forms from the DOT Warehouse, dated August 7, 1987.
3. APPLICABILITY. This Handbook applies to all publishing and printing of materials sponsored by the FHWA. It applies to reprints as well as original publishing and printing; and it applies whether such publications are completed by the OST printing plant, U.S. Government Printing Office, purchase order, interagency agreement, general working agreement, contract, subcontract, or Federal discretionary grant.
4. RESPONSIBILITIES
  - a. Washington Headquarters. Associate Administrators and Staff Office Directors are responsible for implementing and maintaining the publications and printing program prescribed in this Handbook. This includes determining the propriety, accuracy, and necessity of matter printed, published, or duplicated.
  - b. Field Offices. The Regional Administrators and Direct Federal Division Engineers are responsible for carrying out the publications and printing program in the field offices.
  - c. Publications and Visual Aids Branch (P&VA). In the Washington Headquarters, the Office of Management Systems, Publications and Visual Aids Branch (HMS-24), is responsible for management of the FHWA Publications and Printing Program, ensuring conformance with FHWA and DOT policy in developing and acquiring quality publications in an economical and effective manner. The P&VA Branch is also responsible for management of the administrative budget for publications production and services.
  - d. Office of Public Affairs. The Director, Office of Public Affairs is responsible for approving all publications before they are printed or reprinted.

## CHAPTER 2. FHWA PUBLICATION DEVELOPMENT AND REPRODUCTION

### 1. PUBLICATION DEVELOPMENT

- a. Planning a Publication. Planning is an important step in the development of a publication. Proper planning will ensure a quality, cost-effective, and timely end product.
- (1) Production schedules and timetables should be developed at the conceptual stage of the publication. The FHWA Washington Headquarters and field offices are required to obtain conceptual clearance of publication projects from the Office of Public Affairs (see Clearance Requirements, Chapter 3).
  - (2) Publication costs, including printing estimates, may be obtained from the P&VA Branch (see Publication Funding and Cost Reporting, Chapter 4).
  - (3) Staff specialists in the P&VA Branch are available to assist program office personnel in the development of FHWA publications. P&VA specialists can provide advice in the areas of planning, editing, graphics, or still photography for a publication (see Guidelines for Preparing Federal Highway Administration Publications, Chapter 5).
- b. Producing the FHWA Publication. Twelve basic steps should be used to produce an FHWA publication, from the concept of the proposed publication to the preparation of the final package for printing (see Figure 2.1).

2. EDITORIAL ASSISTANCE. Editorial services are available from the concept of the proposed publication, throughout the production stages, to the finished printed product.

Publication Step	Procedures Reference	Forms Reference
<b>1 Publication Number</b> Assign each publication a number.	Chapter 5 Par. 5a	Place number on all forms.
<b>2 Concept Clearance</b> Obtain clearance of the concept.	Chapter 3 Par. 1a	Form FHWA-1113 Chp. 3, Par. 1b
<b>3 Production Planning</b> Prepare a production schedule.	Chapter 2 Par. 1	
<b>4 First Draft — Writing</b> Set the tone and style of the writing.	Chapter 2 Par. 2a	
<b>5 First Draft — Editing</b> Edit the first draft.	Chapter 2 Par. 2	
<b>6 Editorial Review</b> Submit draft to P&VA Branch for editorial review.	Chapter 2 Par. 2	Form FHWA-850 Chp. 2, Par. 2c
<b>7 Layout Design</b> Determine the design and prepare a rough layout. Insert all art.	Chapter 5, Par. 11	
<b>8 Graphics</b> Submit rough layout and graphics work to P&VA Branch.	Chapter 2, Par. 3	Form FHWA-850 Chp. 2, Par. 3a
<b>9 Composition</b> Prepare the final text.	Chapter 5, Par. 12	DOT F 1700.8 Chp. 5, Par. 12c
<b>10 Final Publication</b> Prepare the final publication: camera-ready text and art.	Chapter 5, Par. 16	
<b>11 Final Clearance</b> Attach Form 1528 to the final publication. Obtain the first two clearances.	Chapter 3, Par. 1b	Form FHWA-1528 Chp. 3, Par. 1b(4)
<b>12 Printing</b> Submit the publication to the P&VA Branch: camera-ready text, art, Technical Report Documentation and/or title page, disclaimer, metric conversion factors, duplicating request (Form 1700.8), and clearance form (Form 1528)	Chapter 2, Par. 4	Technical Report Documentation and/or title page Chp. 5, Par. 10c(1,2) Disclaimer Chp. 5, Par. 10a(2)(b) Metric Factors Chp. 5, Par. 10c(4) Form FHWA-1700.8 Chp. 2, Par. 4a(1) Form FHWA-1528 Chp. 3, Par. 1b(4)

Figure 2.1. Steps in Producing the FHWA Publication

- a. At the request of FHWA offices, the P&VA Branch will provide a writer-editor to either work with the program office from the initial planning of the publication project or to edit a draft of the proposed publication.
  - b. All final copy submitted for printing to the P&VA Branch receives an editorial review. To avoid last minute delays, program offices are encouraged to request editorial services early in the development of a publication project. By having the P&VA Branch review a draft of the publication, you may avoid unnecessary problems (e.g. style, organization, page format, and clearance approvals.) A draft may be submitted directly to the P&VA Branch. Publications written by contractors also should be reviewed by the P&VA Branch. Submit a draft during the contract review period, before the contract is closed.
  - c. Washington Headquarters and field offices should prepare requests for editorial services on Form FHWA-850, Order for Audio Visual Services and Special Reproduction (Attachment 1). In block 7 check the box, "OTHER," and in block 15 indicate editorial services are required. Submit Form FHWA-850 to the P&VA Branch.
3. PUBLICATION DESIGN. Advice is available on the most effective format and style for a proposed publication. Assistance is available concerning the overall design, illustrations, graphics, charts, and other artwork used in a publication.
- a. Washington Headquarters. Requests for the development or procurement of graphics and still photography should be submitted to the P&VA Branch on Form FHWA-850, Order for Audio Visual Services and Special Reproduction (Attachment 1). (Refer to FHWA Order H 1710.3, Audiovisual and Visual Aids Handbook, for detailed instructions on obtaining graphics and still photography services.)
  - b. Field Offices. Field offices should procure graphics and still photography services through local commercial sources using regular procurement procedures. If necessary, field offices may request services from the P&VA Branch.

4. PRINTING AND REPRODUCTION. The final phase in the development of a publication is the reproduction of the camera-ready copy. Printing specialists will advise the best method to use: copying, duplicating, or printing.
- a. Washington Headquarters. In the Washington Headquarters, printing, duplicating, and copying services are consolidated under the Office of the Secretary of Transportation (OST) and are funded through the Working Capital Fund. The P&VA Branch is the FHWA control point for the review and approval of requests to the OST.
- (1) Requests for printing and duplicating services should be prepared on Form DOT F 1700.8, Duplicating Request (Attachment 2), and submitted to the P&VA Branch, along with the final copy of the item to be reproduced. (The clearance requirements stated in Chapter 3 must be followed where applicable.)
  - (2) Hot copies (e.g., copies off a xerographic machine) are ordered on Form 1700.8. Copies, photostats, daisy prints, and any other types of reproduction are ordered on Form FHWA-850, Order for Audio Visual Services. All forms must be signed by the authorized person, designated by the Associate Administrator or Staff Office Director to monitor expenditures for printing services.
- b. Field Offices. In the field offices, printing and duplicating services are obtained through the U.S. Government Printing Office's (GPO) Regional Printing Procurement Offices. Standard Form 1, Printing and Binding Requisition, is the form used to requisition printing, binding, and related services from the GPO. This form is required to request individual (one time) printing requirements, to request the establishment or renewal of a term contract, to place work on general usage term contracts, and to request waivers. For additional information, see the Agency Procedural Handbook for the Procurement of Commercial Printing Services (GPO Publication 305.1, dated March 1987).
- (1) Procurement of Printing and Duplicating Services through the Regional Printing Procurement Offices. Printing and duplicating that will be commercially procurable is obtained through the field GPO. All printing and duplicating are

considered commercially procurable except classified materials and materials required in 3 work days or less; in practice, the time factor may vary. Printing and duplicating determined to be commercially procurable will be requisitioned from the appropriate GPO Regional Printing Procurement Office.

(2) Procurement of Printing Services from Other Federal Government Agencies

- (a) Outside the Washington metropolitan area, printing or duplicating that is not commercially procurable may be procured from other Federal Government agencies in the area where the need originates, e.g., General Services Administration facilities in Federal office buildings.
- (b) Outside the 48 contiguous States, any requirements may be procured from other Government agencies.

(3) Direct Procurement of Printing Services from Commercial Contractors

- (a) Outside the Washington Headquarters, printing and duplicating may be procured directly from commercial contractors only upon the issuance of a waiver by a GPO Regional Printing Procurement Office.
- (b) Outside the 48 contiguous States, printing and duplicating may be procured directly from commercial contractors. A waiver will be required at such time as the GPO establishes a GPO Regional Printing Procurement Office for the Federal Printing Region in which the contractor is located.
- (c) All direct procurement from commercial contractors must be reported on the Joint Committee on Printing (JCP) Form No. 2,

Commercial Printing Report (Attachment 3).  
If printing has not been directly procured  
from commercial contractors, no report is  
required.

- c. Printing Requirements Resulting from Contracts and Grants. The inclusion of printing resulting from contracts for the manufacture and/or operation of equipment, and for services such as architectural, engineering and research, or resulting from grants, is prohibited unless authorized by the Joint Committee on Printing. This regulation does not preclude the following:
- (1) Procurement of writing and/or editing, preparation of related manuscript copy, or preparation of related illustrative material as a part of the contract or grant.
  - (2) A requirement for the contractor or grantee to duplicate not more than 5,000 units of one page or 25,000 units in the aggregate of multiple pages.
  - (3) A requirement for administrative printing (e.g., forms and instructional materials) necessary for use by a contractor or grantee responding to the terms of a contract or grant. Nor does it preclude recording manuscript copy in digital form for typesetting purposes. However, the printing of such material for the Federal Government must be accomplished in accordance with applicable laws and regulations.
- d. Requesting Color Printing. Multicolor printing should be used only if two or more colors are essential. Prior approval is required. Washington Headquarters and field offices must submit justifications in memorandum form to the Chief, P&VA Branch. The P&VA Branch reviews the requests, and then submits the requests for approval to the Director, Office of Public Affairs, HPA-1. Approved requests are forwarded to the Chief, Publishing and Graphics Division, OST, for final clearance. The following categories are examples of justifications for color work:
- (1) Maps and technical diagrams where color is necessary for clarity.

- (2) Safety promotion.
  - (3) Fire prevention.
  - (4) Competitive areas of personnel recruiting.
  - e. Requesting Printing for Items Other than Publications: Business and Greeting Cards. Printing or engraving of business or greeting cards is considered a personal rather than an official expense. Such printing shall not be done at the Federal Government's expense.
5. REDUCING PRINTING AND REPRODUCTION COSTS. When deciding how many copies of a publication to publish, program offices should follow these guidelines to reduce printing and reproduction costs:
- a. Plan Ahead. Plan as far ahead as possible. The cost for rush services is often double or triple that of normal rates, and with rush work, quality and/or accuracy is often sacrificed. In addition, if consulted in the conceptual stages of a project, the P&VA Branch can offer suggestions for effective presentation of the material.
  - b. Paper Stock. Only those types, grades, weights, and colors of paper included within the Federal Government Paper Specification Standards issued by the Joint Committee on Printing shall be procured or specified for printing, duplicating, and binding of the FHWA material.
- (1) Paper Selection. When selecting paper, consider the purpose of the publication. The paper is part of the overall message of the publication. The texture or surface quality of the paper should not compete with the design or images. For advice concerning paper selection, program offices can consult a visual information specialist or printing specialist in the P&VA Branch.

- (2) Cover Paper. For publications up to 32 pages, self-covers should be used whenever possible. This means the cover paper should be the same as the paper selected for the text. For booklets of 32 pages or more, a different or heavier cover stock should be considered.
  - (3) Other Paper Considerations. With perfect bound books of 100 pages or more, bulk must be considered as more pages are added. The stock should not be too rigid, and it should not be difficult to open the book or lay it flat. The use of color ink also affects paper selection.
- c. Binding. Only standard types of binding shall be used. Standard types include saddle or side stitched, pasted on fold, or perfect binding.
- d. Binders. Instead of binding a publication, ring binders can be used as covers for a printed publication. Binders allow a flexible assembly of various information packages. They hold standard size materials (8 1/2 inches by 11 inches) and are expandable and convenient. Binders also are expensive, and for this reason, should only be used when absolutely necessary.
- (1) Vinyl Binder with Clear Window Pocket Cover. This most popular and economical binder has a vinyl cover and clear vinyl window pockets thermally welded to its full exterior front cover and spine. Cover and spine inserts, sized to the dimensions of the windows, may be printed and inserted into the window pockets. This type cover can be handled with short print runs and may not require lengthy production time. Covers may be printed in colors and may contain half-tone reproductions. This type of binder usually is less expensive than the silk-screened binders and is recommended for use, whenever practical.
  - (2) Silk-Screen Binders. Silk-screened covers and spines are recommended only for large quantities of fine-quality publications intended for use over an extended period.

- (3) Binder Size. Binders are available in 1- to 3-inch ring size. Choose a binder according to the number of pages to be contained. The size is determined by the diameter of the rings and not by the width of the spine.

e. Other Cost Reduction Suggestions

- (1) Restrict the number of copies published to those actually needed for a planned distribution and a limited reserve stock. (Note: Setup costs for printing a publication are expensive. Do not order an over abundance of copies, but order enough copies to avoid a reprint that would incur additional setup costs.)
- (2) Print or duplicate on both sides of paper on all jobs having two or more pages being reproduced in quantities of 100 or more copies.
- (3) Plan reproduction work in increments of four pages (especially on saddle-stitched publications) to avoid blank pages in publications, whenever possible (except in looseleaf material). (Books are printed on large sheets, four pages to one sheet, then folded to become four pages of a book.)
- (4) Limit the number of typeset proofs to the number of sets actually required for proofreading.

6. SALE OF PUBLICATIONS THROUGH THE U.S. GOVERNMENT PRINTING OFFICE AND THE NATIONAL TECHNICAL INFORMATION SERVICE

a. U.S. Government Printing Office (GPO)

- (1) If a publication is expected to be of interest to the general public, it should be considered for sale through the GPO's Superintendent of Documents. Sale of publications through the GPO permits the public to have easier access to popular publications and reduces the number of copies printed by the FHWA, thereby reducing printing costs.
- (2) Request the sale of a publication through GPO on Form DOT F 1700.8, Duplicating Request

(Attachment 2), when the publication is submitted for printing to the Publications and Visual Aids Branch (HMS-24). The GPO reviews each request and places those publications on sale that are expected to result in acceptable sales.

b. National Technical Information Service (NTIS)

- (1) The NTIS sells technical publications to the public. Program offices shall submit all technical publications to NTIS.
- (2) The NTIS requires all submissions to include the Technical Report Documentation Page, Form DOT F 1700.7 (Attachment 4). This form is always included as the first page of the publication. Instructions are included in Attachment 4 on how to complete and paginate Form DOT F 1700.7.
- (3) Form NTIS 79, Accession Notice (Attachment 5), accompanied by a minimum of 11 copies of each publication, must be submitted to NTIS. In addition, one copy of the Form NTIS 79 is submitted to the P&VA Branch.

7. ORDERING FHWA PUBLICATIONS, DIRECTIVES, AND FORMS FROM THE DOT WAREHOUSE. To order stock from the DOT warehouse, see DOT Order 1300.4, Procedures for Withdrawal of FHWA Publications, Directives, and Forms.

### CHAPTER 3. CLEARANCE REQUIREMENTS

1. CLEARANCE OF PUBLICATIONS. The FHWA Headquarters and field offices shall obtain approval to proceed with publication projects from the Director, Office of Public Affairs. In general, this approval applies to all FHWA publications. This approval is obtained at two stages in the planning of a publication: the concept stage prior to the development of the first draft and the final stage prior to printing or reprinting the completed publication.

- a. Concept Clearance

- (1) The FHWA Headquarters and field offices planning a publication will submit the clearance request for the concept of a publication to the P&VA Branch. The P&VA Branch will review the request for compliance with current FHWA publication standards and guidelines. The P&VA Branch will then submit the request to the Director, Office of Public Affairs, for approval to proceed.
- (2) The request for concept approval is submitted on Form FHWA-1113, Clearance Request for Publication, Film, Exhibit, or Visual Presentation (Attachment 6).

- b. Final Clearance Prior to Printing or Reprinting Publications

- (1) FHWA Headquarters and field offices should submit the clearance request to proceed to print or reprint a publication to the P&VA Branch, along with a final copy of the publication. The P&VA Branch must sign off on this form before it is submitted to the Office of Public Affairs.
- (2) The P&VA Branch will review the final copy, attach a final cost estimate for printing, and submit the request to the Director, Office of Public Affairs, for approval.

- (3) All final copy submitted for printing to the P&VA Branch receives an editorial review. However, program offices should request editorial services early in the development of a publication project. (See Editorial Assistance, Chapter 2, paragraph 2.)
- (4) The request to proceed to printing or reprinting a publication should be submitted on Form FHWA 1528, Authorization to Proceed to Printing/Reprinting (Attachment 7). The form must be signed by the program office and the appropriate Associate Administrator or Staff Office Director before it is submitted to P&VA.
- (5) Approved publications must be printed within 60 days from the date of the approval. Should the printing not occur within the 60-day period, the final stage approval cycle must be repeated and a new clearance obtained to proceed to print or reprint.

2. ADDITIONAL CLEARANCE REQUIREMENTS FOR PERIODICALS (RECURRING PUBLICATIONS)

- a. Periodicals are recurring publications issued annually, or more often, with a consistent format, content, or purpose. In addition to the clearance requirements stated in paragraph 1, periodicals require clearance approval from the Office of the Secretary (OST) and the Office of Management and Budget (OMB) in accordance with Government Publications (OMB Circular No. A-3). The program office requiring clearance should submit a memorandum to the P&VA Branch as soon as the concept approval is obtained (reference paragraph 1a, Concept Clearance) and at least 120 days before the periodical is ready for printing.
- b. OMB Circular No. A-3 exempts specific publications. The following publications are not considered periodicals and do not require OMB clearance.
  - (1) Administrative materials (memoranda, directives, regulations, legal opinions and decisions, proceedings, programs for ceremonies, press releases, environmental impact statements and assessments, and planning documents).

- (2) Primarily (90 percent or more) statistical materials. (This exception does not apply to publications that contain statistics from published sources other than FHWA.)
  - (3) Research and development reports. (These reports are the direct result of research contracts and are distributed to Federal Government employees, contractors involved in the work, and commercial publishers or professional associations for use in technical publications.)
  - (4) Official instructional/informational publications of a permanent nature, published as a supplement to directive systems of Executive Branch agencies.
  - (5) Annual updates of instructional/informational publications made available to the public to inform them of laws and regulations.
- c. To request OMB clearance, program offices should provide information about periodical projects to the P&VA Branch. The P&VA Branch will use this information to prepare a memorandum from the Federal Highway Administrator to the Office of the Assistant Secretary for Public Affairs, OST, requesting that the Assistant Secretary obtain clearance from OMB.
- d. Requests for OMB approval from program offices to the P&VA Branch must include the following information:
- (1) Name of periodical.
  - (2) Issuing office.
  - (3) Proposed frequency of issue.
  - (4) General content.
  - (5) Maximum number of copies per issue, both for official use and for free distribution.

- (6) Estimated annual cost (including separate indications of costs for (a) printing and binding, and (b) salaries, materials, and other expenses associated with preparing the periodical).
- (7) Appropriation to be charged.
- (8) A comprehensive statement of the necessity for the periodical, including any specific statutory authorization for publication of the information included in the periodical, is required. In the absence of specific authorization, include a description of why the proposed periodical is necessary to transact public business that the issuing office is required by law to undertake.
- (9) A statement justifying the number of copies proposed, both for official use and for free distribution, is required. The statement should indicate the specific segment of the public in need of free distribution and why distribution should be free instead of paid for by recipients.

CHAPTER 4. PUBLICATION FUNDING  
AND COST REPORTING

1. FUNDING FHWA PUBLICATIONS. The P&VA Branch is allocated funds each year for the printing of FHWA publications. The printing services are obtained through the DOT Working Capital Fund (WCF) program. As part of the budget formulation process, the FHWA must identify planned publications and then determine estimates to fund printing projects. To develop these estimates, the P&VA Branch will request planning information from the Washington Headquarters program offices.
  - a. Planned Publications Report. Prior to each fiscal year, the Chief, P&VA Branch requests Washington Headquarters offices to submit a report of planned publications to the P&VA Branch. This information is used to estimate annual printing costs, develop fiscal plans, and to prepare the Annual Publications Report to the Office of the Secretary. As a minimum, program offices should include in the Planned Publications Report the following information for each publication:
    - (1) Publication name.
    - (2) Publication number.
    - (3) Estimated number of pages.
    - (4) Estimated number of copies.
    - (5) Size of publication.
    - (6) Type of paper stock.
    - (7) Type of binding.
    - (8) Final copy or typeset composition. (Will final copy be provided by the program office/contractor; or will composition services be requested through the P&VA Branch?)

- (9) Frequency of issue.
  - (10) Estimated number of photos/illustrations.
  - (11) Number of ink colors.
  - (12) Target audience.
- b. Publication Estimates. From the information provided by the Washington Headquarters program offices in the Planned Publications Report, the P&VA Branch develops cost estimates for each publication project. These estimates are provided to the program offices, allowing the program offices to evaluate and carry out their publication program.
- c. Expenditure Guidelines for Printing Services. After evaluating the Planned Publications Report each year, the P&VA Branch will provide expenditure guidelines to the FHWA Headquarters Associate Administrators and Staff Office Directors for printing services to be obtained through the Working Capital Fund (WCF) program. These guidelines will be based on the projected printing cost-estimates derived from the Planned Publications Report, and will be issued after the Budget Advice is provided by the Office of Fiscal Services.
- d. Monthly Budget Reports. The P&VA Branch will forward a monthly report to each designated contact person within the Washington Headquarters program offices.
- (1) The report will include the estimated total expenditures for the month and year-to-date (based on the sums of individual job estimates) and the amount of funds remaining under the established guidelines. This will allow Washington Headquarters offices to monitor overall expenditures and trends.
  - (2) If a program office is in danger of exceeding the total of its expenditure guideline in a fiscal year, each requested job with a cost estimate exceeding \$500 for printing services will be

cleared by the P&VA Branch with the designated contact person in the Washington Headquarters office prior to processing.

2. ANNUAL PUBLICATIONS REPORT TO THE OFFICE OF THE SECRETARY (OST)

- a. Each year the P&VA Branch will submit to the OST a report on periodicals and nonrecurring publications. This report serves as a feeder report for the Department's annual publications report to the Office of Management and Budget (OMB) in accordance with the requirements of OMB Circular No. A-3.
- b. The report will include the following:
  - (1) A listing of current and proposed periodicals.
  - (2) Actual and projected spending for periodicals and nonrecurring publications.
  - (3) Detailed justifications for proposed periodicals.

## CHAPTER 5. GUIDELINES FOR PREPARING FEDERAL HIGHWAY ADMINISTRATION PUBLICATIONS

1. GENERAL. The guidelines in this chapter are provided to achieve a consistency in the presentation of the FHWA publications. They are derived from applicable DOT and FHWA directives, and are in compliance with DOT Order 1360.6, Graphic Standards for the U.S. Department of Transportation.
  - a. Availability to Contractors. Contractors preparing publications for the FHWA can obtain copies of this chapter, without charge, from the Office of Contracts and Procurement, HCP-30, Federal Highway Administration, Washington, DC 20590.
  - b. Availability of Graphic Standards Manual (DOT Order 1360.6). Contractors can obtain a copy of Graphic Standards for the U.S. Department of Transportation (DOT Order 1360.6) from the Contracting Officer's Technical Representative (COTR). No fee is charged for the manual.
2. PUBLICATION DEFINITIONS
  - a. Camera-Ready Copy. The finished manuscript (final text pages), including all art work (illustrations, photographs, charts, or tables) ready for printing by photographic or other means.
  - b. Perfect Binding. Binding by which the pages of a book are held together with adhesive along the back edge, and a spine is added.
  - c. Publications. Printed matter such as manuals, reports, periodicals, scientific and technical materials, public information pamphlets, procedures, and posters. (News releases, speeches, documents, and articles submitted to nongovernmental publications are excluded).
  - d. Reproduction. Producing copy of an original document by mechanical or photomechanical methods or process.
  - e. Running Head. A line at the top of a page showing the title of the book, the chapter, or the subject.

- f. Saddle Stitch. To fasten a booklet by stitching it through the spine of the pamphlet. Always done using signatures.
- g. Side Stitch. A binding method in which the stitch is run from the front to back. This method can be used with signatures or single sheets.
- h. Signature. A sheet of paper folded so that, when cut, it will produce a certain number of pages (in any multiple of four).

### 3. KINDS OF PUBLICATIONS

- a. General Information Publications. Publications written in nontechnical language and often prepared for distribution to the general public.
- b. Technical Publications. Reports, manuals, or studies that consist primarily of scientific, engineering, or statistical data, analyses, or discussions. Technical publications do not contain statements of policy.
- c. Mandated Reports. Publications prepared for Congress or in response to specific statutory requirements.
- d. Manuals. Directives or other publications that contain policies, procedures, instructions, or technical information and provide comprehensive coverage of a single subject area or a series of related subject areas.
- e. Nonrecurring Publications. Publications printed on a one-edition basis. This includes pamphlets, brochures, books, booklets, monographs, reports, leaflets, folders, Bulletins, journal articles, and similar nonrecurring publications, including those reprinted or revised.
- f. Periodicals (Recurring Publications). Publications issued annually or more often with a consistent format, content, and purpose for official use by the FHWA in the transaction of its routine business (e.g., annual reports, newsletters, newspapers, journals, or magazines).

#### 4. COPYRIGHT REQUIREMENTS

##### a. Written Release Required

- (1) Copyrighted material may not be used in an FHWA publication unless written permission of the copyright owner is obtained. Prior use of copyrighted material in another Federal Government publication does not necessarily constitute permission to use it in the FHWA publication.
- (2) If a contractor-prepared publication contains copyrighted material, the contractor is responsible for identifying it, obtaining the copyright owner's written permission to use it, and including a footnote giving credit to the owner. The written permission must be provided to the Contracting Officer's Technical Representative (COTR).
- (3) The program office is responsible for identifying copyrighted material and obtaining written permission for its use in in-house prepared publications. The language of the written release should comply with the statements in paragraph 4b.

##### b. Release Language

- (1) The following release language should be used for contractor-prepared publications:

(Name of copyright owner) hereby grants to (name of contractor) and to the United States Government a royalty-free, nonexclusive, irrevocable right to use, reproduce, distribute, and sell (identify the copyrighted work, or the portion of it to which rights are granted) throughout the world.

- (2) For in-house prepared publications, the following release language should be used:

(Name of copyright owner) hereby grants to the United States Government a royalty-free, nonexclusive, irrevocable right to use, reproduce, distribute, and sell (identify the copyrighted work, or the portion of it to which rights are granted) throughout the world.

- (3) This wording has been approved by the NTIS. If the release is not properly worded, the NTIS may refuse to stock and sell a report that contains copyrighted material.

5. ASSIGNMENT OF PUBLICATION NUMBER

- a. Each publication printed at the expense of the U.S. Department of Transportation is required to have a publication number under Policy and Procedures Governing DOT Printing, Duplicating, and Copying (DOT Order 1360.5). The number aids in identifying publications, determining costs, providing an easy system for ordering items, and keeping inventory of stock.
- b. Each FHWA program office is responsible for assigning a publication number to each of its publications projects and keeping a log of the assigned numbers. This number is assigned in the beginning of the fiscal year as part of the Planned Publications Report. (See Planned Publications Report, Chapter 4, paragraph 1a.)
- c. The FHWA Contracting Officer's Technical Representative (COTR) is responsible for providing the publication number to the contractor.
- d. All forms requesting work relating to a publication (editorial, graphics, photography, typography, composition, design, and printing) must carry the pre-assigned publication number. For nonpublication work submitted to the P&VA Branch, place "Publication No. N/A" on forms (to indicate that a publication number is not applicable).
- e. The numbering system is based on the following elements:

<u>Agency Prefix</u>	<u>Program Office</u>	<u>Fiscal Year Printed</u>	<u>Sequential Number</u>
FHWA	RD	87	001

- (1) The number appears in the following form:

FHWA-RD-87-001

- (2) Each year the sequence number (001) begins again with 001.
- (3) Individual designations are used to number multivolume publications. For example, a publication with two volumes would be given the sequence number 001 for volume 1 and 002 for volume 2 (see following example).

FHWA-RD-87-001            (for Volume 1)  
FHWA-RD-87-002            (for Volume 2)

- (4) For purposes of the FHWA publication number, the following codes will be used:

AD - Administration  
CC - Chief Counsel  
CR - Civil Rights  
DF - Direct Federal Programs  
DP - Demonstration Projects  
ED - Engineering and Program  
      Development  
HI - National Highway Institute  
IP - Implementation  
MC - Motor Carriers  
OA - Office of the Administrator  
PA - Public Affairs  
PL - Policy  
PR - Program Review  
RD - Research, Development, and  
      Technology  
TS - Technology Sharing  
RE - Right-of-Way and Environment  
SA - Safety and Operations  
RT - Rural Technical Assistance Program  
      (RTAP)

## 6. IDENTIFICATION OF PUBLICATION

- (a) Departmental Mark and Signature. All publications printed at the FHWA's expense shall have the full Department signature printed on the front or back cover, title page, and spine (space permitting). The full signature includes the DOT mark, the Department's name, and the Administration's name (the Administration's name is in bold typeface), as designated in the Graphic Standards for the U.S. Department of Transportation (DOT Order 1360.6). (See Figure 5.1 for an example.)



U.S. Department  
of Transportation

**Federal Highway  
Administration**

Example 1. Preferred Mark and Signature



U.S. Department of Transportation

**Federal Highway Administration**

Example 2. Mark and Signature — Used when space does not permit  
use of example 1

Figure 5.1. Mark and Signature — Acceptable Variations

- (b) Publication Date. The publication date shall appear on the front cover, Technical Report Documentation Page, and title page.
  - (c) Publication Number. The publication number shall appear on the front or back cover, Technical Report Documentation page, and title page. If sufficient space is available, the publication number should appear on the spine.
  - (d) Originating Office. The name of the originating or sponsoring element may appear in the publication.
7. ACKNOWLEDGING CONTRIBUTORS AND AUTHORS: Credit Lines and Bylines
- a. Credit Lines
    - (1) Courtesy or credit lines are permissible for materials loaned or contributed by nongovernment sources.
    - (2) No credit lines or acknowledgments shall be given when such materials have been purchased by the FHWA.
    - (3) Credit lines or acknowledgments are placed on the Technical Report Documentation Page or in the preface. Such credit lines shall be set in the smallest practical typeface so that they shall be subordinate both to text and illustrations. If the acknowledgments are long they may be put on a separate page following the preface. (See Figure 5.13.)
    - (4) No credit lines or acknowledgments shall be permitted for the sole purpose of giving credit to any author or FHWA employee, except in in-house newsletters or similar morale type publications.
  - b. Bylines
    - (1) Government Agencies. If the contractor preparing the FHWA publication is a State, Federal, or local government agency, the agency's seal or logo may appear to the right or directly below the DOT seal, if the agency so requests.

- (2) Private Contractors. Names of private contractors are not permitted on the covers of the FHWA publications. The contractor's name may be placed on the Technical Report Documentation Page (see paragraph 10c(1)) or title page. (See Figure 5.11 for an example of a title page with bylines.)
  - (3) Employees. Bylines are not permitted for the sole purpose of giving credit to any author or an FHWA employee.
8. USING ADVERTISEMENTS IN THE FHWA PUBLICATIONS. No printed matter produced by, or at the direction of the FHWA, shall contain any advertisement for any private individual, firm, or corporation; or contain any material which implies in any manner that the Federal Government endorses or favors any specific commercial product, commodity, or service.
9. STYLE MANUALS
- a. Editorial Style for the FHWA Publication. For consistency and uniformity in all Federal Government publications, the guide for editorial style is the United States Government Printing Office (GPO) Style Manual. This manual is a standard of spelling, hyphenation, capitalization, punctuation, abbreviation, numerals, and other style concerns.
  - b. Additional Style References. When an additional style reference is needed, the recommended guide is the Chicago Manual of Style. For spelling, the GPO Style Manual recommends Webster's Third New International Dictionary. Another excellent resource is Webster's New World Dictionary.
  - c. Other Style Manuals. When preparing FHWA publications, the GPO and Chicago manuals should be followed. Style guides or orders designed for the specific use of preparing FHWA directives or correspondence should not be used for publications. Style and punctuation rules in these guides may differ from the GPO and Chicago manuals.
  - d. Writing/Editing Resource Library. The P&VA Branch has a Writing/Editing Resource Library for use by in-house staff. The reference books in this library are not

circulated or loaned but are available for use within the P&VA Branch office area.

10. FORMAT FOR PREPARING TECHNICAL BROCHURES, MANUALS, REPORTS, AND STUDIES. The format guidelines in Figure 5.2 apply to all technical manuals, reports, brochures, guides, and studies prepared by FHWA offices or by contractors. They are the standard order of elements included in a publication.

- a. Covers. A publication has four covers and a spine (if the volume of pages creates a need for a spine). Cover 1 is the front cover. Cover 2 is the inside of the front cover. Cover 3 is the inside of the back cover. Cover 4 is the back cover. Several elements are required on the covers and spine of a publication.

(1) Front Cover (Cover 1). The front cover follows the style for technical publications shown in Figure 5.3. The title, subtitle (if any), DOT mark and signature, and publication date are on the front cover. Depending upon the design of the report, manual, or study, the publication number may be placed on the front cover or the back cover. All FHWA publications require a publication number (see Publication Number, paragraph 5).

(2) Inside Front Cover (Cover 2). Publications containing technical material must have a foreword. All technical manuals, reports, guides, and studies also must have certain disclaimer notices. (See Figure 5.4 for a sample technical inside cover.)

(a) Foreword. The foreword and disclaimer notices in FHWA technical publications must be limited to the inside front cover. They may not continue on to other pages or other cover surfaces of the publication. The foreword contains the following information:

- 1 The reason for publishing the report, manual, or study.
- 2 A short summary of the contents.
- 3 A statement identifying the audience.

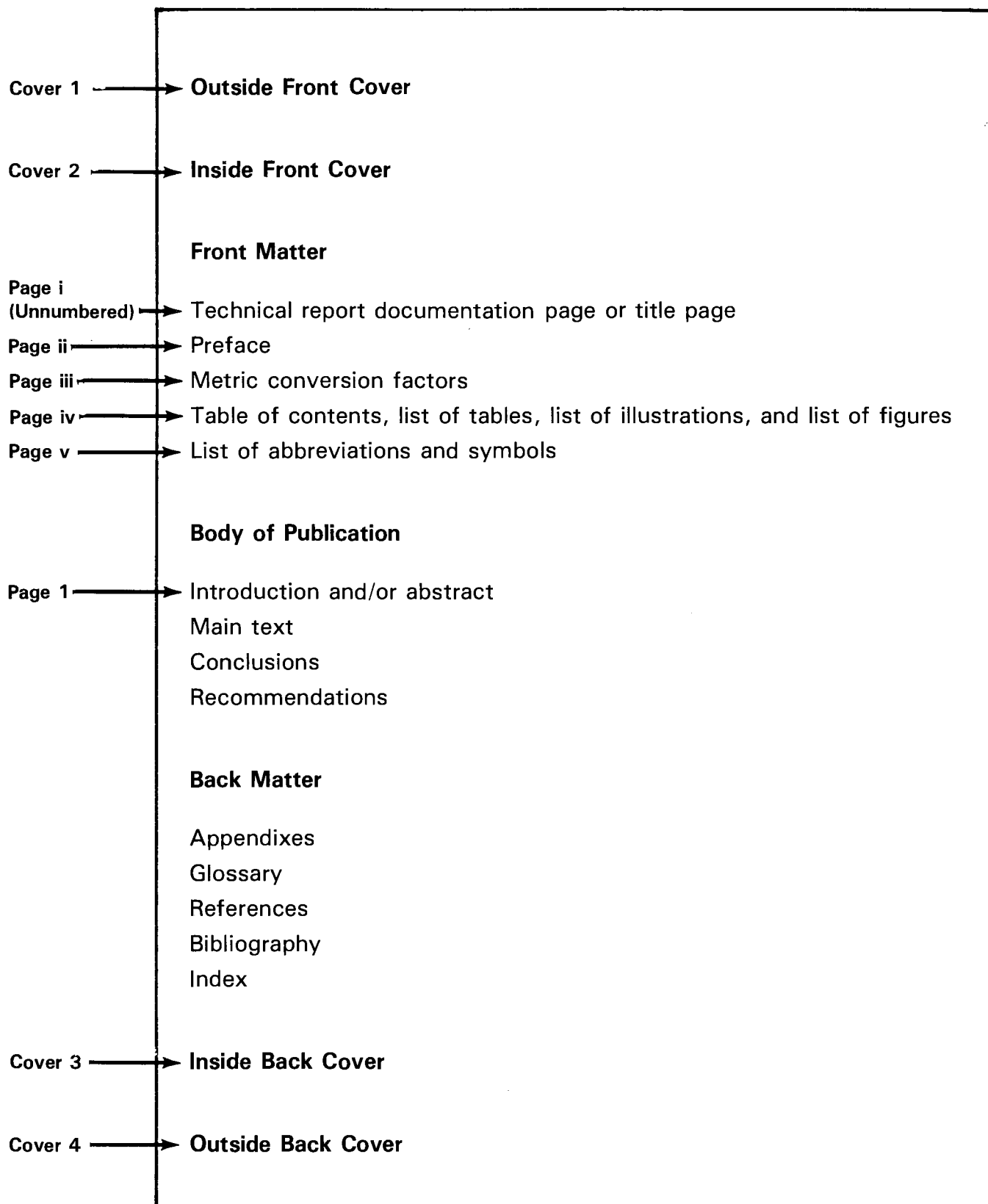


Figure 5.2. Standard Order of Elements in a Publication


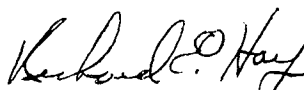
Mark & Signature	 U.S. Department of Transportation <b>Federal Highway Administration</b>	<b>Surface Design and Rehabilitation</b>	← Title
		<b>Guidelines for Low-Volume Roads</b>	← Subtitle
<hr/>			
Publication Number	<hr/>		
	Report No. FHWA-TS-87-225	December 1987	

Figure 5.3. Example of a Technical Publication — Front Cover (Cover 1)

### Foreword

This report presents the results of a comprehensive investigation of the performance of pile driving systems. It is an inspection manual for impact hammers and includes pile cushions, helmets, and leads. The manual also includes pile hammer data sheets for use on the job site. This report will be of interest to bridge engineers and geotechnical engineers concerned with the inspection of pile driving operations.

Sufficient copies of the report are being distributed by FHWA Bulletin to provide a minimum of two copies to each FHWA regional and division office, and five copies to each State highway agency. Direct distribution is being made to division offices.



Richard E. Hay, Director  
Office of Engineering and Highway  
Operations Research and Development

Foreword

### Notice

This document is disseminated under the sponsorship of the Department of Transportation in the interest of information exchange. The United States Government assumes no liability for its contents or use thereof.

The contents of this report reflect the views of the contractor who is responsible for the accuracy of the data presented herein. The contents do not necessarily reflect the official policy of the Department of Transportation.

This report does not constitute a standard, specification, or regulation.

The United States Government does not endorse products or manufacturers. Trade or manufacturers' names appear herein only because they are considered essential to the object of this document.

Disclaimer  
Notice

Figure 5.4. Sample of an Inside Front Cover (Cover 2)

4 Whether the publication supersedes another.

5 Whether the publication is preliminary, interim, or final.

(b) Disclaimer Notices. (See Figures 5.5, 5.6, and 5.7 for sample disclaimer notices.) The following disclaimer notices will be used when applicable:

1 Departmental Disclaimer. A departmental disclaimer under the caption "Notice" must be added to the inside front cover.

**Notice**

This document is disseminated under the sponsorship of the Department of Transportation in the interest of information exchange. The United States Government assumes no liability for its contents or use thereof.

Figure 5.5. Departmental Disclaimer

2 Disclaimer for Product Names or Manufacturers. If any names of products or manufacturers appear in the publication, the following disclaimer also must be used.

**Notice**

The United States Government does not endorse products or manufacturers. Trademarks or manufacturers' names appear herein only because they are considered essential to the object of this document.

Figure 5.6. Disclaimer for Product Names

- 3     Optional Notices. The following notice also may be added at the option of the FHWA program office or contract manager.

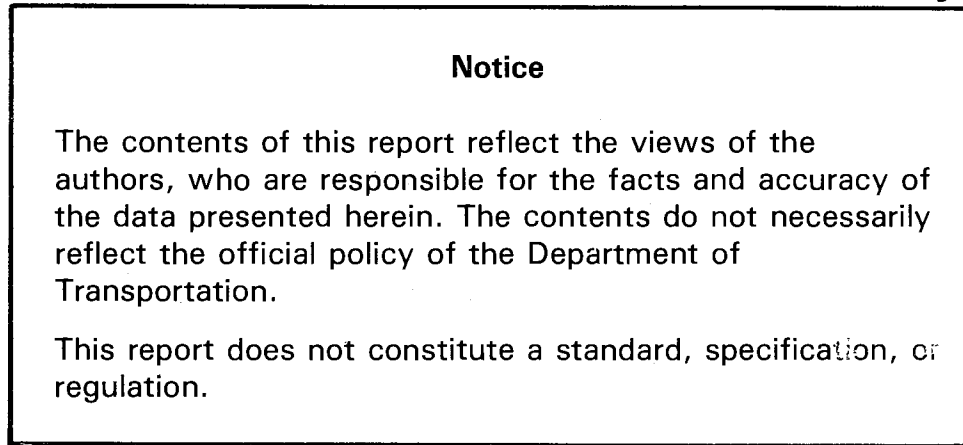


Figure 5.7. Optional Notices

- (3) Inside Back Cover (Cover 3). The inside back cover does not require any special elements. The cover can be blank, or a design element may be added, such as an illustration or photograph or a final page of text.
- (4) Back Cover (Cover 4). The back cover does not require any special elements. It can be blank, or a design element may be used, such as an illustration or photograph. Depending upon the overall front and back cover design, the DOT mark and signature, and publication number may be placed on the back cover. For mailing purposes, a self-mailer can be placed on the back cover. The self-mailer portion of the page must occupy no more than one-third of the page. See Figure 5.8 for a sample self-mailer back cover.
- b. Spine. If the publication contains 95 pages or more, a spine usually is required. The title, volume number (if any), and publication number are placed on the spine. This information is arranged on the spine to read from top to bottom, when the publication is placed upright on a bookshelf. (Omit publication number if sufficient space is not available.) See Figure 5.9 for examples of spine titles.
- c. Front Matter. The front matter contains preliminary pages prior to the main text of the report.

U.S. Department  
of Transportation  
**Federal Highway  
Administration**

400 Seventh St., S.W.  
Washington, D.C. 20590

Official Business  
Penalty for Private Use \$300

Postage and Fees Paid  
Federal Highway  
Administration  
DOT 512



NOTE: A self-mailer can occupy a full page, or  
1/2 of a page, but no less than 1/3 of a  
page on an 8 1/2" x 11" publication.  
On a 4" x 9" or a 5 1/2" x 8 1/2"  
publication, a self-mailer must occupy the  
full back cover.

Figure 5.8. Sample Back Cover (Cover 4) when used as a Self-Mailer

FHWA-RD-85-106 BEHAVIOR OF PILES AND PILE GROUPS UNDER LATERAL LOAD  
VOLUME 1

Figure 5.9. Spine Title

- (1) Technical Report Documentation Page. All technical publications require a Technical Report Documentation Page, Form DOT F 1700.7. This page is unnumbered page (i), which indicates it is the first page of the publication. ("Unnumbered" means the number (i) is not actually typed on the page. It is only designated the (i) page for placement in the publication when the book is printed.) The Technical Report Documentation Page replaces the need for a title page; however, a title page may be added. (See Title Page, paragraph 11C (2).) See Attachment 4 for a copy of Form DOT F 1700.7, Technical Report Documentation Page and instructions for completing this form.
- (2) Title Page. The title page is optional in a technical publication. If it is included in addition to the Technical Report Documentation Page, the title page is the third page in the book and is an unnumbered (iii). The title page is always placed on the right-hand page. (Order of pages: Technical Report Documentation Page, blank page, title page.) See Figure 5.10 for a sample title page.
  - (a) The following elements are required on the title page:
    - 1 Title
    - 2 Subtitle (if a subtitle is used)
    - 3 Publication Number
    - 4 Publications Date
    - 5 Administration's Name
    - 6 Department's Name
  - (b) A byline may be added to the title page following the guidelines in paragraph 7b (see Figure 5.11).
- (3) Preface. Among possible uses, a preface may show the relation of the work reported to associated efforts, give credit for the use of copyrighted material, and acknowledge significant assistance


Title	→	<b>Nondestructive Testing Methods for Steel Bridges</b>
Subtitle	→	<b>Participants Training Manual</b>
Publication Number	→	Report No. FHWA-TS-88-225
Signature	→	 U.S. Department of Transportation <b>Federal Highway Administration</b>
Date	→	June 1986

Figure 5.10. Sample Title Page

Title	→	<b>Transportation Revenue Forecasting Guide</b>
Publication Number	→	Report No. FHWA-TS-88-001
Contractor's Name	→	Prepared by Joint Center for Urban Mobility Research Rice Center Nine Greenway Plaza, Suite 1900 Houston, Texas 77046
Administration's Name	→	Prepared for Federal Highway Administration and Urban Mass Transportation Administration U.S. Department of Transportation Washington, D.C. 20590
Date	→	April 1987

Figure 5.11. Sample Title Page with Byline

received (see Credit Lines, paragraph 7a). If acknowledgments are too long, they may be put on the page following the preface. See Figures 5.12 and 5.13 for examples of a preface and separate acknowledgment page.

- (4) Metric Conversion Factors Page. Include a Metric Conversion Factors page (Figure 5.14) in the report, if measurements are used in the publication. This page provides the reader with information for converting to metric measures. Additional units may be included as they apply to the contents of the report. Figure 5.14 may be reproduced. Copies also can be obtained from the P&VA Branch. The Metric Conversion Factors page may be included on reverse of the preface.
- (5) Table of Contents. A table of contents (Figure 5.15) is useful in most publications of more than 10 pages and required in all publications of 30 or more pages. In preparing the table of contents, these rules should be followed:
  - (a) Front matter preceding the table of contents should not be listed. Begin with the introduction or first section, which follows the table of contents.
  - (b) List every section or subsection title. All capitals or initial capital letters may be used for the titles, but each level of headings must be consistent (e.g., main headings in all capitals, subheadings in initial capitals, etc.). If both headings and subheadings are used, bold typeface is recommended for the main headings. The relationship between the levels of headings and subheadings also can be emphasized by indenting the subheadings.
  - (c) Use titles identical to the headings in the publication.
  - (d) Use numbers or letters identical to those found in the publication.

## Preface

The Nationwide Personal Transportation Study (NPTS) is an investigation of the characteristics and personal travel patterns of the U.S. population. The NPTS derives its information from a nationwide home interview survey of households. The NPTS is a unique source of information on personal travel, both as a reference on key travel measures such as trip rates and vehicle occupancy levels, as well as being a source for linking the characteristics of households with their travel by all modes of transportation.

This report presents summary findings from the 1983 NPTS Survey conducted between February 1983 and January 1984. The 1983 survey obtained data from a national sample of 6,438 households. The survey sample was selected and the results presented in such a manner as to be representative of the nation as a whole. Previous NPTS surveys were conducted in 1977 and 1969. Comparing results from these three surveys provides a good picture of how the country's population and travel habits have changed over time.

This report presents principal findings from the 1983 survey, and offers a comparison of the same measures with the 1977 and 1969 surveys where the data are comparable. Topics covered by the report include drivers and their vehicles, household and person travel patterns, vehicle ownership and usage, journey to work, vehicle occupancy, long distance travel, and use of vehicle safety devices. Whereas the previous NPTS surveys were also accompanied by summary reports, the 1983 effort is different in two respects: a consolidation of the findings into a single report instead of individual subject reports, and a more extensive effort in comparing the results of the current survey with the previous surveys.

The survey is sponsored by four agencies within the U.S. Department of Transportation--the Federal Highway Administration, the Office of the Secretary of Transportation, the National Highway Traffic Safety Administration, and the Urban Mass Transportation Administration. The U.S. Census Bureau also had a significant role in the study. Working under an interagency agreement with the Department of Transportation, Census designed the survey and the sample, conducted the survey, and developed the basic data files. COMSIS Corporation, under contract to the Federal Highway Administration, had the responsibility of processing and analyzing the data and prepared the reports and the users' guide for the survey data tapes.

Figure 5.12. Sample Preface

### **Acknowledgments**

We would like to express appreciation to the following organizations and individuals for either granting permission to copy publications or for providing information used for the development of this training program:

Complete copies of their publications can be obtained from:

The American Welding Society  
550 N.W. LeJeune Road  
P.O. Box 351040  
Miami, FL 33135  
(305) 443-9353

Materials Evaluation  
The Official Journal of  
The American Society for  
Nondestructive Testing (ASNT)

The American Society of  
State Highway Transportation  
Officials (AASHTO), Washington, D.C.

National Institute for Certification in  
Engineering Technologies, NICET,  
Alexandria, Virginia

The following State Departments of Transportation:

Connecticut  
Idaho  
Maryland  
Massachusetts  
Michigan  
New York

Figure 5.13. Sample Acknowledgments Page

# SI\* (MODERN METRIC) CONVERSION FACTORS

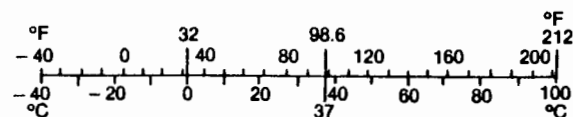
## APPROXIMATE CONVERSIONS TO SI UNITS

Symbol	When You Know	Multiply By	To Find	Symbol
<b>LENGTH</b>				
in	inches	25.4	millimetres	mm
ft	feet	0.305	metres	m
yd	yards	0.914	metres	m
mi	miles	1.61	kilometres	km
<b>AREA</b>				
in <sup>2</sup>	square inches	645.2	millimetres squared	mm <sup>2</sup>
ft <sup>2</sup>	square feet	0.093	metres squared	m <sup>2</sup>
yd <sup>2</sup>	square yards	0.836	metres squared	m <sup>2</sup>
ac	acres	0.405	hectares	ha
mi <sup>2</sup>	square miles	2.59	kilometres squared	km <sup>2</sup>
<b>VOLUME</b>				
fl oz	fluid ounces	29.57	millilitres	mL
gal	gallons	3.785	litres	L
ft <sup>3</sup>	cubic feet	0.028	metres cubed	m <sup>3</sup>
yd <sup>3</sup>	cubic yards	0.765	metres cubed	m <sup>3</sup>
<b>MASS</b>				
oz	ounces	28.35	grams	g
lb	pounds	0.454	kilograms	kg
T	short tons (2000 lb)	0.907	megagrams	Mg
<b>TEMPERATURE (exact)</b>				
°F	Fahrenheit temperature	5(F-32)/9	Celcius temperature	°C

NOTE: Volumes greater than 1000 L shall be shown in m<sup>3</sup>.

## APPROXIMATE CONVERSIONS FROM SI UNITS

Symbol	When You Know	Multiply By	To Find	Symbol
<b>LENGTH</b>				
mm	millimetres	0.039	inches	in
m	metres	3.28	feet	ft
m	metres	1.09	yards	yd
km	kilometres	0.621	miles	mi
<b>AREA</b>				
mm <sup>2</sup>	millimetres squared	0.0016	square inches	in <sup>2</sup>
m <sup>2</sup>	metres squared	10.764	square feet	ft <sup>2</sup>
ha	hectares	2.47	acres	ac
km <sup>2</sup>	kilometres squared	0.386	square miles	mi <sup>2</sup>
<b>VOLUME</b>				
mL	millilitres	0.034	fluid ounces	fl oz
L	litres	0.264	gallons	gal
m <sup>3</sup>	metres cubed	35.315	cubic feet	ft <sup>3</sup>
m <sup>3</sup>	metres cubed	1.308	cubic yards	yd <sup>3</sup>
<b>MASS</b>				
g	grams	0.035	ounces	oz
kg	kilograms	2.205	pounds	lb
Mg	megagrams	1.102	short tons (2000 lb)	T
<b>TEMPERATURE (exact)</b>				
°C	Celcius temperature	1.8C + 32	Fahrenheit temperature	°F



\* SI is the symbol for the International System of Measurement

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Figure 5.15. Sample Table of Contents

- (6) Lists of Tables and Figures. Lists of tables and figures are required in publications of 30 or more pages following the table of contents. These lists should include the table or figure number, title, and page number. If the lists are short, both lists can be placed on the same page (see Figure 5.16).
  - (7) List of Abbreviations and Symbols. When symbols and abbreviations are numerous, provide a separate list with definitions (Figure 5.17). Then define symbols and abbreviations where first introduced in the text. If a list is used, include organization symbols (e.g., FHWA, ANSI, etc).
- d. Body of Publication. The body of the publication includes the introduction, discussion, and the conclusion and recommendations.
- (1) Introduction. The introduction includes the following:
    - (a) Background information on the subject.
    - (b) Scope of the project, research, or study.
    - (c) Organization of the contents.
  - (2) Discussion
    - (a) Divisions. The discussion (the main text of the publication) answers the "who, what, where, when, and how" of the subject. The "why" is answered in the foreword. The amount of detail in the discussion depends upon the subject, purpose, and scope of the publication. The discussion is divided into sections and subsections, with varying levels of headings and subheadings. This division allows easy identification of the subject matter by the reader.
    - (b) Headings and Subheadings. The format of the headings varies depending on the number of levels used. The point is for the heading to be easily distinguishable. Bold typeface increases the readability and attractiveness of a publication. A heading should (1)

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Figure 5.16. Lists of Tables and Figures

### List of Abbreviations

<b>amt.</b> .....amount	<b>DOT</b> .....Department of Transportation
<b>amp</b> .....ampere	<b>EB</b> .....eastbound
<b>APU</b> .....authorized pickup	<b>eg</b> .....exempli gratia (for example)
<b>arr</b> .....(1) arrive, (2) arrival	<b>eq</b> .....equal
<b>art</b> .....article	<b>est</b> .....estimated
<b>ATA</b> ..American Trucking Associations, Inc.	<b>est wt</b> .....estimated weight
<b>av</b> .....average	<b>ETA</b> .....estimated time of arrival
<b>avg</b> .....average	<b>etc</b> .....et cetera (and other things; and so forth)
<b>A/W</b> .....actual weight	<b>ETD</b> .....estimated time of departure
<b>BB</b> .....break bulk	<b>ex</b> .....(1) exchange, (2) example
<b>BBC</b> .....length of tractor in inches from bumper to back of cab	<b>ex BL</b> .....exchange bill of lading
<b>bb1</b> .....barrel	<b>exp</b> ..(1) export, (2) express, (3) expense
<b>BC</b> .....distance in inches from back of cab to end of frame	<b>FA</b> ..(1) free astray, (2) freight astray
<b>BHP</b> .....brake horsepower	<b>FB</b> .....Freight Bill
<b>BL or B/L</b> .....bill of lading	<b>FHWA</b> .....Federal Highway Administration
<b>bls</b> .....bales	<b>FMCSR</b> .....Federal Motor Carrier Safety Regulations
<b>BTW</b> .....behind-the-wheel	<b>FOB</b> .....free on board
<b>bu</b> .....(1) bushel, (2) bureau	<b>frt</b> .....freight
<b>bx</b> .....box	<b>ft</b> .....(1) feet, (2) foot, (3) foot
<b>CA</b> ...distance in inches from back of cab to centerline rear axle	<b>gal</b> .....gallon
<b>CAE</b> .....cab-alongside-engine	<b>GCW</b> .....gross combination weight
<b>COE</b> .....cab-over-engine	<b>gen'l</b> .....general
<b>CBE</b> .....cab-beside-engine or cab-behind-engine	<b>gr</b> .....gross
<b>con</b> .....conventional	<b>GT</b> .....gross ton
<b>chg</b> .....charge	<b>GVW</b> .....gross vehicle weight
<b>ck</b> .....(1) cask(s), (2) check	<b>hdqrs</b> .....headquarters
<b>CL</b> .....(1) connecting line, (2) car load	<b>hgt</b> .....height
<b>c/o</b> .....care of	<b>hhd</b> .....hogshead
<b>COD</b> .....cash (or collect) on delivery	<b>HP</b> .....horsepower
<b>coll</b> .....collect	<b>HQ</b> .....headquarters
<b>comb</b> .....combination	<b>ht</b> .....heat or height
<b>com'l</b> .....commercial	<b>ie</b> .....id est (that is)
<b>cr</b> .....(1) credit, (2) creditor	<b>IB</b> .....(1) inbound, (2) in bond
<b>CR</b> .....carrier's risk	<b>ICC</b> .....Interstate Commerce Commission
<b>cty</b> .....county	<b>IL</b> .....Interline
<b>cu ft</b> .....(1) cubic foot, (2) cubic feet	<b>imp</b> .....import
<b>cwt</b> .....hundred weight	<b>inc</b> .....(1) inclusive, (2) incorporated
<b>cyl</b> .....cylinder	<b>ins</b> .....insurance
<b>dba</b> .....doing business as	<b>inter</b> .....interstate
<b>dely</b> .....delivery	<b>intra</b> .....intrastate
<b>diam</b> .....diameter	<b>inv</b> .....invoice
<b>diff</b> .....differential	<b>it</b> .....item
<b>disc</b> .....discount	<b>KD</b> .....knocked down
<b>disp</b> .....(1) dispatch, (2) dispatcher	<b>LCF</b> .....low cab forward of engine
<b>dist</b> .....(1) district, (2) distance	<b>LCL</b> .....less than a car load
<b>div</b> .....division	<b>liq</b> .....(1) liquor, (2) liquid
<b>dk</b> .....dock	<b>L&amp;D</b> .....loss and damage
	<b>lg tn</b> .....long ton (2,240 lbs)

Figure 5.17. Sample List of Abbreviations and Symbols

indicate the importance of the section, (2) be identical in form to headings of the same relative importance, (3) be readily distinguishable from the order of other headings, and (4) be clearly distinguishable from the text. One recommended format for headings and subheadings is as follows:

- 1 Chapter headings - bold type, all capitals, and centered at the top of the page. Underscoring is not necessary.
- 2 First-level main headings - bold type, all capitals, and flush left on the page.
- 3 Second-level headings - bold type, initial capitals and flush left on the page.
- 4 Third-level headings - initial capitals. Do not use bold type. The heading can be underscored, italic, or roman type. The heading should be flush left or the first line leading into a paragraph.

- (c) Running Heads. Running heads are used at the tops of pages in a book as signposts, telling readers where they are. The contents of running heads in the text depends on the structure of the publication. Subject headings that may be used for left and right pages are as follows:

LEFT

Part title  
Chapter title  
Chapter title  
Subhead

RIGHT

Chapter title  
Subhead  
Chapter title  
Subhead

- (3) Conclusions and Recommendations. Conclusions and recommendations may be required in some publications, depending upon the subject matter. A conclusion is an opinion based on the results; a recommendation is a suggestion for action.

- e. Back Matter. The back matter includes the reference material and index.
- (1) Appendixes. Supplemental material may be needed in some publications. This information should be placed in the appendix. Information in the appendix should be indirectly related to the subject; directly related information should be part of the discussion.
  - (2) Glossary. Define special terms where first introduced in the text. When such terms are numerous, list them as a glossary in alphabetical order.
  - (3) References. Include complete identification of references as footnotes on bottom of page where first cited to aid the reader. When references are numerous, include a reference list in the back of the report. Present entries in a uniform style, with complete identifying data, in accepted bibliographic format. Each entry includes the author, title, source, identifying number, pagination, and publication date. Abbreviations are not recommended and should be used sparingly .
  - (4) Bibliography. A bibliography is useful to (a) direct readers to sources of material, (b) permit authors to acknowledge sources of information, and (c) aid persons using the publication as a reference to locate additional writings on the subject. The U.S. Government Printing Office Style Manual is the required reference for format of bibliographies and footnotes.
  - (5) Index. If an index is included for a lengthy report, make it as complete as the nature of the report and its usage requires.
11. DESIGNING THE LAYOUT OF THE TECHNICAL PUBLICATION. The DOT Graphic Standards Manual suggests the vertical format for most publications. Horizontal or album formats should be avoided unless the content cannot be adapted to the vertical alignment. Cover designs for horizontal format publications also follow the guidelines of the DOT Graphic Standards Manual (see General, paragraph 1).

- a. Standard Size Pages. Standard trimmed size for manuals, reports, guides, and studies is 8 1/2 inches wide by 11 inches long. To provide for adequate margins, the typed material on the page must not exceed 7 inches by 9 1/2 inches including page numbers and running heads. These measurements apply to all pages, regardless of content. All text pages must be submitted on stock of the same size.
- b. Foldout Pages. Foldout pages are expensive and should be avoided. Use foldout pages only for oversize tables and illustrations (not text), which if reduced would sacrifice legibility. It is better to use facing pages where feasible. If foldouts are necessary, follow these requirements:
  - (1) Foldouts must be sized to require folding in one direction only (folds parallel to binding). The length of the foldout page should not exceed the size of the publication (usually, 11 inches). The maximum width permitted horizontally is 18 inches, when the page is unfolded.
  - (2) Foldout pages may be placed throughout the text; however, the preferred placement is to gather all such pages at the end of the volume. Each foldout page should be assigned a page number. Printing on the back of the page is permitted, but should be avoided.
  - (3) Each foldout page must be folded so that the page number and caption are immediately visible to the reader when opening the book, without unfolding the page.
- c. Column Formats
  - (1) Two- and Three-Column Formats. The two-column format should be used for manuals, reports, guides, or studies. A two-column format increases the readability, attractiveness, and professional look of a publication. A three-column format also can be used. (The shorter line in a three-column format improves readability.)
  - (2) One-Column Format. The one-column format is permissible, but it is the least desirable. (The one, long line of text across the page decreases readability and the professional look of a

publication.) Using two columns of text on a page is preferable. Consider typing the text in a two-column format on oversize paper for photographic reduction.

d. Typefaces and Type Arrangement for the Text

- (1) Typefaces. Standard typefaces rather than cursive, italic, or other ornamental typefaces should be used for the main text. Cursive or italic typefaces are only appropriate for emphasis of specific words, terms, or subheadings. Use elite, pica, or similarly sized type (10 to 12 characters per inch).
- (2) Type Arrangement. Typefaces and spacing in the text must be uniform throughout each volume. Indent paragraphs uniformly. The right-hand margin is not required to be justified but should be as smooth as possible.

12. PREPARING THE FINAL TEXT FOR TECHNICAL PUBLICATIONS. Two methods can be used to prepare the final text of a manuscript for printing. The text can be prepared on a typewriter or word processor. (This includes publications produced through a word processing program on a personal computer). Or the text can be submitted to the FHWA Publications and Visual Aids Branch for typesetting.

- a. Typing the Manuscript. Text matter must be typed using typewriters or word processing equipment. The end product (from a typewriter or printer) must produce copy acceptable in uniformity, color, neatness, and legibility for printing. Variations in ink color or density likely to cause noticeable discrepancies in the final printing are not acceptable. The typed text should not contain excessive white space, double spacing, unnecessary wide margins, or blank pages. Single spaced text is required in most cases.
- b. Dot Matrix Type. If dot matrix type from a printer is used, the print should not have ragged edges. Use a letter quality printer with type that is similar in weight, texture, and form to typeset composition. See Figure 5.18 for examples of type.
- c. Typesetting. Typeset composition generally produces a better quality typeface than a typewriter or word processor. Typeset composition should always be

## INTRODUCTION

Recently, the Federal Highway Administration has endorsed using full-scale crash tests as the basis for determining bridge railing acceptability. In this study, current State designs were investigated and evaluated for structural continuity in rail, geometry, vehicle snagging potential, and effective rail height. From these designs, seven were selected to be crash-tested to NCHRP criteria.

Acceptable

## USE NEW CRASH FACILITY

With the current trend toward smaller, lighter automobiles, the Federal Highway Administration recognized that alternative test methods needed to be developed to reduce test costs and improve the repeatability of test results. The Federal Outdoor Impact Laboratory (FOIL) was constructed to meet these needs.

## UNIQUE FEATURES OF THE FOIL

Unacceptable

Figure 5.18. Acceptable and Unacceptable Type

considered when 3,500 or more copies of a publication are printed. Typesetting condenses the text and reduces the number of pages used, resulting in a substantial savings in paper and printing costs. Use FHWA Form DOT F 1700.8, Duplicating Request, to request typeset composition. Note: When having a publication typeset, the publication should be in final form and all required clearances signed because additional changes to typeset copy is expensive.

d. Selecting What Method to Use

- (1) Typewriter or Word Processor. Technical publications are usually prepared on a typewriter or word processor. Publications (brochures, pamphlets, flyers, bulletins, etc.) requiring a small quantity of copies also are generally typed.
- (2) Typeset Composition. Large quality publications (8 1/2 by 11 inch format), such as magazines and some reports, require typeset composition. Most brochures, booklets, and other publications designed for the general public are typeset.
  - (a) Washington Headquarters. The Typography and Design Section, Office of the Secretary, has the ability to scan typed pages with an optical character reader, instead of rekeying (or retyping) the pages. This saves both time and money. However, typed pages must be submitted in a certain format to be scanned effectively. Printed instructions on this format are available from OST's Typography and Design Section.
  - (b) Field Offices. When contracting for typesetting services in the field, field offices should consult contractors early in the development of a project. Contractors may have the ability to scan type, using an optical character reader. Scanning type instead of rekeying the type can save time and money.

13. PREPARING ARTWORK FOR TECHNICAL PUBLICATIONS: Line Drawings, Graphs, Charts, Figures, and Tables. Artwork incorporated in publications may be in forms such as line drawings, graphs, charts, figures, and tables.

- a. Criteria. Artwork is used to further explain the text. Use the following criteria to select appropriate art.
- (1) Submit only clean line art. Original art is preferred, although copies can be used. Use of copies or printed clippings in place of prepared original artwork requires permission from the FHWA Contracting Officer's Technical Representative (COTR) (for contract reports) or the FHWA project manager (for in-house reports).
  - (2) Select artwork that relates directly to the subject matter and is necessary to explain the text.
  - (3) Do not use artwork that serves to aggrandize an individual.
  - (4) Blueprints, diazo prints, and translucent prints intended for diazo reproduction are not acceptable. This restriction does not apply to original drawings on mylar or to full-sized prints of engineering drawings to be reduced at reproduction, provided that lettering and details in such prints or drawings are legible after reduction. (Lettering smaller than 6-point type after reduction is not considered legible.)
- b. Figure and Table Captions. Each figure and table must have a title or caption, duplicated by no other figure or table caption in the publication. The caption must be within the text page area, never in the margin.
- (1) Figures. On a figure page, (including line drawings, charts, graphs), the caption is centered at the bottom and is parallel to the lines of the text when the figure is upright.
  - (2) Tables. On a table page, the caption is centered at the top of the table.
  - (3) Page Placement for Figures and Tables
    - (a) Figures and tables should be placed on pages as near as practical to textual references, except in special situations, such as when a report only contains a few pages and many illustrations. In such cases, place the

illustrations in numerical sequence in the back of the report.

- (b) It is preferable that artwork is placed so it is viewed without turning the page sideways. If a figure or table must be placed sideways on a page, place it so the top of the art is at the left side of the page.
  - (c) Place captions on the page where they cannot be confused with text. Use adequate space between the caption and text to indicate the difference, or use a different type style or size from the text.
- c. Multipage Figure and Tables. Though such treatment is not encouraged, a figure or table can occupy two or more consecutive full pages. If only two pages are required, use facing pages (place the first page of the figure or table on an even numbered page). In all such multipage figures and tables, repeat the captions on each page, followed by the unabbreviated word "continued" in parentheses without quotation marks.

#### 14. PREPARING PHOTOGRAPHS FOR TECHNICAL PUBLICATIONS

- a. Use. When designing a publication, the presentation of photographs should be fresh and imaginative. A photograph must have impact. It should convey an idea. If multiple photographs are used, they should not be redundant. One good photograph is better than several mediocre ones. The layout should not force the use of photographs just to fill space. Photographs add significantly to the production costs of a publication.
- b. Quality Requirements. Sharp, clear, black-and-white glossy, positive photographic prints are acceptable for artwork. They should contain a full tonal range.
- c. Submitting Photographs for Final Printing
  - (1) Photographs not cemented in place to the page for same-size reproduction must be adequately identified by a figure number, page number, and percentage or size reduction requested.
  - (2) Loose photographs must be adequately packaged to prevent loss and damage. Individual mounting of each piece, including protection with tissue

overlays, is recommended. (Note: If a publication includes both photographs that must be reduced and ones that are the correct size, it is preferred that all the photographs be left loose and treated as described above.)

- (3) Color transparencies are usually not acceptable. A color or black-and-white positive must be made from the transparency prior to printing. Avoid selecting overexposed slides or prints with thin, washed-out color, or underexposed ones with dark tones.
- (4) Color photographs should have true color. Color prints to be reproduced in black and white are acceptable but to insure they will reproduce sharply and with adequate contrast, black-and-white prints or enlargements from the negatives or contact prints must be made before printing. Avoid submitting originals that must be enlarged to printing size because the quality of the photograph is reduced.

#### 15. PAGE NUMBERING FOR TECHNICAL PUBLICATIONS

- a. Typing Numbers. The Technical Report Documentation Page and title page are included in the numbering of a publication for placement only. Actual page numbers should not be typed on these pages. All other pages should have numbers actually typed on the page. Page numbers should be centered on the bottom of every text page, 1/2 inch above the bottom margin.
- b. Page Numbering. Only two series of numbers in a single volume are permitted: one series of lowercase Roman numbers (i, ii, iii, etc.) for front matter and one series of Arabic numbers (1, 2, 3, etc.) for the body (discussion) of the publication. (Looseleaf publications may be numbered differently. See Looseleaf Publications, paragraph 15d.) Front matter includes Technical Report Documentation Page, title page, preface, Metric Conversion Factors page, table of contents, and introduction.
- c. Odd- and Even-Numbered Pages. Odd-numbered pages must always fall on the right-hand side page. Even-numbered pages fall on the left side.

- d. Looseleaf Publications. Only in looseleaf material may the sections be numbered individually or a combination of section numbers and page numbers used: a different series for each chapter or appendix, hyphenated or decimal numbers, numbers combined with letters (e.g., 1-2, A-1, 1.2, etc.). (These numbering systems should not be used for other publications.)
- e. Technical Report Documentation Page/Title Page.
  - (1) When the Form DOT F 1700.7, Technical Report Documentation Page is used, it is always the unnumbered page (i). The use of a title page in addition to the technical documentation page is optional.
  - (2) If both a Technical Report Documentation Page and title page are used, the title page follows the Technical Report Documentation Page and is unnumbered (iii). (Note: The back of the Report Documentation Page is blank and is an unnumbered ii.) The back of the title page may be left blank or additional front matter may be added. This page is numbered iv. (See Technical Report Documentation Page, paragraph 10c(1).)
- f. Body of the Publication. Page 1 of the body of the publication (the discussion) must be numbered, as must the first page of each chapter or other major subdivisions of the document. (Page 1 of the body of the publication begins the series of Arabic numbers.)
- g. Using Blank Pages. Publications must be printed on both sides of the page. Use blank pages only so a chapter or section will begin on the right-hand side. Blank pages are assigned a page number, but this number is not printed on the page.
- h. Chapters/Sections/Appendixes. For a better appearance, start chapters, sections, and appendixes on odd-numbered (right-hand) pages. In looseleaf material, the first page of a section following a tab must be a right-hand page. In multivolume or series reports, pagination starts anew with each volume.
- i. Multivolume Publications. "Volume" designates an individually bound book. When a publication exceeds 400 pages of repro copy (including artwork, tables, front and back matter), it is divided into two or more

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volumes. Each volume is to be designated a separate publication number. (See Publication Number, paragraph 5). Each volume is given a number (Volume 1, Volume 2, etc.) as part of the subtitle.

- (1) Definition. Do not designate individual volumes of multivolume publications as section, part, chapter, or other kinds of subdivision. Even if the volume contains only one chapter or one appendix, it is still to be designated as a volume.
- (2) Volume Size. Avoid splitting the main parts of the publication when dividing publications into volumes. For example, if the body of a report fits into one volume, appendixes can then be grouped in a second volume. Exceptionally long publications may require each appendix (or each of several groups of appendixes) to have its own volume, or that individual chapters (or groups of chapters) have their own volumes. Avoid splitting long publications into volumes of vastly disproportionate size. For example, it is better to break a 450-page publication into two volumes of approximately equal size, or even into a 150-page volume and a 300-page volume, than to divide it into one of 400 pages and one of 50 pages.
- (3) Table of Contents. Complete tables of contents, lists of figures, and lists of tables for all volumes. If feasible, a table of contents should be contained in each volume. Where individual volumes are produced consecutively (and the detailed contents and pagination of later volumes are not known when the earlier ones are submitted for publication), the later volumes should include this information. If Volume 1 of a series has already been printed when the rest of the series is completed, it is recommended that the table of contents, etc., for the entire series be printed as an addendum to Volume 1.

16. PREPARING THE CAMERA-READY COPY (FINAL PAGES) FOR PRINTING

- a. Camera-Ready Copy. A camera-ready page must be made up for every page in the report, including all text, figure and table captions, and page numbers. Figures and tables, submitted in the size they will appear in

the publication, are placed on the page. Those requiring reductions or alterations are submitted separately, marked by a figure or table number, page number, and the required reduction. "Windows" for reduced artwork are necessary. (Windows are red or black rectangles of transparent film. They are the exact final size of the artwork and are placed on the camera-ready page where the artwork will appear.)

- b. Preferred Form. The preferred form for camera-ready copy is clean, black on white copy on one side of the paper only. Any notations, guidelines, or instructions to the printer (not to be printed in the final publication) must be in nonphoto blue pencil.
- c. Reproductions. Any reproductions submitted as camera-ready copy for printing must be of a quality that the reproduction is essentially indistinguishable from the original copy. Reproduced material used in this manner must be sharply outlined; have good contrast; be without flaws, breaks, dim patches, stains, or spots; and be close enough in color to original material to make the final product uniform in appearance. Reproductions made on copiers such as Xerox, IBM, or Kodak are rarely acceptable as camera-ready copy. The exceptions are reproductions produced by copy cameras (photocopies) designed for reducing and enlarging artwork in graphic shops.
- d. Color Original Artwork or Photographs. For black-and-white printing, color originals are acceptable only if they can be reproduced satisfactorily in black and white.
- e. Corrections. Corrections made to camera-ready copy must not compromise the quality of the final printed product. Corrections made with white opaquing fluid are not acceptable because of the fluid's unreliable opacity. Careful erasure, patching, and correction tape are more reliable.

17. LAYOUT FORMAT FOR NONTECHNICAL PUBLICATIONS: General Information Brochures and Booklets, Magazines, Newsletters, and Newspapers. The format of general information publications varies widely. The intent of these publications is to be informative with the overall presentation and format developed to promote the interest of the reader. As part of the DOT Graphics Standards Program, the individual design of each of these publications must

maintain a consistent DOT look. For requirements regarding format, publication size, typography, layout, and other applicable standards see Graphics Standards for the U.S. Department of Transportation (DOT Order 1360.6.). See Availability of Graphic Standards Manual, paragraph 1b.

18. CONTENT FORMAT FOR MAGAZINES, NEWSLETTERS, AND NEWSPAPERS.

In addition to the layout format, the contents of magazines, newsletters, and newspapers must follow specific guidelines and restrictions.

- a. Magazines. Magazines cannot contain editorials, book reviews, or articles that are intended solely to foster or obtain the support of persons outside the Federal Government or that can be construed as advocacy of increased appropriations or of legislation.
- b. Newsletters. Newsletters are used to report recent developments in the FHWA program. Material of a personal interest or social nature should not be published. Each issue is devoted entirely to specific program areas.
- c. Newspapers. Newspapers may be used as internal or external house organs to convey timely information either to the FHWA employees or to allied groups outside the agency. They should be timely, economical, and quickly produced.

19. FORMAT FOR TRAINING PUBLICATIONS

- a. Training publications are manuals, guides, reports, or studies used by instructors and students in a training course or session. These publications will be prepared in a consistent manner in compliance with the DOT Graphic Standards for the U.S. Department of Transportation (DOT Order 1360.6). See Availability of Graphic Standards Manual, paragraph 1b.
- b. If several publications are prepared for one course or a series of courses, the project manager should coordinate the writing style and format to create a consistent, effective, and usable product. The format style chosen depends largely on preference and individual course need.

U.S. DEPARTMENT OF TRANSPORTATION FEDERAL HIGHWAY ADMINISTRATION				1. DATE OF REQUEST		DATE RECEIVED	
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## Editorial Style Guide Federal Highway Administration

### Starting Up

Know the answers to these basic questions before you begin to write or edit.

- What is the purpose of this article?
- How can this article be different from other articles on the same subject?
- Who is the audience?

### Writing Style

Short declarative sentences are the easiest to read. Too many short sentences in a row can become monotonous, however. Vary sentence length by adding a compound or compound-complex sentence whenever the longer sentence contributes to reading flow in a natural way. The best writing reads as if it is a conversation between two people (the writer and the reader). Thus the tone of good writing reflects the personal style of the writer. Remember, however, that the aim to keep writing style personal does not give the writer license to break the rules of accuracy, conciseness, and precision. Above all, writing should be readable. By properly employing logic, style, grace, and clarity, writing can engage the reader's mind and hold the reader's attention.

The following tips aid readable writing.

- Stick to original meanings of words; avoid fourth and fifth level definitions in the dictionary. For example, avoid using "since" when you mean "because." Avoid using "while" when you mean "although."
- Avoid slang and jargon.
- Avoid journalese. For example: *I helicoptered to work.* Better to write: *I flew to work in a helicopter,* or *A helicopter flew me to work.*
- Use strong verbs. They are the workhorses of the English language; they are the action and color of the English language; they are essential to clear, concise writing.
- Use the active voice whenever possible. The active voice is less wordy and carries more zest to peak the reader's interest. Use the passive voice, however, whenever logic or rhythm dictate.

*Weak*

The fact that such processes are under strict stereoelectronic control is demonstrated by our work in this area.

*Stronger*

Our work in this area demonstrates that such processes are under strict stereoelectronic control.

- Be brief. Wordiness adds confusion and runs up typesetting costs.
- Use of first person and second person viewpoint is acceptable. In fact, use of first and second person increases readability by nearly 50 percent.

However, avoid such phrases as “we believe,” “we feel,” “we conclude.” Such phrasing is unnecessary, and it hints of opinion. Unless you (writer or editor) are a recognized and certified authority on the subject, you should keep your opinion to yourself (let readers form their own opinions; they relish the chance to be participants in the communication process).

- Avoid shifting the dominant verb tense within the same sentence, the same paragraph, the same section. Of course the tense will have to shift now and then to fit logic, such as *A wide variety of books are available. Dr. Smith reviewed the offerings and found many choices.* The next sentence would return to present tense (the dominant tense of the paragraph) to discuss the many choices. No matter how many shifts logic compels, keep the passage’s **dominant** tense consistent.
- Avoid shifting voice in the same sentence.

*Poor*

Most major airports have adequate access but are expected to face increasing problems with peak period congestion.

*Better*

Most major airports have adequate access, but they are expected to face increasing congestion at peak periods.

- Whenever possible, avoid the conditional tense.

*Weak*

By concentrating resources on NHS, the Nation could maintain and improve conditions.

*Stronger*

By concentrating resources on NHS, the Nation can maintain and improve conditions.

- Whenever possible, avoid the past perfect tense.

*Weak*

In recent years, several States have developed priority networks.

*Stronger*

In recent years, several States developed priority networks.

## **Grammar, Style, and Usage**

Grammar is a tool for building readable syntax. Educated readers are accustomed to certain grammatical conventions, subject-verb agreement for example: *He don't see good* disturbs the educated ear, which expects to hear *He doesn't see well*. Thus writers and editors should meet the grammatical expectations of readers. Go against the grammatical grain and you run the risk of losing your reader.

Style and usage need to be consistent. A consistent style provides unity, coherence, and credibility. The following suggestions for acceptable style and usage are based on such authoritative sources as the *Government Printing Office Style Manual*, *The Chicago Manual of Style*, and *Words into Type*.

## **Grammar**

### **Subject-Verb Agreement**

- An error often occurs when a prepositional phrase falls between the subject and the predicate.

*Incorrect*

The level of highway user charges affect transportation choices.

*Correct*

The level of highway user charges affects transportation choices.

- Two singular subjects joined by “and” can muddle agreement.

*Incorrect*

Safety and security of the Nation's port facilities is critical to the national defense.

*Correct*

Safety and security of the Nation's port facilities are critical to the national defense.

*Exception:* A subject that is plural in form but singular in effect takes a singular verb.

*Examples of the Exception*

Research and development is needed on innovative management and financing options in transportation.

The continued prosperity and growth of our country depends on a strong intermodal transportation system.

- When two or more subjects are joined by *or*, the predicate takes the number of the closest subject.

*Correct*

FHWA application or uses were noted.

*Also Correct*

FHWA uses or application was noted.

Collective Nouns

- Collective nouns take a singular verb when the group as a whole is meant; they take a plural verb when individuals of the group are meant.

*Sampling of Collective Nouns*

contents	dozens	none	range
couple	group	number	series
data	majority	pair	variety

*Incorrect*

The series are arranged in chronological order.

*Correct*

The series is arranged in chronological order. (Refers to the series as a whole.)

*Incorrect*

A series of units was tested.

*Correct*

A series of units were tested. (Refers to each unit.)

- Units of measure are treated as collective nouns; thus they take a singular subject.

*Incorrect*

Ten meters were added to the road grade.

*Correct*

Ten meters was added to the road grade.

### Compound Subject

- Both components of the compound subject must contain the words *each* or *every*. If not, the verb should be plural.

*Example*

Each tort claim and all the allegations were the result of the bridge collapse on the Baltimore Expressway.

- Compound subjects containing the word *each* and *every* may take singular verbs.

*Examples*

Each driver and each household member is asked to give an estimate of miles traveled.

Every tort claim and every allegation was the result of the bridge collapse on the Baltimore Expressway.

### Restrictive and Nonrestrictive Clauses

- Restrictive clauses are best introduced by *that* instead of *which*.

*Poor*

The Department of Defense lifted the moratorium which had prevented the start of new construction projects.

*Better*

The Department of Defense lifted the moratorium that had prevented the start of new construction contracts.

- Nonrestrictive clauses are best introduced by *which* and set off by a comma.

*Poor*

User costs were limited to the vehicle operating component that included fuel and oil consumption, tire wear, maintenance, and depreciation.

*Better*

User costs were limited to the vehicle operating component, which included fuel and oil consumption, tire wear, maintenance, and depreciation.

### Dangling Modifiers

- Avoid a verbal phrase that does not refer clearly and logically to another word or phrase in the sentence.

#### *Incorrect*

Using various telecommunication and local and wide area network protocols, the benefits of the ITS Room include the following:

#### *Correct*

Using various telecommunication and local and wide area network protocols, the ITS Room includes the following benefits:

### Parallel Construction

- Keep the construction of compound phrases and sentences parallel.

#### *Awkward*

Changing vehicle sizes and configurations and a changing mix of traffic on the highways have implications for safety.

#### *Better*

A changing of vehicle sizes and configurations and a changing mix of traffic on the highways have implications for safety.

#### *Awkward*

These park values are dedicated by law, and preserved for the benefit and enjoyment of people.

#### *Better*

These park values are dedicated by law, and they are preserved for the benefit and enjoyment of people.

## **Punctuation**

### Comma

- Use a comma before and after Jr. and Sr., but not before or after II or III.
- Use a comma in a date after the day and after the year, but not after the month when the day is not given.

On May 12, 1995, the city held a groundbreaking ceremony.

*or*

In May 1995 the city held a groundbreaking ceremony.

- Use a comma after a long introductory clause or phrase.

Because life-cycle maintenance costs for each treatment type were not available, short-term strategies were developed.

*but*

In May 1995 the city held a ground breaking ceremony. (No comma after a short introductory prepositional phrase, unless needed for clarity.)

- Use the serial comma before *and* and *or* (in series of words or phrases containing three or more items).

Private firms, labor unions, and local officials are working together to develop transportation programs for the next century.

- Use comma before the coordinating conjunctions *and*, *or*, *nor*, *but*, *yet*, *for*, and *so* connecting two main clauses.

The motorized vehicle is the principle mode of transportation, and the park road system is the basic means of visitor access.

Eligible costs cannot exceed the cost of demolition, so the Highway Bridge Replacement and Rehabilitation Program has possible application to scenic roads.

*Exception*

The auto is primary and the park system is essential. (two short independent clauses)

- Do not use a comma in a sentence with a compound predicate that is not a member of a series.

*Incorrect*

The program will eliminate 42 at-grade railroad crossings, and give the town a new Depot Plaza.

*Correct*

The program will eliminate 42 at-grade railroad crossings and will give the town a new Depot Plaza.

- Use commas to set off *that is*, *namely*, *for example*, *i.e.*, and *e.g.*

Routine maintenance is a problem because non-road-dependent costs (e.g., snow and ice control) are 40 percent of total operations costs.

Areas that deserve attention include safety, smooth transport (i.e., no delay in getting to the destination) system efficiency and the ability to retrofit roads to meet true needs.

- Drop the comma preceding *et al.*, but use the comma in a series.

McFadden et al.      McFadden, Molitoris, et al.

## Quotes

- Place quotation marks after all punctuation, whether or not it is part of the quotation.

The category “other,” with less than one percent of transit activity, is a very minor component of transit travel.

It would be inappropriate to assume that this trend is a “problem to be solved.”

Without a sound management structure, strategic plans often end up “on a shelf,” never making the change sought in an organization.

“This is an enormous step forward in our efforts to liberalize worldwide aviation and forge stronger economic ties around the globe,” said Secretary Peña.

- Use single quotation marks within a quotation.

“I’ve been to government meetings where the first item is ‘when’s our next meeting?’” said the FHWA official.

- Use quotation marks for new words or phrases, words used in a new sense, words used as a reference, or words not used literally. After first appearance in text, these same words do not carry quotation marks.

The category “other,” with less than one percent of transit activity, is a very minor component of transit travel. (word used as reference)

FHWA is working with ITS Communications Protocol to determine how traffic signal systems “talk” to local controllers. (word not used literally)

In the 1990 surveys the term “vehicle” was expanded to include pickups and other light trucks. (new use of word)

The typical “work-at-homer” should be characterized demographically and geographically. (new phrase)

## Parentheses

- A parenthetical expression contains information that supports the main point of the sentence.
- Use parenthesis to clarify, identify, or illustrate.

The NTU affiliates are among the Nation’s leading engineering schools (e.g., Georgia Tech, Michigan State, Stanford).

- Use parenthesis to enumerate.

If only those trips (a) made in urbanized areas of 1 million or more with a subway system, (b) made on weekdays, and (c) with a trip length under 75 miles are considered, transit’s share increases to about 3.63 percent of trips.

- Do not use a final period if a parenthetical sentence is within another sentence.

Those who are over 65 and work do walk to work in higher proportion than the national average (see Figure 23).

- *but* if the parenthetical sentence is not within another sentence, use final period inside the parenthesis.

Those who are over 65 and work do walk to work in higher proportion than the national average. (See Figure 23.)

### Colon

- Use a colon to introduce a word, phrase, sentence, or several sentences that illustrate, clarify, or expand preceding information.

Marine users pay into two trust funds: the Inland Waterways Trust Fund and the Harbor Trust Fund.

- Use a colon to express ratios.

20:1

- Do not use a colon between a verb and its object.

#### *Incorrect*

The three reports are: (1) a comprehensive report of 1990 NPTS results, (2) a detailed discussion of current issues in personal travel, and (3) data tabulations and analysis of NPTS data on travel in urbanized areas.

#### *Correct*

The three reports are (1) a comprehensive report of 1990 NPTS results, (2) a detailed discussion of current issues in personal travel, and (3) data tabulations and analysis of NPTS data on travel in urbanized areas.

### Dashes

- The shortest dash is the hyphen (-); the next longest is the en dash (—); the longest is the em dash (—).

### *Hyphens*

- See section on “Hyphenation.”

### *En Dash*

- Use en dash as equivalent of *and* or *to* in two-word concepts.

The FHWA–NPTS findings are presented in Table 3.

- Use en dash to mean *to* or *through* with a span of three or more numerals.

Over the 1969–1990 period, the total number of vehicle trips increased.

Figures 1– 6

- Use en dash to link two names.

The Skinner– Lockwood report s cover personal travel data and new directions for transportation.

#### *Em Dash*

- Use em dash to set off words or phrases that would otherwise be misread.

##### *Incorrect*

The effectiveness of isolation devices depends on energy dissipation, friction, damping, things that are not easily quantifiable.

##### *Correct*

The effectiveness of isolation devices depends on energy dissipation, friction, damping—things that are not easily quantifiable.

- Use em dash for parenthetical information.

“This project reaches beyond our usual customer—State and local transportation departments—to the actual driver.”

#### Solidus (Slash)

Use of the solidus to mean *and* or *or* is frowned upon by most authoritative style guides. The solidus means *or*, so the expression *and/or* is redundant. Furthermore, usually the use of either *and* or *or* is sufficient.

##### *Poor*

The NHS is a critical element of a combined Federal/State/local investment strategy to provide the needed transportation infrastructure.

##### *Better*

The NHS is a critical element of Federal and State and local investment strategies combined to provide the needed transportation infrastructure.

#### Ellipsis Points

- Use three periods (points of ellipsis) to indicate deleted words or phrases. The points of ellipsis are in addition to other needed punctuation. Thus if a period is called for the result will be four periods.

Section 134 of Title 23 U.S.C. requires a “continuing comprehensive transportation planning process [to be] carried on cooperatively by States and local communities....”

### Square Brackets

- Use square brackets within quotation marks to indicate material that is not part of a direct quote.

“...continuing comprehensive transportation planning process [to be] carried on cooperatively by States and local communities....”

### Semicolon

- Use semicolon to separate independent clauses if no conjunction is used.

New Jersey created the first State-aid highway program in 1891; all other States had established similar programs by 1917.

- Use a semicolon between independent clauses joined by conjunctive adverbs, such as *that is*, *however*, *therefore*, and *thus*.

A person with a central city job and a central city residence shifting to a suburban residence could add almost 50 percent to his work trip length; thus, as the population shifted to the suburbs, work trip lengths to the center increased.

- Use semicolons between items in a series if one or more of the items contain commas.

Issues explored included approaches to increase supervisory-to-employee spans of control; consolidating, reducing, or eliminating management layers; and generating savings and increased productivity through technology.

- Do not use a semicolon between dependent and independent clauses.

#### *Incorrect*

In the twenties' age group, women's tripmaking tendency increases faster than men's; whereas in the later years, men's trip rates exceed women's.

#### *Correct*

In the twenties' age group, women's tripmaking tendency increases faster than men's, whereas in the later years, men's trip rates exceed women's.

### **Spelling**

- Use a dictionary. Many of the best writers and editors rely on *Webster's Third New International Dictionary* and *Webster's New Collegiate Dictionary*. Whatever dictionary you prefer, you should usually choose the first spelling and original meaning of a word, as opposed to the word's fourth or fifth meaning.

- Is it ---ary or ---ery?

Only six common English words end in ---ery. Learn them and you feel fairly secure when you end all the rest in ---ary. The six ---ery words are *cemetery*, *monastery*, *millinery*, *confectionery*, *distillery*, *stationery* (as in paper).

- Is it ---efy or ---ify?

Only four commonly used words end in ---efy. Almost all the remaining words take --ify. The four ---efy words are *stupefy*, *putrefy*, *liquefy*, and *rarefy*.

- Is it ---able or ---ible?

If the word is a complete word able to stand alone, add ---able.

*work, workable*

*adapt, adaptable*

If the word ends in *e*, drop the final *e*.

*love, lovable*

If the word ends in *ee*, keep the double *e* and add ---able.

*agree, agreeable*

If the root word cannot stand alone, use ---ible.

*credible*

*tangible*

*horrible*

*terrible*

If the root word ends in ---ns use ---ible.

*responsible*

If the root word ends in ---miss, use ---ible

*permissible*

If the root word ends in a soft *c* followed with an *e*, drop the *e* and use ---ible.

*force, forcible.*

- Shun affixes (prefixes and suffixes) in favor of root words.

*foreign* for *international*  
*job* for *employment*

*use* for *utilize*  
*let* for *enable*

*hurt* for *injured*  
*rules* for *regulations*

### **Editorial Style**

Every publishing unit attends its own in-house editorial style. The following editorial conventions are recommended for FHWA publications.

#### **Hyphenation**

- Try to avoid adding prefixes to common nouns (see Spelling), but if you have to use a prefix, do not hyphenate, even if a double letter results. When in doubt, use dictionary.

#### ***Common Prefixes***

after	extra	non	sub
ante	hyper	over	supera
auto	hypo	photo	supra
bi	infra	physico	trans
bio	iso	poly	ultra
co	macro	post	under
counter	metallo	pre	up
de	mid	pro	visco
di	mini	pseudo	
down	mono	semi	
electro	multi	stereo	

- Do not hyphenate a common noun and the suffix *like*, unless a triple *el* will result.

urbanlike      *but* jewel-like

- Do not hyphenate a common noun and the suffix *wide* or *fold*.

nationwide      tenfold

- Hyphenate a prefix that refers to a two-word compound.

non-Federal-aid recipients

macro-service-based industry

*Compound words* are two or more items used to express a single idea (i.e., *criss-cross*, *right-of-way*). *Unit modifiers* are two words used as an adjective (i.e., *skid-resistant substance*, *Federal-aid funds*). The *GPO Style Guide* presents an excellent guide to compounding; FHWA writers and editors are encouraged to consult the *GPO manual*.

- Do not hyphenate unit modifiers if the first word is an adverb ending in *ly*.
  - increasingly sophisticated navigation equipment
  - accurately measured distances
  - carefully planned research
- Hyphenate a number and a unit of time or measure are used as an adjective.
  - a 3-year average cost
  - 30-year project
  - a 42,000-mile system
  - 4,100-foot Cumberland Gap tunnels
- Hyphenate converted units that are given in parentheses and are also adjectives.
  - 4.6- by 15.2-m (15- by 50-foot) steel section
- When a unit modifier contains an en dash between numbers, hyphenate it between the last number and the unit of measure.
  - 20–29-year-old age group
- When two or more unit modifiers have the same base, hyphenate after each element; do not repeat the base.
  - the 20- to 29-year-old age group
  - high-, medium-, and low-income households
- Do not hyphenate familiar unit modifiers or those that are naturally and easily recognizable.
 

real estate contract	income tax code	peak travel periods
data base systems	highway user revenues	motor fuel tax
		motor fuel use

- Do not hyphenate foreign phrases used as adjectives.  
ad hoc committee  
in situ review
- Hyphenate unit modifiers containing such adverbs as *still*, *well*, *ever*.  
the still-new roadbed      well-known speaker      ever-changing needs
- Do not hyphenate these adverbial modifiers if they are modified by another adverb.  
the extremely well known speaker
- Do not hyphenate unit modifiers if one is a proper name.  
The Monroney inspection sticker
- Do not hyphenate unit modifier if the first word is a comparative or superlative.  
lower project costs  
highest risk roadways  
safest Interstate system
- Hyphenate unit modifiers that contain numbers.  
three-vehicle carrier  
20-gallon cans  
5,000-mile Trans-Canada Highway  
six-member advisory panel
- Hyphenate unit modifiers that contain three words or a number (unit of measure) and a word.  
out-of-court settlement  
6-year-old passenger
- Hyphenate unit modifiers used as predicate adjectives.  
The project is long-term.  
The vehicle lanes are high-occupancy.

## Capitalization

- Generally, keep all words lower case except proper nouns. Many exceptions govern this section. For an in-depth look at the many options, consult *The Chicago Manual of Style* and the *GPO Style Guide*.
- In title, headings, and names, use initial caps and lower case. Do not capitalize coordinating conjunctions (*and, but, or, nor, yet, so*), articles (*a, an, the*), or prepositions. Do not capitalize *to* in infinitives. Do capitalize the first and last words of the title or heading regardless of part of speech (unless convention mandates lower case, i.e., pH).

DOT Awards \$16 Million to Accelerate Standards

When Did the Tax Hike Creep In?

- Capitalize the parts of a book when they refer to a specific number.

Chapter 1                      Appendix II

- Capitalize the words *figure, table, chart, graph, scheme* only when they refer to a specific numbered item.

Figure 2      Table 3      Chart 4      Graph 5      Scheme I

- Do not capitalize *page, reference, equation, structure*, even when they refer to a specific numbered item.

page 3              reference 1              equation 4              structure 6

- Capitalize only the name of the eponym but not the noun.

Volpe's model      Einstein's theory

- Do not capitalize the first word after a colon if it is not the first word of a complete sentence.

The symposium focuses on the following issues: policy input, elements of LCCA, resolution methods, and guidance.

*General Exception:* If a full sentence following a colon is *not* a formal statement, a quotation, or speech in dialogue, the first word after the colon may remain lower case.

A variety of devices are used to control scenic highway corridors: they include wider than normal rights-of-way, outright acquisition, and zoning. (informal statement)

*but*

Secretary Samuel K. Skinner pointed out: To ensure the continued vitality of our Nation, we all must participate in making the investments today that will spur productivity and allow transportation to be an engine of tomorrow's growth and prosperity. (formal statement)

- In titles and headings with compound words, capitalize both words if the compound is a unit modifier.

Federal-Aid Highway Program

Double-Stack Trains

- In titles and headings, capitalize each component of hyphenated words.

Cross-Link    Zig-Zag    Criss-Cross    Ex-Senator

- Capitalize *Earth* as a planet.
- Capitalize trade names, but whenever possible use generic names set lower case.

surfing the Internet (trade name)    *or*    surfing cyberspace (generic)

The replacement sections received a thin coating of a skid-resistant substance.

- Do not capitalize common names of equipment.

Two overhead cranes provided full coverage for the bridge's truss-replacement .

Full-size containers were hauled to a marine terminal by a semitrailer truck and a flatbed railroad freight car.

- Capitalize sections of the country but not the corresponding adjectives.

Midwest *but* midwestern

Southwest *but* southwestern

- Capitalize civil, military, religious, and professional titles, and titles of nobility when they immediately precede a personal name; lower case the title when used in a generic sense.

*Exception:* The U.S. President's title , the word *Administration* (used in the sense of the Administration currently occupying the White House) , and all U.S. Cabinet titles are upper case when standing alone (i.e., the President, the Administration, the Secretary).

Vice President Al Gore *but* the vice president

Federal Transit Administrator Gordon J. Linton *but* the administrator

Rear Adm. Paul Versaw *but* the rear admiral

- Capitalize *Congress* when referring to the U.S. Congress.
- Capitalize *Capitol* when referring to the U.S. Capitol.

- Capitalize *Nation* when referring to the United States of America.
- Capitalize *Federal* when referring to the U. S. Federal Government , its acts and actions .  
     Federal law              Federal aid  
     Federal Government *but* the government
- Capitalize *State* when referring to one of the 50 States.  
     State of Mississippi        the State
- Capitalize full names of legislative, deliberative, administrative, and judicial bodies, departments, bureaus, and offices.  
     U.S. Department of Transportation  
     Federal Highway Administration  
     National Highway Traffic Safety Administration  
     Federal Railroad Administration  
     Nebraska Game and Parks Commission  
     Office of Highway Information Management

### Surnames and Formal Names

Reference citation should always list surname first, followed by initials. In most cultures, the surname is the family name, but it may not be the formal name. The following sample list serves to alert editors to take note of cultural difference and recast the reference in standard American format.

- *Spanish*—Often three or more names. The last two are surnames, sometimes connected by a y. The formal name begins with the first surname . Example: José y Nieto Muñoz becomes (in American standard citation) Nieto Muñoz.
- *Hungarian*—Two names. The surname is first, and it is the formal name.
- *Arabic*—Often many names. The surname varies widely. The formal name often includes two or three names and articles .
- *Thai*—Two names. The surname is last, the formal name first.
- *Vietnamese*—Two or three names. The first is the surname and the formal name.
- *Japanese*—Two names. The surname is the formal name. The surname is first.  
     *Note:* When Japanese cite their names in non-Asian languages, the place their surnames last. *Example:* T-L. Lee (note hyphen after first initial and period after second initial).
- *Korean*—Often three names. The surname is first, and it is the formal name.

### Numeral Usage

- Use metric equivalents for all weights and measures.

The Interstate Highway System with its slightly more than 67,600 km (42,000 miles) accounts for only 1 percent of the 6.6 million km (3.9 million miles) of roads in the United States.

The 4.6- by 15.2-m (15- by 50-foot ) steel sections were trucked nightly to the bridge. The change from concrete to steel lightened the span by about 11,500 MT (12,700 tons). After all 747 sections were in place, the contractor applied a 3.8 centimeter (1.5 inch) epoxy asphaltic surface on the entire 2,750-meter (9,000-foot ) deck.

- Use numerals to express units of time or measure. Use a space between the number and the unit.

2,750 m          6 A.M.          9.4 km<sup>2</sup>

- Spell out units of time or measure used in a nontechnical sense.

The Golden Gate Bridge was built in 1937 and redecked fifty years later.

It will take you twenty minutes to read this article.

- For units of time, numerals are used with the abbreviations for divisions of the day (A.M., M, P.M., usually set in small caps.), but not with *o'clock*.

4 :00 A.M (or .4 A.M., but be consistent)

6:30 P.M. 12 M (*meridies*, or noon)

six o'clock *but not* 6 A.M. o'clock or 6 A.M. in the morning

- For items other than units of time or measure, use words for numbers less than 10.

three tractor rigs *but* 30 tractor rigs

six new jobs *but* 60 new jobs

- For large numbers, use numerals and words.

\$65 million ( *not* 65 million dollars)

4 million miles

60 million Americans

1.5 billion vehicle miles

- Use all numerals in a series if one or more of the numbers is 10 or greater.

The parkway traverses 20 counties, 7 Congressional districts , and 2 geographic regions.

- Try to avoid beginning a sentence with a number. If not possible, spell out the number or unit of measure.

Fifteen years ago, the agency began recruiting volunteers.

- Use numerals for decades; form their plurals by adding *s*

the 1990s *not* the '90s *and not* the 1990's

- Use decimals rather than fractions with units of time or measure (unless technical accuracy warrants otherwise).

1.5 cm *not* 1 1/2 cm

- Spell out ordinals *first* through *ninth*; use numerals for *10th* and greater.

Do not add ordinal endings to numbers in dates.

March 3 *not* March 3rd

October 5 *not* October 5th

### Abbreviations and Acronyms

In an abbreviation, each letter is pronounced. In an acronym the letters form a pronounceable word. FHWA is an abbreviation. DOT is an acronym.

- The first time the item appears in text, place its abbreviation in parentheses following the spelled-out form. *Exception:* Abbreviations that are well known in a specific field need not be identified, at the discretion of the editor.

The U.S. Department of Transportation's (DOT) Federal Highway Administration (FHWA) serves as the principal contact for people interested in road technology.

- Use *e.g.* and *i.e.* in figure captions, in tables, and in parentheses in text. If not in parentheses, spell out *for example* and *that is*.
- Do not abbreviate the following:

✓ the words *day, week, month, year*

✓ days of the week

✓ names of the months

*Exception:* In tables, graphs, and charts the following style is acceptable:

Jan., Feb., March, April, May, June, July, Aug., Sept., Oct., Nov., Dec.

- ✓ titles not used with a name
- ✓ states, whether or not accompanied by name of town

Thus, Oklahoma City, Oklahoma, is about a five-hour drive north from Dallas, Texas.

*Exception:* In tables, graphs, and charts the following style is acceptable: the two-letter abbreviation for state names used by the U.S. Postal Service. For example, AK for Alaska, WY for Wyoming.

- Use the abbreviation U.S. as an adjective; spell out United States as a noun.

The U.S. highway system                      the highway system of the United States

- Do not abbreviate *company* or *corporation* when giving the full name of a firm.

Saint Lawrence Seaway Development Corporation

Cosco, Inc.                      Sletten Construction Company

## Mathematical Symbols

### *Units of Measure*

- Use metric and the International System of Units (SI).

For a detailed explanation metric measurement refer to *FHWA Geotechnical Metrication Guidelines* (publication no. FHWA-SA-95-035)

- Abbreviate the unit of measure when it appears with a numeral. Leave space between the number and the unit of measure.

The Interstate Highway System with its slightly more than 67,600 kilometers (42,000 miles) accounts for only 1 percent of the 6.6 million kilometers (3.9 million miles) of roads in the United States.

The 4.6- by 15.2-m (15- by 50-foot ) steel sections were trucked to the bridge. The change from concrete to steel lightened the span by about 11,500 metric tons (12,700 tons). After all 747 sections were in place, the contractor applied a 3.8 centimeter (1.5 inch) epoxy asphaltic surface on the entire 2,750-meter (9,000-foot ) deck.

- Spell out the unit of measure when no numeral is used.

many kilograms

- Do not use plurals for abbreviated units of measure.

100 cm *not* 100 cms *but* five centimeters

- In ranges and series, use only the final unit of measure.

6–12 km                      10, 20, and 30 cm

between 40 and 60 mg

- Use the Celsius or kelvin scale, not the Fahrenheit temperature scale.
- Use C with a space after a number, but no space between the degree symbol and C.

30 °C

- Do not italicize unit of measure.

Incorrect

*Bob is running in tomorrow's 10 km race.*

Correct

*Bob is running in tomorrow's 10 km race.*

### *Mathematical Symbols and Equations*

- Mathematical symbols are single letters used to designate unknown quantities, constants, and variables.

*x.....y.....z*

- A mathematical equation is an argument composed of symbols and numbers.

*x + y = z*

- In general, set mathematical symbols in italic.

*x + y = z*

- Numerals, punctuation, and operators are set in roman.

Examples of operators are log (logarithm), max (maximum), exp (exponential function), tan (tangent), cos (cosine), cosh (hyperbolic cosine) lim (limit), arg (argument), cov (covariance) diag (diagonal), ln (natural logarithm), and var (variance).

sin *x*      log *x*

- Put space before and after mathematical operators, unless they are superscripts or subscripts.

2 x 6 cm

4 + 6<sup>-10</sup>

- Equations displayed on separate lines should be numbered with Arabic numbers in parentheses at the right margin. Also equation lines should break at operational signs. Mathematicians recognized two kinds of operational signs: *verbs* and *conjunctions*.

Verbs include: =  $\neq$  < >  $\leq$   $\geq$

Conjunctions include:  $\times$   $\pm$  + -

For example:

$$W_{90,i} = a_0 + (a_1 \times (Z_{90,i})) + (a_2 \times Z_{90,i}^2) + \dots + (a_{10} \times (Z_{90,i}^{10})) \quad (1.1)$$

For detailed guidance in handling equations, consult Ellen Swanson, *Mathematics into Type*

### Statistics

- Standard statistical symbols include the following:

<i>f</i> .....frequency	<i>CV</i> ..... <i>coefficient</i> of variation
SD.....standard deviation	SE..... <i>standard</i> error
<i>r</i> .....correlation coefficient	SEM..... <i>standard</i> error of the mean
<i>n</i> , <i>N</i> .....total individuals or variables	<i>t</i> ..... <i>Student</i> distribution (Student <i>t</i> test)
<i>R</i> .....regression coefficient	<i>F</i> .....variance ratio
<i>p</i> , <i>P</i> .....probability	RSD.....relative standard deviation
<i>s</i> <sup>2</sup> .....sample variance	
$\Sigma$ .....summation	

### Special Typefaces

Special typefaces help distinguish letters, words, or phrases from the rest of the text.

- Use italic type for the following items:
  - ✓ Mathematical constants, variables, and unknown quantities in text and equations.
  - ✓ Genus and species of all animals, plants, and microorganisms used as nouns.
  - ✓ To emphasize a word or phrase.
  - ✓ Titles and abbreviations of newspapers, periodicals, and books.

- Use Roman Face type for the following items:

*Latin prefixes:* di, tri, tetra, penta, hexa, hepta, octa, nona, deca

*Greek prefixes:* bis, tris, tetrakis, pentakis, hexakis, heptakis, octakis, nonakis, decakis

pH (*p* is always lower case; *H* is always upper case)

- Use Roman Face for common Latin terms and abbreviations, such as the following:

ab initio	et. al	status quo
e.g.	in vitro	ca.
in situ	a priori	i.e.
ad hoc	etc.	vs.

### Nonsexist Language

The most common problems in this realm of usage are with the noun *man* and the pronouns *he* and *his*.

- Instead of *man* use *people*, *humans*, *human beings* or *human species* or a generic noun appropriate to the subject.

#### *Sexist*

The Interstate System helps all mankind.

#### *Nonsexist*

The Interstate System helps all people.

*or*

The Interstate System helps all travelers.

- Instead of *manpower* use *workers*, *staff*, *work force*, or *personnel*, depending on meaning.

#### *Sexist*

NHTSA scheduled manpower training sessions .

#### *Nonsexist*

NHTSA scheduled staff training sessions.

- Instead of *he* and *his*, use plural (*they* and *theirs*) or first person (*we*, *us*, *ours*). Use sparingly the phrases *he or she* and *his or her* .

#### *Sexist*

With a child safety seat, you can be sure you are protecting your child if he is involved in a crash.

#### *Nonsexist*

With child safety seats, you can be sure you are protecting your children if they are involved in a crash.

*or*

With a child safety seat, you can be sure you are protecting your child if he or she is involved in a crash.

Wordiness

- Replace a wordy expression with a simple word.

<b>Wordy</b>	<b>Pithy</b>
owing to the fact that	because
subsequent to	after
on the order of	about
in the near future	soon
at the present time	now
by means of	by
it appears that	apparently
of great importance	important
in consequence of this fact	therefore or thus
a very limited number of	few
in spite of the fact that	although

ReferencesCiting in Text

- Use one of two ways: citing by number or by author name and date.

The SI system is composed of seven base units.<sup>1</sup>  
(full citation would be given in a footnote or endnote.)

The SI system is composed of seven base units (Ladd, 1985).  
(full citation would be given in a bibliography)

Cross References

- Use *see* and the citation to direct reader to other items or sections.

Ninety-one percent of the trips used privately-owned vehicles (see Table 6.21)

One of the modes involves public transportation (see pages 4–50 of Vol.1).

Enumerations

- Use enumerated passages to achieve clarity.

*Foggy*

If only those trips made in urbanized areas of 1 million or more with a subway system made on weekdays, and with a trip length under 75 miles are considered, transit's share increases to about 3.63 percent of trips.

*A Little Clearer*

If only those trips made (a) in urbanized areas of 1 million or more with a subway system, (b) on weekdays, and (c) with a trip length under 75 miles are considered, transit's share increases to about 3.63 percent of trips.

*Much Clearer*

Transit's share increases to about 3.63 percent of trips if the only trips considered are those made (a) on weekdays, (b) with a trip length under 75 miles, and (c) in urbanized areas with a subway system and a population of 1 million or more.

- Avoid colon abuse in an enumerated list.

*Incorrect:*

The issues are: (a) transit's share of national travel, (b) demographic characteristics of travelers, and (c) private vehicle use by low-income populations.

*Correct:*

The issues are (a) transit's share of national travel, (b) demographic characteristics of travelers, and (c) private vehicle use by low-income populations.

or

The issues are

- (a) transit's share of national travel,
- (b) demographic characteristics of travelers, and
- (c) private vehicle use by low-income populations.

- Use the serial comma in an enumerated list, even if there are only two items.

The report includes (a) thematic sections on the performance of transportation, and (b) discussions of the contribution made by highway investments to the overall performance of the American economy.

- Use semicolon instead of serial comma to separate enumerated passages if one or more of the passages contains commas.

Issues explored were (a) devising ways to increase supervisory-to-employee spans of control; consolidating, reducing, or eliminating management layers; and generating saving and increased productivity.

- Keep passages parallel in an enumerated listing.

*Warped*

The Centers of Excellence will become effective through

- (a) reduction of the number of management support facilities,
- (b) restructuring the research program, and
- (c) the effort to combine military and civilian personnel into a single unit..

*Parallel*

The Centers of Excellence will become effective through

- (a) reducing the number of management support facilities,
- (b) restructuring the research program, and
- (c) combining military and civilian personnel into a single unit.

### Illustrations and Tables

Well-drawn illustrations can convey trends, comparisons, and relationships more clearly than text. An illustration that merely repeats data in the text, however, is a waste of time and space. The role of an illustration is to increase comprehension of text data by showing the data's significance. Also, avoid poorly drawn illustrations; they only confuse the reader and decrease comprehension.

- Keep line-art illustrations simple. Basically they should be rendered in black markings against a white background. Avoid shades of gray.

Identify an illustration by the word *Figure* and a number. Also give each figure a caption. The caption should describe the figure in one or two sentences of descriptive phrases.

For example:

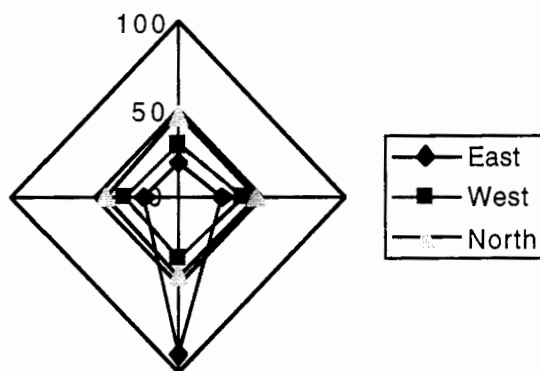


Figure 1. Major traffic corridors

### Tables

- Use tables when
  - (a) the data are precise numbers,
  - (b) there are too many numbers to be presented clearly in text, and
  - (c) more meaningful relationships can be shown.
- Do not use tables if the material is not a major text subject.
- As with illustrations, tables should supplement, not duplicate, data presented in the text.

- Identify each table by the word *Table* and a number. Number the tables sequentially with Arabic numbers. Also give each table a heading. The heading should convey the essence of the table.

For example:

Table 1  
**Women's Daily Trip Rates by Availability of a Driver's License**  
(trips per day)

Trip rate without license		Trip rate with license	Percent licensed
1983 <sup>a</sup>	1.71	3.44	76.2%
1984	1.73	3.46	77.0%
1986	1.82	3.42	75.3%
1987	1.72	3.47	80.7%
1990	1.70	3.49	84.6%

*Sources:* [Set initial cap and italic, followed by colon. Use to cite table's source or data]

*Notes:* [Set initial cap and italic, followed by colon. Use to present added information.]

(a) or <sup>a</sup> [Set Roman Face in parens, or as superscript with no punctuation. Use footnote key to callout comment on data in table's cell. The footnote key should be a letter to avoid possibility of confusing a superscript number with the table's statistical data.]

The Table 1 footnotes appear in the order commonly followed and recommended as best usage. Of course, some tables may need to use only one or two kinds of footnotes. And some tables need no footnotes at all.

- Put period after the table's number reference if the table's title follows on the same line.

Table 1. Women's Daily Trip Rates by Availability of a Driver's License  
(trips per day)

- Three common footnotes are used with a table. They should appear in the following order: (1) source notes, (2) general notes, and (3) notes keyed to a specific item in the table. (See Table 1 and notes above.)
- Use *letters*, not *numbers*, for the callout keys in a table. The use of a letters helps avoid the chance of perceiving a footnote key as part of the data in a table's cell.

### **Special Lists**

At times you need to cite numerous items, such as award winners. If there are too many names to run into text, create a special list. Such a list is neither a figure nor a table.

- Give the special list an unnumbered title.

For example:

#### **On-the-Spot Awards**

**Dean. A. Abrams**, highway engineer,  
Office of Technology Applications

**Rhonda Breezdale**, community  
planner, Planning Programs Branch

**Thomas F. Coleman**, administrative  
program assistant, Office of Technology  
Applications

**Greig McCormick**, financial manager,  
National Data Management Division

**Sam H. Sawrey**, transportation  
specialist, Office of Highway Safety

**Janet A. Whitcrow**, highway safety  
specialist, Design Concepts Research  
Division

**Susan C. Wright**, program director,  
FHWA Emergency Preparedness Branch

**Finley Zergo**, highway engineer,  
Office of Highway Safety

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