



Standard Guide for Network Level Pavement Management¹

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1. Scope

1.1 This guide outlines the basic components of a network level pavement management system (PMS).

1.2 This guide is intended for use in the management of traveled pavement surfaces, including roads, airfields and parking lots.

1.3 This guide is not a standard method or practice, that is, it is not intended to provide a comprehensive PMS in a user specific application.

2. Referenced Documents

2.1 ASTM Standards:

E 867 Terminology Relating to Traveled Surface Characteristics²

3. Terminology

3.1 *Definitions:* All terminology used in this guide conforms to Terminology E 867.

3.1.1 *feature*—(see 3.1.4).

3.1.2 *network level analysis*—evaluation of a network of pavement to enable selection of candidate projects, project scheduling, and budget estimates.

3.1.3 *pavement condition*—a quantitative representation of distress in pavement at a given point in time.

3.1.4 *pavement management section/segment*—a contiguous pavement area considered to have uniform construction, maintenance, usage history, and condition.

3.1.5 *pavement performance*—ability of a pavement to fulfill its purpose over time.

3.1.6 *project level pavement analysis*—evaluation of pavement section to select the type and timing of rehabilitation or maintenance.

4. Significance and Use

4.1 This guide provides network level PMS users with an outline of the basic components of a PMS to ensure the specific system the user selects or develops fulfills the agency needs and requirements.

4.2 This guide may be used by agencies or organizations wishing to develop, evaluate, or refine a network level PMS.

4.3 The basic components of the PMS described in this guide are location reference, information collection, data base management, analysis, implementation, operation and maintenance.

4.4 Within each basic component a list of possible types of data, information, models, etc. are provided for consideration by the user agency. These lists are neither all inclusive nor exclusive. They are intended for guidance only.

5. Basic Components of a PMS

5.1 *Location Reference*—Reference and location for all pavements and information in the system should be identified by a consistent and time stable reference and locations method. Some of the common network referencing methods include: (a) link-node, (b) branch/facility, (c) section/feature, (d) mile-post, (e) log-mile, and (f) geo-coordinates.

5.2 *Information Collection*—The fundamental information used in a pavement management system includes: (a) pavement inventory, (b) pavement condition, (c) traffic characteristics, (d) environment, and (e) cost. This information is used to define uniform sections/features whose locations are identified within the reference method used by the agency. Data collection methods, sampling patterns and frequencies should be chosen that are appropriate to the reliability of information required to meet the needs and objectives of the agency as defined in 3.1.2. Resources should be available to sustain the information collection efforts. Methods should be flexible enough to allow for special conditions. Data may be collected objectively, subjectively, or in combination.

5.2.1 *Pavement Inventory*—The following data may be included: (a) length/width/area/geometrics, (b) pavement structure, layer types, design strength, and thicknesses, (c) construction and rehabilitation history, (d) maintenance history, (e) drainage, and (f) functional classification.

5.2.2 *Pavement Condition*—The following data may be included: (a) distress, (b) roughness, ride quality, (c) skid resistance, texture, (d) stiffness, deflection, (e) materials and layer properties, and (f) drainage.

5.2.3 *Traffic Characteristics*—The following data may be included: (a) volume, (b) loads, (c) vehicle classifications, and (d) accidents.

5.2.4 *Environment*—The following data may be included: (a) freeze-thaw cycles, (b) precipitation, (c) solar radiation, and

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² Annual Book of ASTM Standards, Vol 04.03.