



Designation: E2560 – 17

Standard Specification for Data Format for Pavement Profile¹

This standard is issued under the fixed designation E2560; the number immediately following the designation indicates the year of original adoption or, in the case of revision, the year of last revision. A number in parentheses indicates the year of last reapproval. A superscript epsilon (ϵ) indicates an editorial change since the last revision or reapproval.

1. Scope

1.1 This specification describes a data file format for pavement profile.

1.2 This specification describes the variables and sizes of all data that will be stored in the file. The file is in binary format, and is fully documented in this specification.

1.3 This specification is designed to be independent of hardware platforms, computer languages, and operating system (OS).

1.4 *This standard does not purport to address all of the safety concerns, if any, associated with its use. It is the responsibility of the user of this standard to establish appropriate safety and health practices and determine the applicability of regulatory limitations prior to use.*

1.5 *This international standard was developed in accordance with internationally recognized principles on standardization established in the Decision on Principles for the Development of International Standards, Guides and Recommendations issued by the World Trade Organization Technical Barriers to Trade (TBT) Committee.*

2. Referenced Documents

2.1 *ASTM Standards:*²

E867 Terminology Relating to Vehicle-Pavement Systems

2.2 *IEEE Standards:*³

IEEE 754–2008 (2008) Floating-Point Arithmetic

3. Terminology

3.1 *Definitions:*

3.1.1 Terminology used in this specification conforms to the definitions included in Terminology E867.

¹ This test method is under the jurisdiction of ASTM Committee E17 on Vehicle - Pavement Systems and is the direct responsibility of Subcommittee E17.31 on Methods for Measuring Profile and Roughness.

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² For referenced ASTM standards, visit the ASTM website, www.astm.org, or contact ASTM Customer Service at service@astm.org. For *Annual Book of ASTM Standards* volume information, refer to the standard's Document Summary page on the ASTM website.

³ Available from Institute of Electrical and Electronics Engineers, Inc. (IEEE), 445 Hoes Ln., P.O. Box 1331, Piscataway, NJ 08854-1331, <http://www.ieee.org>.

3.2 *Definitions of Terms Specific to This Standard:*

3.2.1 *signed*—integer capable of representing negative values.

3.2.2 *unsigned*—integer only capable of representing non-negative values.

3.2.3 *int8*—data type for an 8-bit, unsigned integer.

3.2.4 *int32*—data type for a 32-bit, signed integer.

3.2.5 *single*—data type for a 32-bit, signed real number, such as, single precision IEEE floating point.

3.2.6 *string*—data type for a variable-length ASCII string. No null character is included at the end of the string. A separate field defines the length of the string.

3.2.7 *3-byte string*—an ASCII string of three characters in length. No null character is included at the end of the string.

3.2.8 *4-byte string*—an ASCII string of four characters in length. No null character is included at the end of the string.

3.2.9 *8-byte string*—an ASCII string of eight characters in length. No null character is included at the end of the string.

3.2.10 *array (numeric data type)*—sequence of data of the specified numeric data type. Only the values are stored; no information about the array is stored.

3.2.11 *array (string)*—ASCII strings separated by a tab. There is no tab after the last string.

3.3 *Symbols:*

3.3.1 *n*—total channels of elevation data.

3.3.2 *m*—total number of test locations (that is, data points).

4. Profile Data Specifications

4.1 *File Structure:*

4.1.1 The general file structure is divided into five sections: (1) File Header; (2) Metadata; (3) Longitudinal Profile Data; (4) Transverse Profile Data; and (5) File Trailer. The five sections are stored sequentially. (See Fig. 1.)

4.1.2 Each of these portions of the file is described in the following sections, as well as the data types and other descriptors that will be required by the file. The data will be written to the file sequentially, with the offsets listed in the file header as guides to find various portions of the file. It is important to note that all offsets are relative to the beginning of the file. Because offset values may not be known at the time of writing the file header, these values need not be written.