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# CHAPTER 2

## TRACK MEASUREMENT AND ASSESSMENT SYSTEMS<sup>1</sup>

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### INTRODUCTION

The purpose of this Chapter is to provide information and establish recommended practices regarding the different types of track measuring and assessment systems in use by railways and transit agencies in North America and throughout the world. In general, the systems mentioned in this Chapter are capable of measuring and assessing all aspects of track infrastructure elements including geometry, rails, ties and fasteners, special trackwork, ballast, right-of-way and structures, and vehicle/track interaction. Usually, these systems are mounted on a moveable platform referred to as a Track Inspection Platform (TIP) through this Chapter.

Notice to the Reader:

This Chapter has a significant number of terms used to define all aspects of the track infrastructure and the inspection technology. Many organizations and countries will use different names or spellings of the same thing. In this Chapter the most commonly used name and spelling for each term is used throughout the document. However, alternative names and spellings are defined in this document to help the reader translate if they use an alternative terminology. For example, “gauge” is used throughout the document, but “gage” is also defined as an alternative.

Additionally, as of the 2024 revision of this Chapter, it has been refreshed significantly to increase logical order of information for improved reading and understanding. This effort was a significant undertaking by the volunteers within AREMA Chapter 2 and we hope that the information in this Chapter serves you well.

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<sup>1</sup> The material in this and other chapters in the *AREMA Manual for Railway Engineering* is published as recommended practice to railroads and others concerned with the engineering, design and construction of railroad fixed properties (except signals and communications), and allied services and facilities. For the purpose of this Manual, RECOMMENDED PRACTICE is defined as a material, device, design, plan, specification, principle or practice recommended to the railways for use as required, either exactly as presented or with such modifications as may be necessary or desirable to meet the needs of individual railways, but in either event, with a view to promoting efficiency and economy in the location, construction, operation or maintenance of railways. It is not intended to imply that other practices may not be equally acceptable.

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## INTRODUCTION

The Chapters of the AREMA Manual are divided into numbered Parts, each comprised of related documents (specifications, recommended practices, plans, etc.). Individual Parts are divided into Sections by centered headings set in capital letters and identified by a Section number. These Sections are subdivided into Articles designated by numbered side headings.

**Page Numbers** – In the page numbering of the Manual (2-2-1, for example) the first numeral designates the Chapter number, the second denotes the Part number in the Chapter, and the third numeral designates the page number in the Part. Thus, 2-2-1 means Chapter 2, Part 2, page 1.

In the Glossary and References, the Part number is replaced by either a “G” for Glossary or “R” for References.

**Document Dates** – The bold type date (Document Date) at the beginning of each document (Part) applies to the document as a whole and designates the year in which revisions were last made somewhere in the document, unless an attached footnote indicates that the document was adopted, reapproved, or rewritten in that year.

**Article Dates** – Each Article shows the date (in parenthesis) of the last time that Article was modified.