

CERTIFICATION
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**CERTIFICATION
MANUAL**

**For
Welding Inspectors**

Fourth Edition



American Welding Society

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Preface

In 1976, the American Welding Society (AWS) introduced a much-needed certification program, specifically for those individuals who perform visual welding inspection. Shortly thereafter, the AWS Qualification and Certification Committee initiated the development of a publication that could serve as a valid reference for those individuals interested in becoming a Certified Welding Inspector. Prior to the initial publication of the *Certification Manual for Welding Inspectors* in 1977, relevant information on the subject could be found scattered among various documents.

Numerous changes have occurred both in the AWS Certified Welding Inspector program and examination and in the technology related to welding inspection. Consequently, AWS sought to update the information contained in the Certification Manual. Much of the information contained herein is drawn from other AWS publications, including *Welding Inspection*, Second Edition, *Welding Inspection Technology*, AWS B1.11, *Guide for the Visual Examination of Welds*, and AWS B1.10, *Guide for the Nondestructive Examination of Welds*. The reader is encouraged to review these and other documents for even more detailed descriptions of much of the information contained in this new edition.

Welding inspectors are employed in a variety of industries. As a result, their duties will differ somewhat from one situation to the next. This book has been developed under the assumption that a welding inspector will be performing quality control duties of a general nature. Some inspectors, for example, may be working at a field construction site where they are in charge of overall welding quality. At the other extreme, in a large organization, a quality assurance department may make many of the decisions that the manual assigns solely to the inspector. The welding inspector will always perform a key role. The individual inspector's specific role in the quality control activity must, therefore, mesh with many other activities and personnel, as outlined in the pages which follow.

In this fourth edition, there has been an attempt to update the technical information, where appropriate. One of the areas where readers of previous editions will note changes is in the terminology used for describing various weld characteristics. There is an ongoing effort to use standard terminology when talking about welding operations and related weld characteristics. Questions appear at the end of each chapter. The questions have been included to provide those individuals who are preparing for the CWI examination with numerous examples of the types of questions that appear on the test. The questions appear in the same format (multiple choice with five options) as the questions on the CWI examination. While this is intended to specifically aid those studying for the test, it should also be beneficial to others from the standpoint of improving their comprehension of the information presented in the text. An Answer Key for all chapters appears in Annex C.

I hope this presentation will prove helpful to those interested in becoming welding inspectors and eventually becoming an AWS Certified Welding Inspector. The job of welding inspector is a tremendously challenging and important one, and those seeking the CWI qualification should be commended and encouraged. My desire is that this book will assist in reaching that goal.

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CHAPTER 1

The Welding Inspector

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Chapter 1—The Welding Inspector

Introduction

Welding inspectors function as quality representatives of organizations that may be a manufacturer, purchaser, insurance company, or government agency. The inspector is responsible for judging the acceptability of a product according to a written specification. The inspector must understand both the limitations and intent of the specification. The goal of the welding inspector is to strive for the required quality, but not to delay completion and delivery schedules without proper cause.

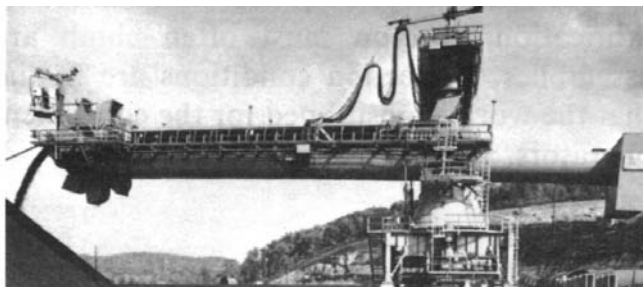
Welding inspectors find themselves working in dozens of different industries, with each situation having slightly different job responsibilities. Among those industries employing welding inspectors are energy production, chemical processing, petroleum product refining and distribution, transportation, and bridge and building construction (see Figure 1.1).

The welding inspector is a composite person—a highly qualified specialist in the field of welding. Welding inspectors can be classified as:

- Code or governing agency inspector



Nippon Steel



Lukens Steel Company



Cessna Aircraft Corporation



Western Oceanic Inc.

Figure 1.1—Industries Utilizing Welding Inspectors