



Standard Practice for Conducting Case Studies on Galvanized Structures¹

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1. Scope

1.1 This practice sets forth the procedures for conducting case studies of galvanized installations. It is intended for structural members and other permanent parts of the installation, such as railings and other such fabrications.

1.2 Included in this practice are recommendations for the visual inspection of the galvanized structure, measurement of coating thickness, and reporting of results.

1.3 The values stated in SI units are to be regarded as the standard.

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.*

2. Referenced Documents

2.1 ASTM Standards:

B 499 Test Method for Measurement of Coating Thickness by the Magnetic Method: Nonmagnetic Coatings on Magnetic Basis Metals²

E 376 Practice for Measuring Coating Thicknesses by Magnetic-Field or Eddy Current (Electromagnetic) Test Methods³

3. Significance and Use

3.1 This practice is applicable to galvanized structures exposed to the atmosphere or to plant environments, including buildings, bridges, and industrial plant constructions.

3.2 It provides for the collection of data to document the protection afforded by the galvanized coating.

3.3 Method A for conducting a coating thickness survey aims essentially at an assessment of the general condition of the galvanized structure, at the time of the inspection, by taking thickness measurements on several members of the structure.

3.4 Method B provides for accurate monitoring of the coating thickness decrease as a function of time, at specific locations on the structure, in order to assess the corrosivity of the environment, the effect of orientation, elevation, or other factors.

3.5 Method B is not an alternate procedure to Method A, but is complementary and optional.

4. Apparatus

4.1 Surface Preparation:

4.1.1 Water.

4.1.2 Cloths, for washing and drying.

4.1.3 Soft Fiber Bristle Brush.

4.2 Coating Thickness Measurement:

4.2.1 Thickness Gage.

4.2.2 Steel Calibration Plates and Foils.

4.2.3 Permanent Marker.

4.2.4 Tape Measure.

4.2.5 Center Punch.

4.2.6 Hammer.

4.3 *Electronic Magnetic Flux Gage*—The use of an electronic magnetic-flux gage in accordance with Method B 499 is recommended. Instruments with an accuracy of ± 3 to ± 5 % are commercially available.

4.3.1 Probes having a constant pressure feature will minimize operator error.

4.3.2 The probe assembly should have a probe support if measurements are to be made on rounded or curved surfaces.

4.4 *Hand-Held Magnetic Gage*—A hand-held magnetic gage using the magnetic attraction principle in accordance with Practice E 376 may be used for Method A.

5. General Procedure

5.1 Background Information:

5.1.1 Wherever possible, obtain information on the tonnage and cost of the steel work, the cost of galvanizing, and estimates of alternative coating costs (initial and maintenance) if the steelwork had been coated by another method. Determine if there are areas of the installation which were painted rather than galvanized, or painted over galvanizing.

5.1.2 Determine if any problems were experienced during fabrication, galvanizing, construction, and operation.

¹ This practice is under the jurisdiction of ASTM Committee A05 on Metallic Coated Iron and Steel Products and is the direct responsibility of Subcommittee A05.13 on Structural Shapes and Hardware Specifications.

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² *Annual Book of ASTM Standards*, Vol 02.05.

³ *Annual Book of ASTM Standards*, Vol 03.03.