



Designation: F3080 – 17

Standard Practice for Laser Technologies for Measurement of Cross-Sectional Shape of Pipeline and Conduit by Non-Rotating Laser Projector and CCTV Camera System¹

This standard is issued under the fixed designation F3080; 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 Laser profiling is a non-contact inspection method used to create a pipe wall profile and internal measurement using a standard CCTV pipe inspection system, 360 degree laser light projector, and special geometrical profiling software. This practice covers the procedure for the measurement to determine any deviation of the internal surface of installed pipe compared to the design. The measurements may be used to verify that the installation has met design requirements for acceptance or to collect data that will facilitate an assessment of the condition of pipe or conduit due to structural deviations or deterioration. This standard practice provides minimum requirements on means and methods for laser profiling to meet the needs of engineers, contractors, owners, regulatory agencies, and financing institutions.

1.2 This practice applies to all types of pipe material, all types of construction, and pipe shapes.

1.3 This practice applies to depressurized and gravity flow storm sewers, drains, sanitary sewers, and combined sewers with diameters from 6 to 72 in. (150 and 1800 mm).

1.4 This standard does not include all aspects of pipe inspection, such as joint gaps, soil/water infiltration in joints, cracks, holes, surface damage, repairs, corrosion, and structural problems associated with these conditions.

1.5 The values stated in inch-pound units are to be regarded as standard. The values given in parentheses are mathematical conversions to SI units that are provided for information only and are not considered standard.

1.6 The profiling process may require physical access to lines, entry manholes, and operations along roadways that may include safety hazards.

1.7 *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. There are no safety hazards specifically, however, associated with the use of the laser ring profiler specified (listed and labeled as specified in 1.3).

1.8 *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

E177 Practice for Use of the Terms Precision and Bias in ASTM Test Methods

E691 Practice for Conducting an Interlaboratory Study to Determine the Precision of a Test Method

F1216 Practice for Rehabilitation of Existing Pipelines and Conduits by the Inversion and Curing of a Resin-Impregnated Tube

2.2 Other Standards:

IEC 60825-1 Safety of Laser Products – Part 1: Equipment Classification and Requirements, Jan 2011.³

CDRH Regulations CFR 21, Section I, Subchapter J, Parts 1002 to 1040.11⁴

3. Terminology

3.1 Definitions of Terms Specific to This Standard:

3.1.1 *authority, n*—party responsible for the generation and verification of performance to job specification(s) and contract requirements.

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 International Electrotechnical Commission (IEC), 3, rue de Varembe, P.O. Box 131, CH-1211 Geneva 20, Switzerland, <http://www.iec.ch>.

⁴ Available from Center for Devices and Radiological Health (CDRH), Food and Drug Administration, 10903 New Hampshire Avenue, WO66-4621, Silver Spring, MD 20993, <http://www.fda.gov>.

¹ This practice is under the jurisdiction of ASTM Committee F36 on Technology and Underground Utilities and is the direct responsibility of Subcommittee F36.20 on Inspection and Renewal of Water and Wastewater Infrastructure.

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*A Summary of Changes section appears at the end of this standard