



Standard Practice for Locating Leaks in Sewer Pipes By Measuring the Variation of Electric Current Flow Through the Pipe Wall¹

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INTRODUCTION

Infiltration of groundwater into a sewer through defects in the pipe can considerably increase the operation and capital costs of a sewer system. Exfiltration of sewage out of a sewer pipe may cause degradation of aquifers and shoreline waters. Accurate location, measurement, and characterization of all potential pipe leak defects are essential inputs for cost-effective design, testing, and certification of pipe repairs, renewal, and new construction. While commonly used sewer leak assessment methods, such as air and water pressure testing, represent cost effective methods to provide overall Pass/Fail pipe assessments, their inability to provide accurate location and size of leaks, particularly at individual joints and service connection, limit their use in remediation and rehabilitation decision support.

1. Scope

1.1 This practice covers procedures for measuring the variation of electric current flow to detect and locate potential pipe leaks in pipes fabricated from electrically nonconductive materials such as brick, clay, concrete, and plastic pipes (that is, reinforced and non-reinforced). The method uses the variation of electric current flow through the pipe wall to locate defects that are potential water leakage paths either into or out of the pipe.

1.2 This practice applies to mainline and lateral gravity flow storm sewers, sanitary sewers, and combined sewers with diameters between 3 and 60 in. (75 and 1500 mm). The pipes must be free of obstructions that prevent the probe passing through the pipe.

1.3 The scanning process requires access to sewers, filling sewers, and operations along roadways that are safety hazards. This standard does not describe the hazards likely to be encountered or the safety procedures that must be carried out when operating in these hazardous environments. (7.1.3) There are no safety hazards specifically associated with the use of an electro-scan apparatus that complies with the specifications provided in this standard. (6.7 and 6.10.)

1.4 The measurement of the variation of electric current requires the insertion of various items into a sewer. There is

always a risk that due to unknown structural conditions in the sewer such items may become lodged in the pipe or may cause the state of a sewer in poor structural condition to further deteriorate. This standard does not describe methods to assess the structural risk of a sewer.

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 *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 to determine the applicability of regulatory limitations prior to use.*

2. Terminology

2.1 Definitions of Terms Specific to This Standard:

2.1.1 *lateral, n*—sewer pipe connecting the common sewer collection system to the user.

2.1.2 *mainline, n*—pipe that is part of the common sewer collection system.

2.1.3 *maintenance hole, n*—(MH) vertical shafts intersecting a sewer that allows entry to the sewer for cleaning, inspection and maintenance.

2.1.4 *owner, n*—entity holding legal rights to, and responsible for the operation and maintenance of the sewer pipe.

2.1.5 *probe, n*—scan electrode placed in a pipe.

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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