
HDOT TM 4-00

Standard Test Method for Estimating the Service Life of Steel Culverts

CAUTION: Prior to handling test materials, performing equipment setups, and/or conducting this method, testers are required to read "SAFETY AND HEALTH" in Paragraph 7.3 of this method. It is the responsibility of whoever uses this method to consult and use departmental safety and health practices and determine the applicability of regulatory limitations before any testing is performed.

1. Scope

1.1 Two environmental factors are combined for estimating the service life (years to perforation) of steel culverts. These factors are the hydrogen-ion concentration (pH) and the minimum electrical resistivity of the site and backfill materials. The pH of soil or water indicates the degree of acidity or alkalinity, while the minimum resistivity indicates the relative quantity of soluble salts in the soil or water. Using these parameters, the probable maintenance-free service life of a galvanized steel culvert in a given location can be estimated by using the chart shown in Figure 1. This information, combined with a condition survey of existing culverts, if any, provides a basis for: (1) estimating the maintenance-free service life of galvanized steel culverts and (2) estimating the additional life that would be obtained by coating the culverts with a dielectric material to reduce their corrosion rate.

The years to perforation is not the total useful service life of culverts. It is a common point at which it is likely that maintenance funds could be spent to repair corrosion damage.

This test method is divided into the following parts:

1. Method of Field Sampling for Laboratory Tests.
2. Method of Determining pH of Water.
3. Method of Determining pH of Soil.
4. Laboratory Method of Determining Minimum Resistivity.
5. Estimating The Maintenance-Free Service Life of Steel Culverts from Test Data.
6. Safety and Health.

2. Referenced Documents

- 2.1 ASTM Standard:
G 51 Method for Measuring pH of Soil for Use in Corrosion Testing

