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Inspection and Assessment of Below Grade and Groundline Corrosion on Weathering Steel on Electrical Transmission and Distribution Structures

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ABSTRACT

The buried or below-grade sections of electric utility steel transmission and distribution structures are often subject to corrosive environments and are not easily accessible for visual inspection. Prior to the publication of this standard, no industry practice existed to help electric utilities determine a prioritized listing of structures to be inspected or that described an inspection and assessment procedure to evaluate below-grade corrosion problems.

This joint NACE/IEEE standard is intended for use by electric utility personnel, contractors, inspectors, and those interested in the impact of corrosion on the below-grade sections of transmission, distribution, and substation steel structures. It provides requirements to: (1) help utilities identify structures that may be at a high risk for below-grade corrosion; (2) excavate and inspect the selected structures; (3) categorize the condition of structures based on corrosion degradation; (4) prioritize structures requiring additional inspection based on those findings; and (5) help identify next steps as required.

This standard is limited to the inspection and assessment of weathering steel transmission towers, poles, substation structures, and other similar structures.

KEYWORDS

Transmission and distribution structure, transmission tower, below-grade, weathering steel, substation structure, field inspection, groundline corrosion, TG 538.

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Foreword

There are an estimated 900,000 electric utility steel transmission and distribution structures in North America alone. The majority of these structures were installed between 1950 and 1990. These structures are now an average of about 45 years of age. The age of these structures dictates an inspection and assessment procedure to determine the level of corrosion affecting the buried portions of this important segment of our infrastructure. While the condition of the above-grade portions of these structures is relatively easy to visually assess, the buried or below-grade sections are often subject to a more corrosive environment and are not easily accessible for visual inspection.

Prior to the publication of this standard, no industry practice existed to help electric utilities determine a prioritized listing of structures to be inspected or that described an inspection and assessment procedure to evaluate below-grade corrosion problems.

This standard is intended for use by electric utility personnel, contractors, inspectors, and those interested in the impact of corrosion on the below-grade sections of transmission, distribution, and substation steel structures.

This standard was prepared in 2018-2019 by NACE/IEEE joint Task Group (TG) 538, "Development of a Joint NACE/IEEE Standard for Below-Grade Inspection and Assessment of Below Grade and Groundline Corrosion on Weathering Steel on Electrical Transmission and Distribution Structures," which is administered by Specific Technology Group (STG) 41, "Electric Utility Generation, Transmission, and Distribution." The task group included members of IEEE. This standard is published by NACE under the auspices of STG 41, and by IEEE's Corrosion Working Group 12: Power and Energy Society/Transmission and Distribution (PE/T&D/TPC–Corrosion).

In NACE and IEEE standards, the terms ***shall, must, should,*** and ***may*** are used in accordance with the definitions of these terms in the *NACE Publications Style Manual* and the *IEEE-SA Standards Style Manual*. The terms ***shall*** and ***must*** are used to state a requirement, and are considered mandatory. The term ***should*** is used to state something good and is recommended, but is not considered mandatory. The term ***may*** is used to state something considered optional.

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