

Review of Mechanically Stabilized Earth Wall Inspection Guidelines in the United States

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ABSTRACT

A new type of retaining structure, initially known as Reinforced Earth walls and later as Mechanically Stabilized Earth (MSE) walls, was first introduced in 1966 by Henri Vidal. These walls have become very popular due to their utility and cost-effectiveness, resulting in widespread adoption worldwide. Over the past five decades, MSE walls have provided essential support for highways, bridges, and other infrastructures. However, the aging of the MSE walls has raised concerns, as their typical design life ranges from 75 to 100 years. Despite their critical role and popularity, there is a notable lack of standardized inspection and maintenance protocols to address these aging concerns comprehensively. Therefore, this study explores the status of the MSE wall inspection practices currently adopted by state agencies in the United States. Through a detailed review of relevant documents from state agencies, as well as published research articles and case studies, this research identifies the common statuses and challenges in the assessment of aging MSE walls. The study also reviews the latest technologies for assessing the conditions of MSE walls, including non-contact and non-destructive testing techniques and advanced sensing technologies. Preliminary findings indicate states fall into four groups: those with no published policies or protocols, those with inspection guidelines only for during construction, those with guidelines featuring descriptive ratings, and those with guidelines featuring quantitative ratings. Additionally, most states do not have specific guidelines regarding inspection frequency for MSE walls. Furthermore, most of the available protocols are limited to visual inspections of the wall's exterior conditions, with only basic rating systems. This study presents the necessity of developing a national framework to guide the routine inspection and maintenance of MSE walls to ensure

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their continued safety and functionality.

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