

Overview

The preservation and rehabilitation of buildings and other structures is a requirement of good stewardship of the nation's investment in its infrastructure. It has also become increasingly important as a way of protecting our cultural heritage in the form of historic architectural landmarks and monuments. The decision to rehabilitate a structure entails a commitment to long-term preservation and maintenance. This commitment in turn requires an evaluation of the future service of the treated structure and the durability of its materials and systems. In considering preservation of the built environment, the practitioner must address the materials to be preserved and the applicability and feasibility of the means available to preserve them. The service life of existing structures, and of methods and materials used to conserve them, is of growing importance in the United States and Canada as our old structures grow older and our newer structures grow old.

This Special Technical Publication has been published as a result of the 1987 Symposium on Service Life of Rehabilitated Buildings and Other Structures which was held in Cincinnati, Ohio. The purpose of the Symposium was to give definition to some of the problems and suggest future directions for improved methods in the prediction of service life. The Symposium was initiated by ASTM Committee E-6 on Performance of Building Constructions and its Subcommittee E06.24 on Building Preservation and Rehabilitation Technology. The Association for Preservation Technology (APT), National Institute of Standards and Technology (NIST), and National Park Service (NPS) joined ASTM Committee E-6 in sponsorship of the Symposium.

The Symposium draws from the experience and expertise of practitioners in both the public and private sector in the United States and Canada. Active participation by colleagues from Canada demonstrates a shared concern for this important subject and also underscores the objective of ASTM to draw upon international resources in the development of standards.

The eleven papers presented within this STP give a state-of-the-art review of issues dealing with the service life of historic buildings and structures. Burgeoning interest in this topic suggests that a continuing review will be required to monitor the wide array of structures, systems, and materials involved; the depth and scope of intervention involved, and the ongoing introduction of new and increasingly complex structures which will need rehabilitation in the future.

The STP is organized in four parts. Part I provides an overview of management systems for existing structures that are in development by public agencies in Canada (Hum-Hartley et al.) and the United States (Battle) and by the private sector (Audet-Lapointe). Part II has examples of extrinsic factors and their effect on the service life of existing structures. Examples include acid rain (Livingston) and building code requirements (Meyer). Part III presents case studies on the service life of some of the nations best known historic structures with emphasis on the assessment of building materials. Materials that are discussed include copper (Cliver and Baboian), exterior paint systems and cast iron (Slaton), reinforced concrete (Hunderman and Rewerts), and red sandstone (Arbogast). Part IV presents case studies on the service life of existing structures with the emphasis on the assessment of building systems. Systems that are discussed include building facades of masonry and stone (Thomassen and Searls) and framed wood floors (Fischetti). An introduction at the front of each section correlates the papers to one another.

The Symposium findings will give direction to government agencies, property managers,

building owners, practicing professionals, and standards specialists who have found it increasingly necessary to define the economic and physical service life of existing structures.

The Symposium presentations cited many existing standards. However, a need was established for the development of standards that would be applicable in the field or in situ, rather than under laboratory conditions only. Similarly, participants in the Symposium proposed modifying existing or developing new standards to aid in the determination of service life of buildings and other structures through the following: development of standard testing procedures of archaic building materials, definition of related preservation products and archaic building systems, and development of standard practices relative to preservation and rehabilitation services. That work is now proceeding within ASTM Subcommittee E06.24 on Building Preservation and Rehabilitation Technology.

There are several people without whose assistance the development of this Symposium and subsequent preparation of the STP would have been impossible. Special thanks go to Wayne Ellis and Dave Battle, Symposium Cochairs, together with Philip Marshall, Gerald Davis of the ASTM Committee on Publications, and Teri McMasters and Kathy Greene of ASTM Headquarters. The editors are especially grateful to all Symposium speakers and authors and the many reviewers whose time and expertise are reflected in the quality of this publication.

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