

# Introduction

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The service life of existing structures is not only determined by the physical condition of the building or monument, but by extrinsic factors which include building code requirements, environmental conditions, and subsequent economic considerations. The following two papers present an overview of extrinsic factors and their effect on service life. Examples include acid rain (Livingston) and building code requirements (Meyer).

Acid deposition, and the subsequent deterioration on building elements, has been realized in North America for many years, but it has been only recently that the gathering of criteria to obtain a measure of the long-term effects of "acid rain" on materials has been attempted.

**Livingston** presents the prediction of service life and life-cycle costing relative to the effects of "acid rain" studies. The research presented relates to the program of the National Acid Precipitation Assessment Program (NAPAP) with the objective to develop credible estimates of economic benefits that could result from the reduction of damage to building materials from acid deposition. The parameters and assumptions of the mathematical model presented are discussed and include the specific materials under consideration, the emphasis on architectural rather than structural components, and the wide array of building structures that must be encompassed. The large assortment of variables involved and the implications of the simplified assumptions that were used are commented upon.

**Meyer** presents the recent development of the Building Officials Code Administration (BOCA) code provision for the "repair, alteration, addition to, and change of use of existing buildings." This provision now in use, provides a means by which otherwise nonconforming structures can meet building code requirements. The provision described is a creative way of determining code compliance that is sensitive to existing structures and recognizes their potential extended service life.