

Chapter 6

Design specifications for the time-dependent behaviour of composite steel-concrete structures

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This chapter deals with the long-term behaviour of composite members and structures used for building and bridge applications and provides a review of the relevant international serviceability limit state design methodologies, with particular focus given to the European, Australian and New Zealand, and American specifications. The first part of the chapter introduces the deflection limit requirements specified in design procedures for satisfying the serviceability limit state conditions. This is followed by a review of the design procedures recommended in the specifications for composite slabs, beams, and columns. Particular attention is devoted to reviewing design methodologies for the calculation of the displacements, for detailing, and for control of concrete cracking.

6.1 Introduction

This chapter provides a review of international guidelines for the service design of composite members and structures for building and bridge applications with particular attention given to European standards EN 1994-1-1 [1] and EN 1994-2 [2], Australian and New Zealand specifications AS/NZS 2327 [3] and AS/NZS 5100.6 [4], and American standards. In the United States, the design of composite steel-concrete construction is covered by a number of standards. For example, the design of composite floors is covered in ANSI/SDI C-2017 [5], while more general provisions dealing with composite steel/concrete construction are given in AASHTO [6] and ANSI/AISC 360-16 [7]. ACI-318-19 [8] deals only with composite construction involving different concrete elements.