

PREFACE TO SECOND EDITION

Unlike laws of equilibrium, which remain unchanged year after year, the application of structural concepts to the design of actual structures using real materials and accepted methods changes on a fairly regular schedule. Material-centric institutes periodically revise their suggestions for building code language; these are referenced in model building codes, and the various states of the union eventually get around to adopting these model codes, turning them into legal mandates that reflect evolving standards for structural design.

This fact alone would make it necessary to update the first edition of *Structural Elements*, and I have indeed incorporated recommendations from the latest versions of all four primary references (i.e., from the AF&PA/AWC, AISC, ACI, and ASCE) into this second edition, including revised values for Southern Pine lumber that became effective in 2013.

In addition, I have reorganized the material in this second edition around the idea of materials rather than based on structural actions. In other words, while the first edition considered tension, compression, and bending as the primary “subjects” (with wood, steel, and reinforced concrete discussed for each of these structural behaviors), the second edition organizes the content around wood, steel, and reinforced concrete (with the various structural actions — tension, compression, and bending — included within each “material” chapter). Doing so has allowed me to add new content concerning structural systems and material properties for each of the primary structural materials, and to integrate the discussion of connections within the particular material chapters to which they apply. In this way, the organization of the book reflects curricular changes within the building technology area of the architectural curriculum at Cornell.

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January, 2015