

Title:

Strategy Guidelines for the Structural Engineer (A status of the Committee's Report on Sustainability, Part 1)

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Abstract:

In conventional building design, structural strategies are aimed at creating a cost-effective system which meets the goals of the building owner. With sustainability, we introduce goals of using the right materials, in the right way, to achieve the right building. This paper will discuss structural strategies for achieving these goals. Many structural engineers who have been involved in designing buildings with sustainability goals have not been included in helping achieve those goals. During each phase of a project, there are structural strategies which can help integrate the structure to support the sustainability goals of the design. Early in the design development phase, the structural engineer can use strategies such as selection of structural material system, input into site selection for reduced foundation and reduced material use, building geometry for material optimization, among others. Strategies involving integration of the structure with other building systems can help improve the thermal, moisture, air quality, water use, energy use, of the building during its life. Normally not included in conventional design, sustainability asks that engineers consider the building after its initial useful life is over: design for adaptability, design for deconstruction, and recyclability are strategies that can all contribute to this. This paper will also include strategies for integrating the structural system with the building envelope, using structural elements for thermal mass and other heating/cooling/energy systems; and case studies of engineers' involvement in high-performance, sustainable buildings.