PREFACE

It is widely accepted that there is no better experience than on-the-job training, but in the practice of interior design, that philosophy could have dangerous consequences. The first construction project I took on was the remodel of a townhouse on the Intracoastal Waterway in south Florida. The owners were "empty nesters" and purchased a 20-year-old townhouse with three bedrooms upstairs, and an open kitchen, dining, and living room downstairs. They hired me to select new ceramic tile for the downstairs floors and new kitchen cabinets and countertops. Upstairs, they wanted to knock down the wall between the master bathroom and a third bedroom to make a larger master suite with an enlarged bathroom and closet area.

Common sense told me not to move too many plumbing pipes because my clients were conscientious about costs. The limitation, however, was that the couple wanted a separate whirlpool tub and shower enclosure to replace the all-in-one system they currently had. I drew up a plan for the upstairs changes and met with the contractor to discuss my ideas. We were upstairs in the current master bathroom and, as he reviewed my plan, he said, "This is great! We won't have to move the vent stack." I had no idea what he was talking about. Maintaining my composure, I looked him straight in the eye and said, "Terrific!"

When I left the job site I went home and immediately started poring through my books (these were the pre-Internet days) to try to find out what a vent stack was, which turned out to be a venting system that runs through the house and out the roof to allow hazardous sewer gas to reach the open air, and that maintains pressure for proper drainage. On this project, I was lucky; the remodeling of the bathroom could have been a disaster. From that moment forward, I realized that although you can't learn everything in school, an interior designer must stay on top of the game when entering the world of remodeling work and new construction.

When deciding to write this book, I was most interested in discussing the questions: What do interior designers need to know to get their designs built? What should they know about interior systems like heating and air-conditioning, plumbing, and electrical (even though they are not responsible for designing these systems)? Acquiring a basic knowledge of building construction and how the mechanical systems work, students of interior design have a better understanding of how their designs will work in the building envelope and how they will be affected by mechanical systems for both residential and commercial spaces.

Moreover, students and interior designers need to understand the structural components and limitations in a building and how these structural elements might influence their interior space planning. Although architects and engineers work out the details of structure and systems, respectively, interior designers must have a working knowledge of how various building systems affect the design of interior spaces, including heating, ventilation, and air-conditioning; acoustics; plumbing; and electrical systems; and the attributes and performance of specified building materials in conjunction with interior finish materials.

Designer's Guide to Building Construction and Systems for Residential and Commercial Structures is written with the student in mind. Using language that is directed toward students of interior design, you will learn about basic structural principles applied to the building environment through a review of common building methods, including timber framing, masonry, and steel construction for residential and commercial projects as applicable. You will also learn industry jargon pertinent to building construction, will be made aware of the work necessary to prepare construction documents, and will be exposed to building and accessibility codes through technical terms and vocabulary interspersed throughout

the text. These terms are in italics and are defined in the glossary at the end of the book.

Structural systems covered in the text include foundations, beams and columns, floors, walls, roofs, doors, and windows. Mechanical and electrical systems, acoustical control, and plumbing are presented through an array of contemporary theories and techniques used in the design of buildings. Furthermore, code issues are presented in the context of the construction process. Codes are referred to in this book *as general guidelines only,* and students must be aware that code compliance begins at the municipal level. Whenever a new project is begun, the applicable codes in force *for the location of the building project* must be upheld. State and federal agencies may also impose codes beyond those supported through the International Code Council, which is the primary reference source for code issues discussed in this book.

Through photographs, detailed drawings, and case studies, students will gain insight to the construction methods used for built environments, beginning with the exterior building envelope and continuing through the interior finish details like millwork, floor coverings, walls, and ceilings. For the visual learner, photographs accompanying the text provide further explanations that show the application of building construction and systems. My goal in writing this book in a concise format with easy-to-understand text is to give students an easy guide to learn about building construction and systems in preparation for a successful practice as an interior designer.

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ACKNOWLEDGMENTS

This book is the result of many people who shaped my interest in construction methods and techniques throughout the years. I appreciate the time my father took to explain to me the various blueprints, with their strong smell of ammonia, that he brought home from work each evening from whatever project he was working on at the moment. For a little girl of seven or eight years old, it inspired me to design my own houses for my Barbie doll. And as the steak knives from mom's kitchen drawer came out along with rolls of Saranwrap, cardboard boxes soon became dream homes with all the bits and pieces of a real house, including operable doors and clear, transparent windows.

If it weren't for Rachel Pike, my department chair at Wentworth Institute of Technology in Boston, who gave me a great push when she scheduled me to teach the Building Construction and Systems class one week before classes began back in 1996, I would not be able to explain how things get built, installed, or finished. Knowing information and disseminating it to students is not always the easiest of tasks.

Despite the many challenges I experienced with clients and contractors while on seemingly endless construction sites, a million thanks go out for stretching the boundaries of my knowledge, design skills, and tolerance to new levels. If it weren't for Robert Smaldone, the general contractor with whom I worked on building a family compound in Kennebunkport, Maine, I would never have considered how important a book like this might be for clients as well as students to ease the pain

of building a new home. He also proved that, yes, you can build a 10,000-square-foot home and have the clients moved in within a year's time.

Many thanks to James Cross, who supplied me with the numerous construction photos that appear in this book, and those generously offered through www.constructionphotography.com and Jeff Schaefer for Bob Moore Construction.

Last, but not least, without Vern Anthony, Editorial Director, at Pearson/Prentice Hall, the pages upon pages of notes I had prepared for the group of students at Wentworth would never have gone beyond classroom lectures. Thanks, Vern! Also, to the rest of the group at Pearson, my editor Sara Eilert, Alex Wolf, Doug Greive, and Alicia Ritchey, who kept the ball rolling throughout the laborious production process, thank you all.

I also appreciate the help of the following reviewers who helped to shape the content of this book: Margaret Jeffries, Pellissippi State Community College; Catherine Kendall, University of Tennessee at Chattanooga; JoAnn Wilson, Utah State University; Donna Weaverling Daley, The Art Institute of Philadelphia; Michael Dudek, Kansas State University; and Jeannie Ireland, Missouri State University.

Thank you all!