1 Drawing as Communication

Ideas and plans are formed in the interior designer's mind, but to be transformed into reality, they have to be communicated to others. Although a designer may have a great idea, it must be effectively communicated or it will remain just an idea and never move beyond conception. Interior designers and other professionals in the building industry use drawings as the primary means of developing and sharing their ideas. Interior designers and architects do a lot of sketching and drawing. They develop their skills in freehand drawing by sketching existing objects and spaces in the environment (Figure 1-1).

These same skills of observation and sketching are then used in visualizing designs for new spaces and objects (Figure 1-2).

This process of brain, eye, and hand coordination is an intrinsic part of design. Architectural drawings can be grouped into three basic types: drawing as idea generation, drawing as a design and presentation medium, and drawing as a guide for the construction process. There are distinct differences between each of these types, yet they all contain some common drawing tools, techniques, standards, and graphic language.

Design communication is also influenced by issues that regulate the building industry, such as building codes that protect the health, safety, and welfare of the public. Currently, other issues, such as universal design, sustainability, and LEED (Leadership in Energy and Environmental Design), and Building Information Modeling (BIM) affect the way designers communicate their ideas.

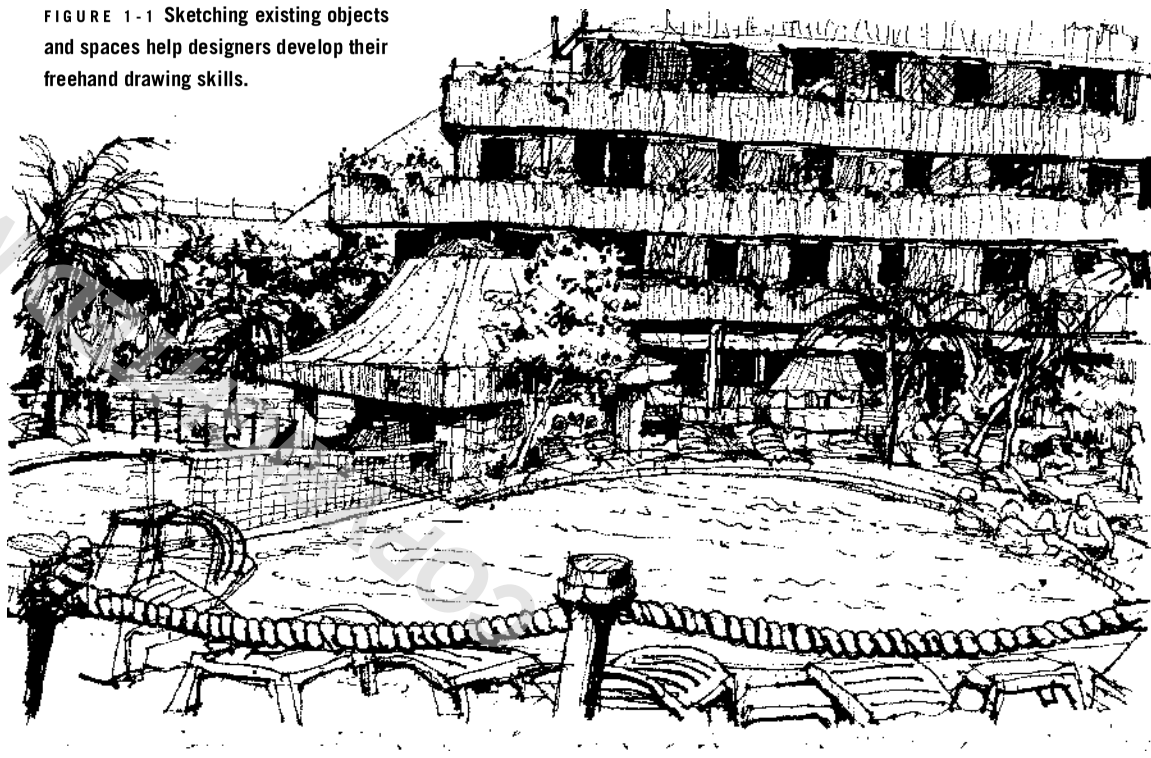


FIGURE 1-1 **Sketching existing objects and spaces help designers develop their freehand drawing skills.**

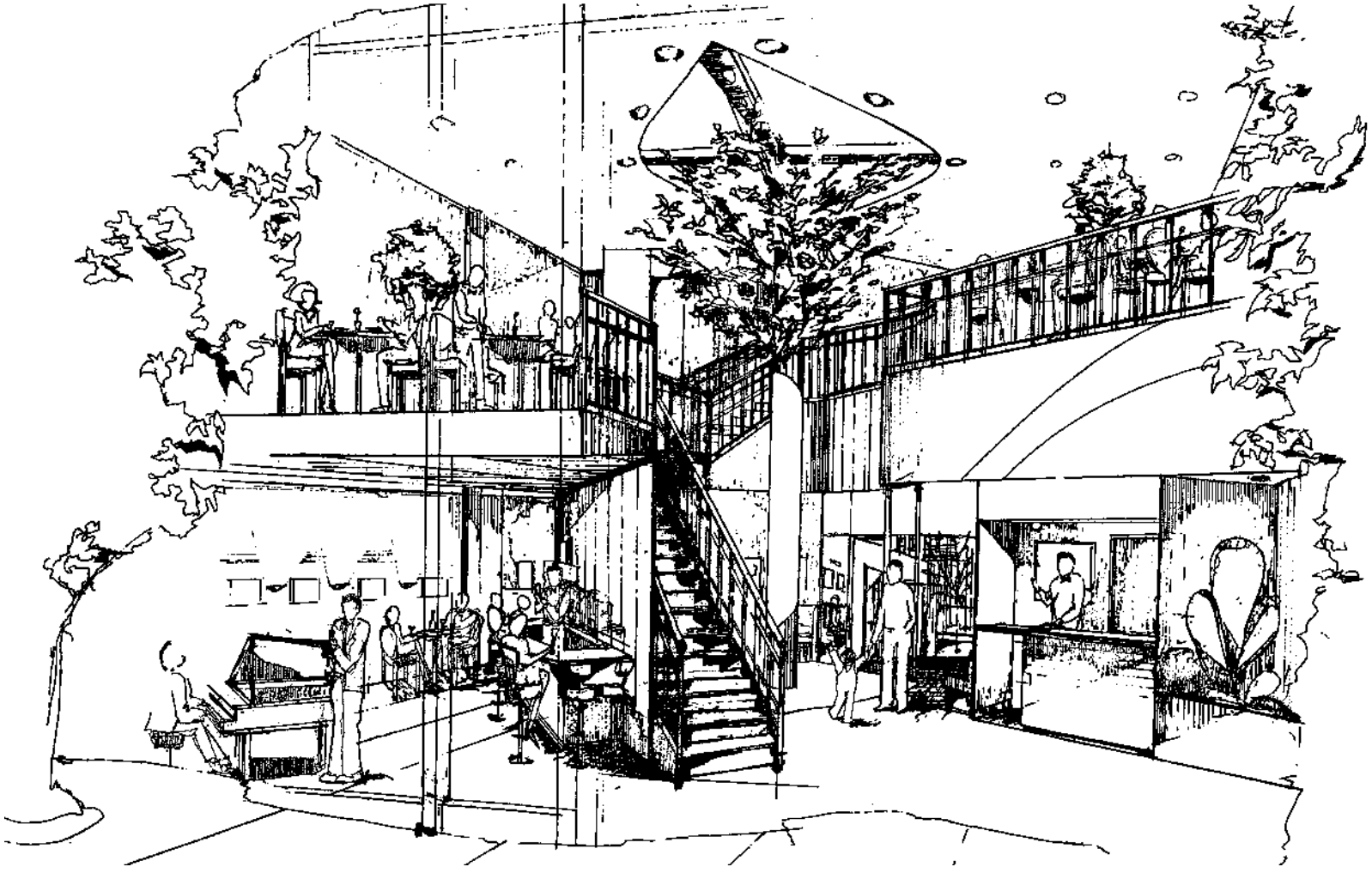


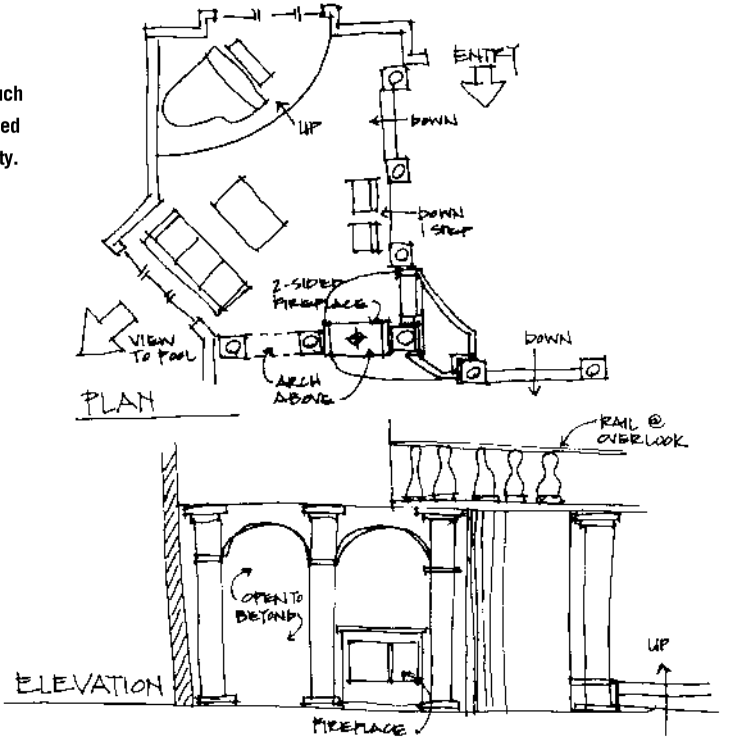
FIGURE 1-2 Designers can use their freehand drawing skills to visualize and sketch new spaces and objects.

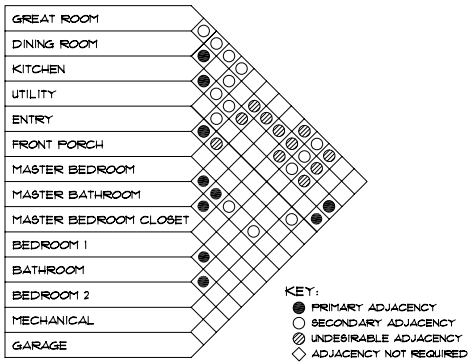
Drawing for Idea Generation

Idea generation assists the designer in working through and visualizing the solution to a problem. Designers use many different types of drawings to generate and bring to reality their creative ideas. These drawings can be in the form of quick freehand sketches illustrating different kinds of views (Figure 1-3).

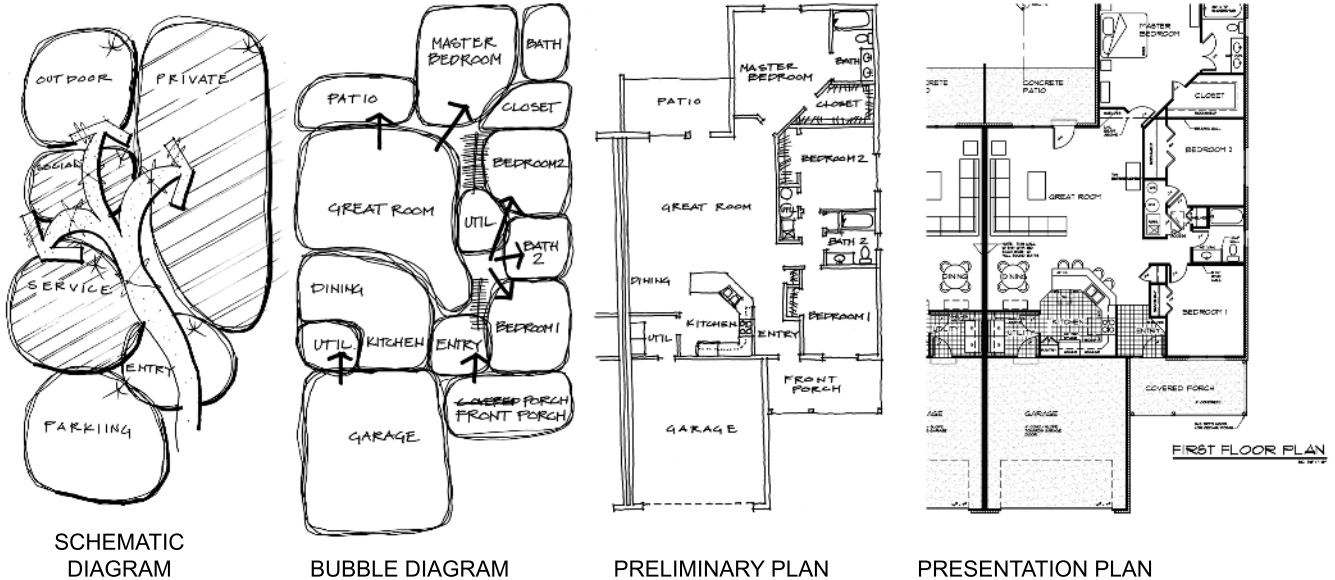
Many times these types of drawings are not shown to clients but are used solely to help designers shape their ideas into a visual form. The drawings are not intended to be the final solution to an idea, but rather to allow the designer to explore alternatives or refine an idea. They also help to record designers' two- and three-dimensional thinking. These concept sketches and drawings are part of a sequence of design steps referred to as the design process (Figure 1-4).

FIGURE 1-3 Quick freehand sketches such as this floor plan and elevation can be used to bring designers' creative ideas to reality.





ADJACENCY MATRIX



SCHEMATIC DIAGRAM

BUBBLE DIAGRAM

PRELIMINARY PLAN

PRESENTATION PLAN

FIGURE 1-4 Analysis charts, concept sketches, and drawings are part of a sequence of design steps known as the design process.

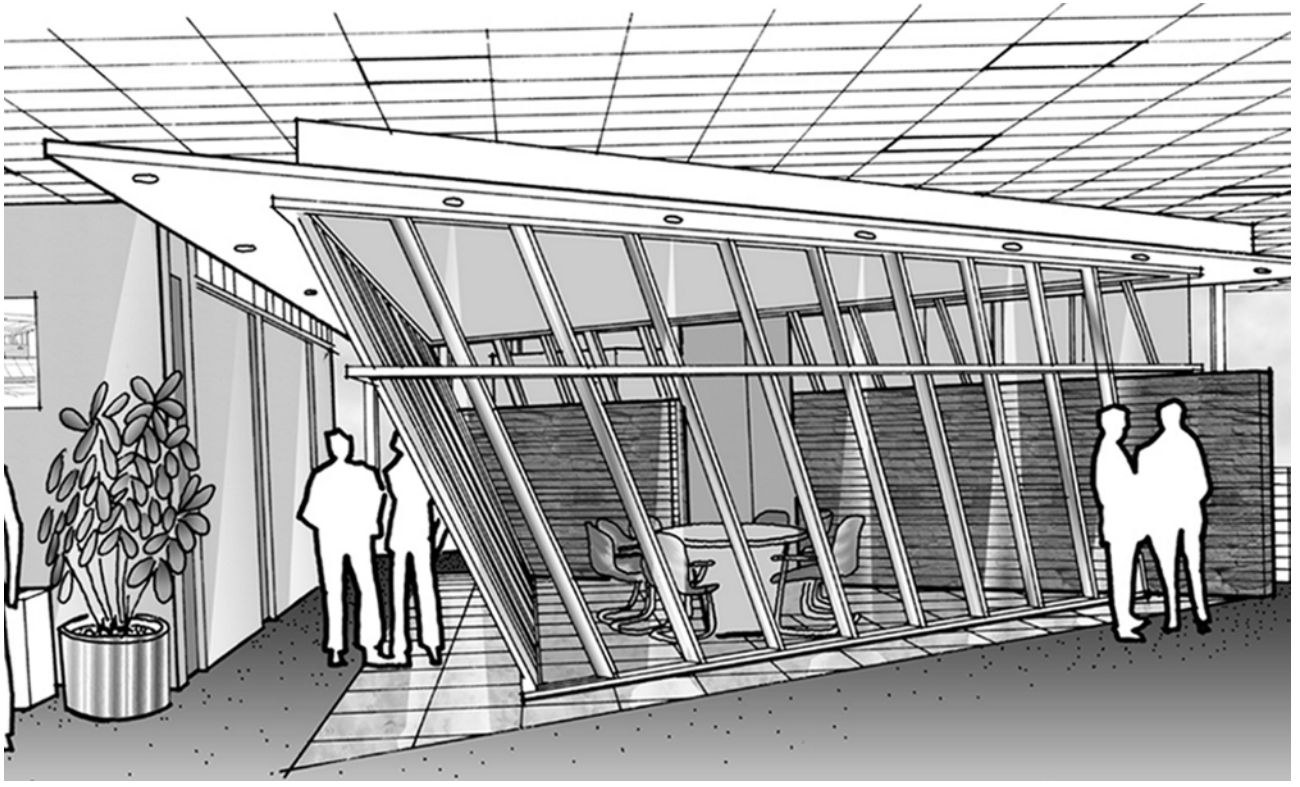


FIGURE 1-5 **Design drawings such as this pictorial rendering show ideas in more detail.**

Drawing as Design and Presentation Media

Once a designer has developed an idea to a point that visual communication is needed to show it to the client or others, new drawings must be created for use as presentation media. These drawings depict the parameters of an idea in more detail, yet are not totally worked out to a point that they serve as an accurate construction guide. Design drawings can range from pictorial renderings of an idea (Figure 1-5) to rendered plan views of a building's interiors (Figure 1-6). In the first example, a rendering is often done as a perspective view (Chapter 4), which resembles a photograph. The receding lines of an object are purposely drawn to a distant vanishing point—similar to the effect of railroad tracks that appear to touch at the horizon. Design drawings are also done using techniques other than perspectives, such as the isometric shown in Figure 1-7. Different types of drawings are discussed further in Chapter 4.

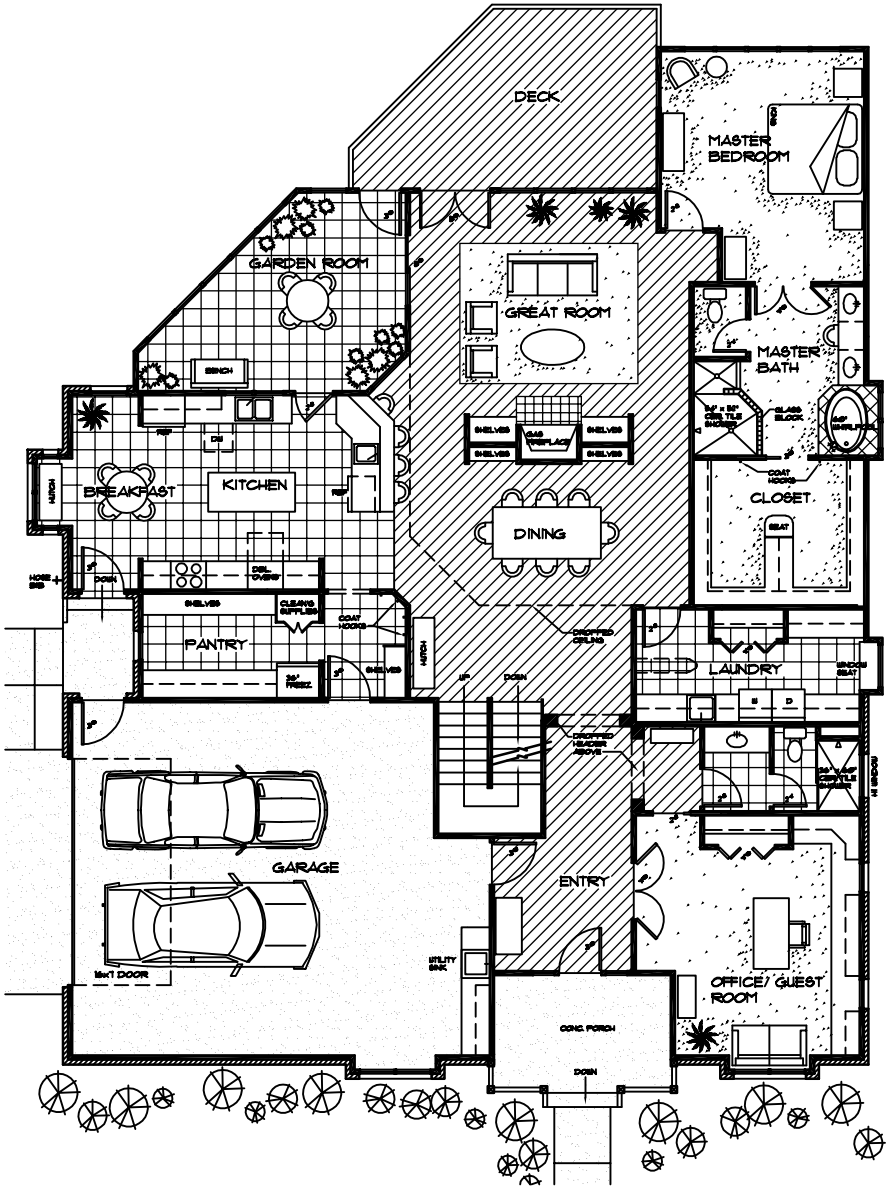


FIGURE 1-6 Design drawings can also show more detail in the form of rendered plan views of a building.

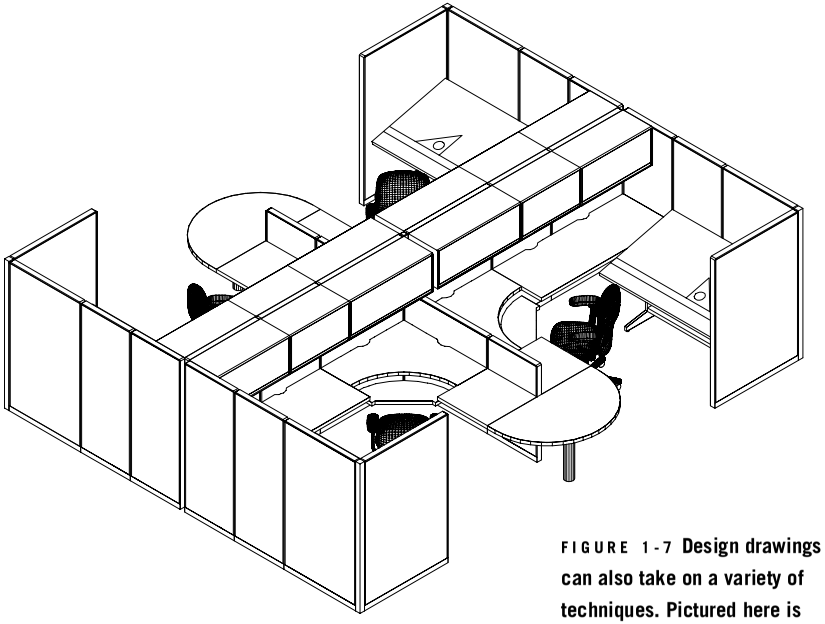


FIGURE 1-7 Design drawings can also take on a variety of techniques. Pictured here is an isometric drawing.

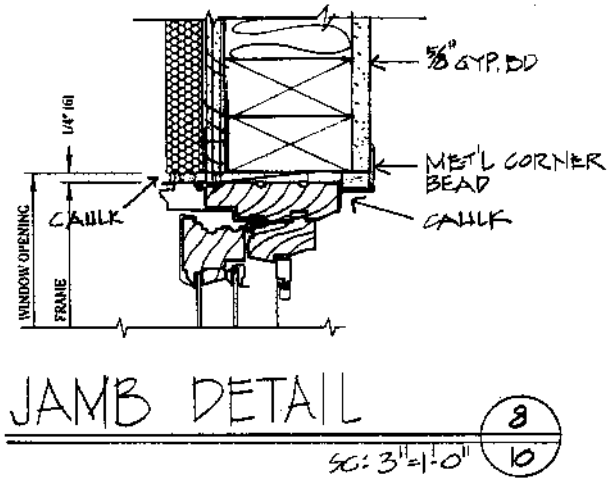
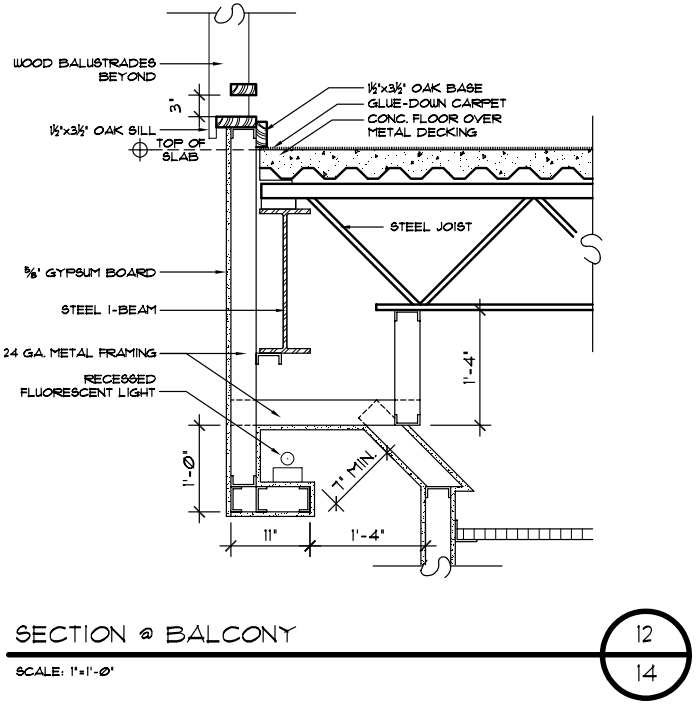


FIGURE 1-9 Designers use graphic conventions to indicate sizes, material, and related information needed to turn ideas for objects or spaces into reality.



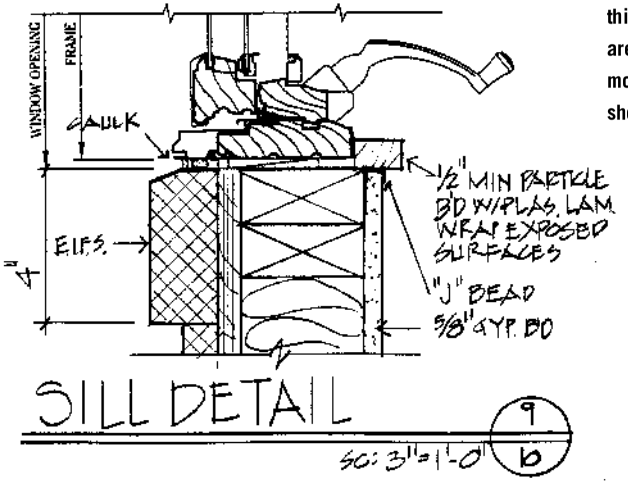


FIGURE 1-8 Drawings used to communicate how something should be constructed are scaled, detailed, and more accurate; they also show materials to be used.

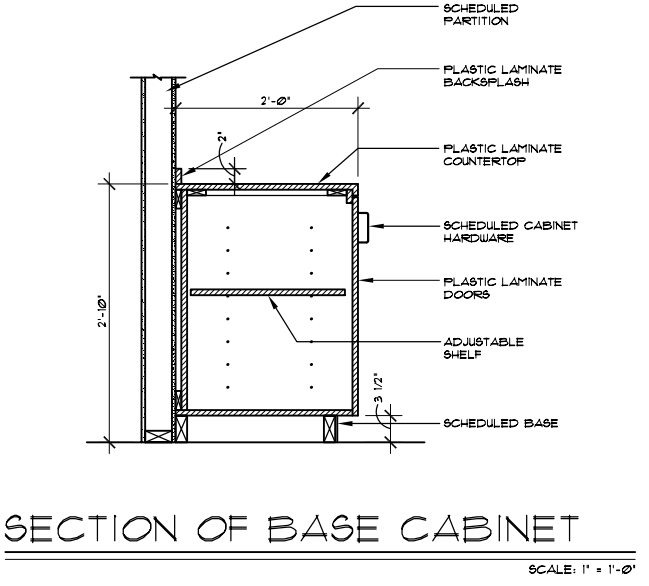


FIGURE 1-10 Clear, concise drawings of an object, such as this section, help a builder to construct the object as the designer envisioned.

Drawing as a Guide for Construction

Drawings serve as the prime means of communication for constructing buildings, interior spaces, cabinets, furniture, and other objects. Construction drawings are scaled, detailed, and accurate representations of how an object looks and how it is constructed, as well as the materials used (Figure 1-8). The drawings follow established architectural graphic conventions to indicate sizes, material, and related information that is needed to bring the objects or spaces into reality (Figure 1-9). The builder needs clear, concise drawings that are directly related to the different views of an object, such as plans, elevations, sections (Figure 1-10), and other drawing types that are discussed in later chapters.

Issues Affecting How Interior Designers Communicate

Interior design is a constantly changing discipline that is affected by societal, environmental, and technological changes. Issues affecting how interior designers communicate today are influenced by universal design concepts, sustainability, and digital technology as they apply to design practice within the building industry.

Universal Design

Universal design is a worldwide belief that encompasses the design of environments, objects, and communication with the intent of serving the widest range of users. Universal design should not be used interchangeably with accessible design, which specifically focuses on people with disabilities and their right of access to entities. Universal design is more than providing minimal compliance with set accessibility guidelines and requirements. Universal design integrates accessible features into the design of the building, interiors, and objects. It attempts to address usability issues of spaces and equipment versus setting standards and minimum requirements. Figure 1-11 illustrates an example of the international symbol for accessibility regardless of the user's abilities.

The Center for Universal Design at North Carolina State University, in collaboration with a consortium of universal design researchers and practitioners, developed seven principles of universal design that were copyrighted in 1997. Funding for the project was provided by the U.S. Department of Education's National Institute on Disability and Rehabilitation Research. These principles are useful in guiding designers in the creation of environments that are accessible to all people, whether they have a disability or not. Good examples of universal design are almost invisible as they are so well blended into the design that they seem commonplace.

FIGURE 1-11 This is the internationally recognized symbol for compliance for wheel chair access.

Sustainability and LEED

The built environment has a profound impact on our natural environment, economy, health, and productivity. Based on this impact, the design, creation, and maintenance of the built environment presents both challenges and opportunities for design professionals. Sustainable design and green design have become common terminology in the design field and involve using methods and products that cause the lowest possible impact upon the ability of the natural environment to maintain its natural balance. Interior designers must practice in an environmentally responsible manner, and must advance their knowledge and application of sustainable design in order to advance sustainable practice. One way this can be accomplished is through an understanding of LEED (Leadership in Energy and Environmental Design) and the Green Building Rating System™, which was developed by the U.S. Green Building Council (Figure 1-12). This system encourages and accel-

1: Principle One: Equitable Use

The design is useful and marketable to people with diverse abilities

GUIDELINES

- Provide the same means of use for all users: identical whenever possible; equivalent when not.
- Avoid segregating or stigmatizing any users.
- Provisions for privacy, security, and safety should be equally available to all users.
- Make the design appealing to all users.

2: Principle Two: Flexibility in Use

The design accommodates a wide range of individual preferences and abilities.

GUIDELINES

- Provide choice in methods of use.
- Accommodate right- or left-handed access and use.
- Facilitate the user's accuracy and precision.
- Provide adaptability to the user's pace.

3: Principle Three: simple and intuitive

Use of the design is easy to understand, regardless of the user's experience, knowledge, language skills, or current concentration level.

GUIDELINES

- Eliminate unnecessary complexity.
- Be consistent with user expectations and intuition.
- Accommodate a wide range of literacy and language skills.
- Arrange information consistent with its importance.
- Provide effective prompting and feedback during and after task completion.

4: Principle Four: Perceptible Information

The design communicates necessary information effectively to the user, regardless of ambient conditions or the user's sensory abilities.

GUIDELINES

- Use different modes (pictorial, verbal, tactile) for redundant presentation of essential information.
- Provide adequate contrast between essential information and its surroundings.
- Maximize "legibility" of essential information.
- Differentiate elements in ways that can be described (i.e., make it easy to give instructions or directions).
- Provide compatibility with a variety of techniques or devices used by people with sensory limitations.

5: Principle Five: Tolerance for Error

The design minimizes hazards and the adverse consequences of accidental or unintended actions.

GUIDELINES

- Arrange elements to minimize hazards and errors: most used elements, most accessible; hazardous elements eliminated, isolated, or shielded.
- Provide warnings of hazards and errors.
- Provide fail safe features.
- Discourage unconscious action in tasks that require vigilance.

6: Principle Six: Low Physical Effort

The design can be used efficiently and comfortably and with a minimum of fatigue.

GUIDELINES

- Allow user to maintain a neutral body position.
- Use reasonable operating forces.
- Minimize repetitive actions.
- Minimize sustained physical effort.

7: Principle Seven: Size and Space for Approach and Use

Appropriate size and space is provided for approach, reach, manipulation, and use regardless of user's body size, posture, or mobility.

GUIDELINES

- Provide a clear line of sight to important elements for any seated or standing user.
- Make reach to all components comfortable for any seated or standing user.
- Accommodate variations in hand and grip size.
- Provide adequate space for the use of assistive devices or personal assistance.

FIGURE 1-12 This is the logo for the United States Green Building Council, who developed the LEED rating systems.

erates global adoption of sustainable green building and development practices through the creation and implementation of universally understood and accepted tools and performance criteria. LEED promotes a whole-building approach to sustainability by recognizing performance in five key areas of human and environmental health: sustainable site development, water savings, energy efficiency, materials selection, and indoor environmental quality.

Additionally, LEED has six different rating systems based on the nature of the project. These are LEED-EB (Existing Building), LEED-NC (New Construction), LEED-CI (Commercial Interiors), LEED-CS (Core and Shell), LEED-H (Homes), and LEED-ND (Neighborhood Development). At the time of this writing, rating systems for Schools, Retail, and Healthcare are being developed.

Interior designers, along with architects, real estate professionals, facility managers, engineers, landscape architects, construction managers, lenders, and government officials are encouraged to use LEED to help transform the built environment to sustainability. Federal agencies, as well as state and local governments across the country are adopting LEED for public-owned and public-funded buildings. Sustainable considerations within the built environment begin at the design phase of a project and are carried through in the specifications and construction drawings. It is therefore important that students in interior design learn how to design and apply LEED standards in an environmentally responsible manner. Sustainable issues and LEED standards are incorporated into relevant chapters where appropriate.

Digital Technology and Building Information Modeling

Digital technology continues to evolve at a rapid pace in the production of new software for two- and three-dimensional modeling programs for use by interior designers and others involved in the building industry. While this book is not about any specific software, there must be some discussions of the most widely used programs and their specific details as the majority of designers are using computers in the production of design and construction drawings.

Autodesk's AutoCAD® has been the most widely used CAD program in interior design and architectural firms in the United States for the production of construction drawings. Other popular programs used by the building and design industry include ArchiCAD® (by Graphisoft) and MicroStation (by Bentley). At this point in time, it appears these software programs will not be discarded anytime soon; however, it appears that the architecture and design industry is headed toward a new technology known as Building Information Modeling, or BIM.

Autodesk Revit® Building, a BIM technology, is leading a new CAD industry standard for interior design and architectural practice. BIM is not a specific program, but an integrated approach to design and construction drawings. It is an approach that produces database-driven, 3-D parametric models of proposed projects that address geometry, spatial relationships, sectional perspectives, unit-cost impacts, and detailed documentation with unprecedented speed. Once mastered, the technology facilitates the entire multidisciplinary interactions of a project team. An advantage of BIM is that revisions made in one view or drawings are automatically integrated into related drawings and/or schedules, as illus-

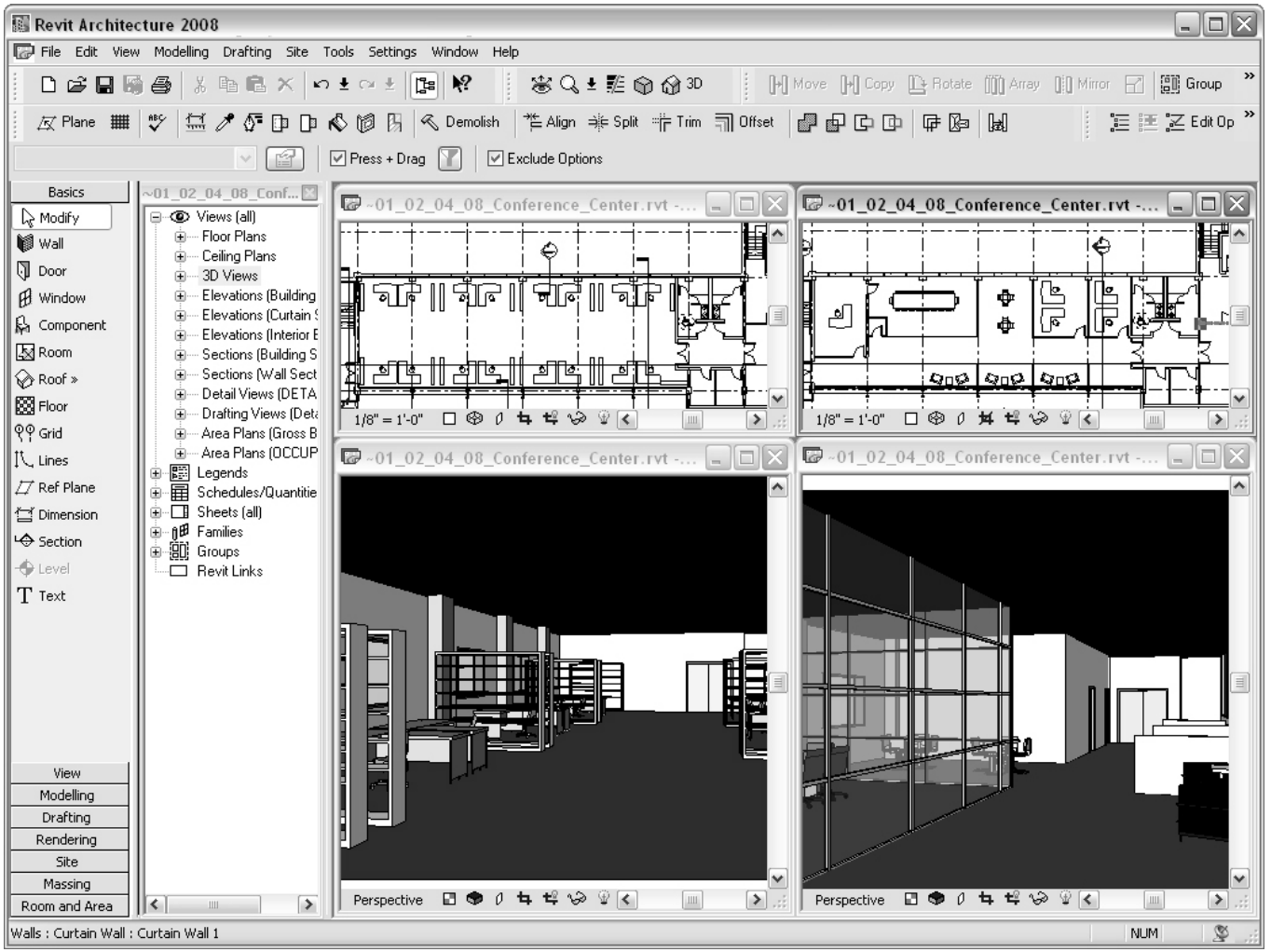


FIGURE 1-13 **Autodesk's Revit software program presents CAD as a building information modeling (BIM) system.**

trated in Figure 1-13. In the AutoCAD platform this would require the changes made to one drawing be "X-referenced" to the other base drawing.

As many large design firms across the country begin to implement BIM technology into their practice, it will be essential to educate design students in this technology.