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 expressed through drawings as a design tool to present the project to the building industry, such as building codes, that protect the health, safety, and welfare of the public. Currently, other issues, such as energy and environmental design, sustainable design, and LEED (Leadership in Energy and Environmental Design), are influencing design communication.

These 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 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.
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. These concept sketches and 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.
CHAPTER 1: Drawing as Communication

Quick freehand sketches such as this floor plan and elevation can be used to bring designer's creative ideas to reality.

**FIGURE 1-3** Analysis charts, concept sketches, and drawings are part of a sequence of design steps known as the design process.
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 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 1-6) to rendered plan views of a building's interior (Figure 1-5). Design drawings can range from pictorial renderings of an idea to rendered plan views of a building's interior. Design drawings can range from pictorial renderings of an idea to rendered plan views of a building's interior. Design drawings can range from pictorial renderings of an idea to rendered plan views of a building's interior. Design drawings can range from pictorial renderings of an idea to rendered plan views of a building's interior. Design drawings can range from pictorial renderings of an idea to rendered plan views of a building's interior. Design drawings can range from pictorial renderings of an idea to rendered plan views of a building's interior.
CHAPTER 1: Drawing as Communication

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

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

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

SECTION OF BASE CABINET

SECTION OF BALCONY

JAMB DETAIL
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 details. Construction drawings make explicit the relationship between the different views of an object and provide a clear and comprehensive set of instructions for the builder.

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 buildings. Universal design must be integrated into the design process. 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.

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 designers. 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 the natural balance. 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.

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 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 must be integrated into the design process. 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.
PART ONE: Drawing Communication, Equipment, Fundamentals, and Classifications Systems

1: Principle One: Equitable Use
- The design is useful and marketable to people with diverse abilities

GUIDELINES

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

I. Provide choice in methods of use.
II. Accommodate right- or left-handed access and use.
III. Facilitate the user's accuracy and precision.
IV. 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

I. Eliminate unnecessary complexity.
II. Be consistent with user expectations and intuition.
III. Accommodate a wide range of literacy and language skills.
IV. Arrange information consistent with its importance.
V. 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

I. Use different modes (pictorial, verbal, tactile) for redundant presentation of essential information.
II. Minimize hazards and errors: most used elements, most accessible; hazardous elements eliminated, isolated, or shielded.
III. Provide warnings of hazards and errors.
IV. Provide fail safe features.
V. Discourage unconscious action in tasks that require vigilance.

5: Principle Five: Tolerance for Error
- The design minimizes hazards and the adverse consequences of accidental or unintended actions.

GUIDELINES

I. Allow user to maintain a neutral body position.
II. Use reasonable operating forces.
III. Minimize repetitive actions.
IV. Minimize sustained physical efforts.
V. Provide accessible means of activating controls or devices used by people with sensory limitations.
VI. Provide descriptive labels and instructions of controls.
VII. Make it easy to determine, from the feel of a control, the name of the control and the position of the control in its range of movement.
VIII. Provide adequate contrast between essential information and its surroundings.
IX. Minimize unnecessary complexity.

6: Principle Six: Low Physical Effort
- The design can be used efficiently and comfortably and with a minimum of fatigue.

GUIDELINES

I. Reduce weight and friction.
II. Minimize sustained physical efforts.
III. Minimize visible fatigue.
IV. Minimize exertion on body.

7: Principle Seven: Size and Space for Approach and Use
- Appropriate size and space is provided for approach and use.

GUIDELINES

I. Allow user to maintain a neutral body position.
II. Make reach to all components comfortable for any seated or standing user.
III. Accommodate variations in hand and grip size.
IV. Provide adequate space for approach and use.

The design can be used efficiently and comfortably and with a minimum of fatigue.
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-O (Operations and Maintenance), and LEED-H (Homes). LEED-ND (Neighborhood Development), LEED-ND (New Construction), LEED-O (Commercial Interiors), LEED-CI (Commercial Interiors), LEED-CS (Core and Shell), LEED-O (Operations and Maintenance), LEED-H (Homes), and LEED-EB (Existing Building) are the names of the projects. These are LEED-ND (Existing Buildings), LEED-ND (New Construction), LEED-O (Commercial Interiors), LEED-CI (Commercial Interiors), LEED-CS (Core and Shell), LEED-O (Operations and Maintenance), LEED-H (Homes), and LEED-EB (Existing Building).

Information Modeling of BIM

Autodesk Revit® Building, a BIM technology, is leading a new wave of BIM in architecture, engineering, and construction. Autodesk Revit® Building is a platform for the production of design and construction drawings. It is an approach that produces database-driven, 3-D parametric models of proposed projects that address geometry, spatial relationships, section perspectives, and other aspects of design. Autodesk Revit® Building is not a specific program but an integrated approach to design and construction. It is a new wave of BIM in architecture, engineering, and construction. Autodesk Revit® Building is leading the way for the future of design and construction.
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.

FIGURE 1-13

Autodesk's Revit software program presents CAD as a building information modeling (BIM) system. The changes made to one drawing be "X-referenced" to the other base drawing needed in Figure 1-13. In the AutoCAD platform, this would require

PART ONE: Drawing Communication, Equipment, Fundamentals, and Classification Systems