Making the “Invisible” World “Visible”

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Abstract

As low vision affects an increasing percentage of the population, the need to accommodate persons with low vision in the constructed environment is critical and must be addressed. As the population ages out and the number of people with low vision increases, it is essential to address the lighting and contrast needs of this population. As we age, less light reaches the retina than in a younger eye due to reduction in pupil size and the yellowing and thickening of the lens. “The result is that a 60-year-old receives only about 40% of the same amount of available light as a 20-year-old. An older person, therefore, may see poorly under dim conditions, and lose both acuity and contrast sensitivity (Sanford).” Buildings with large areas of glass for daylight and views and with extensive artificial lighting result in glare, which is a major source of distraction, discomfort and impediment to vision for many who use these buildings. Lighting levels are often inconsistent and too low for individuals experiencing vision problems. Also, many building interiors favor monochromatic or low-contrast treatments that are difficult for persons with low vision to negotiate. This presentation discusses simple architectural and design changes that can be made to make the “invisible” world “visible” to people experiencing decreased vision and contrast sensitivity and promote safety and independence.

Introduction

The AFB Center on Vision Loss in Dallas was designed as a model of accessibility for people with no or low vision. It deliberately incorporates design features such as color, contrast, texture, lighting, layout, and signage that make navigation of the Center easy and safe for people new to the Center and to vision loss. These features are used throughout the building. The Center also incorporates a model apartment called “Esther’s Place” that includes both design features and products that enhance independent living for people with vision loss.

Use of Contrast in Color and Textures and Consistent Layout

The flooring is designed to give a roadmap to the visitor. The foyer is dark slate tile. The hallways are carpeted and entrances to rooms are indicated with a light wood so that visitors have visual and textural cues.
“Architects are taught to organize buildings but this is a higher level of organization... We need to make the information available to more architects....” James Lanning, architect, Dallas, TX

Contrasting Doorframes

The theme of contrast is carried out throughout the building. For example, all doorframes are painted in a dark brown and contrast to the light colored walls and light colored doors.

Contrasting Light Switches

Light switch plates are black against the light colored walls with light colored switches and vice-versa. These features make it easy for visitors to find doorways and to control lighting.

Contrasting Steps and Handrails

A set of steps in Esther’s Place showcases how steps can be made safer with contrast on the edge of the steps and handrails that contrast in color to the walls.

Contrasts in Bath and Kitchen Areas

The utilization of color contrast in the bath and kitchen areas also promote safety and ease of use. All white bathrooms produce glare and make it difficult to navigate. The use of colored toilet sets and railings as well as non-reflective, contrasting flooring can help to eliminate hazards and assist with visibility. The same is true in kitchen areas with the use of contrasting cabinetry and
pulls and flooring including the use of different textures.

**Lighting and Glare**

Trying to reduce the carbon footprint of buildings has led to reductions in lighting that can affect people with low vision of all ages. LED lighting is cool and long-lasting and not easily breakable. LED lighting has advanced a great deal and can now be used in a variety of settings but, for people with low vision, LEDs work best when the source is close to the surface one is trying to illuminate. Other features to consider are the width of the light beam and the kelvin rating. (Gerritsen, 2012)

Lighting is dependent on the contrast and the size of the target. For instance, visual tasks with high contrast and large size may only need 30 foot candles. With high contrast and a small size, may require 50 foot candles; low contrast and small size, 100 foot candles; extremely low contrast and a small size, up to 302,000 foot candles. (Gerritsen, 2012).

Use of reflective lighting in corridors and baths can reduce glare but ensure even lighting. Also control of glare from windows and reflective flooring in corridors is very important. Task lighting in the form of strategically placed adjustable flood lamps and desk lamps can help with the individual needs of individuals. Use of adjustable window treatments in individual work spaces is important to allow the person affected to control the amount and source of light.

**Review of Design Concepts That Enhance “Visibility” and Wayfinding**

- Increase “visibility” using with high contrast in environmental design
- Provide sufficient ambient lighting, task lighting and glare control
- Use logical, consistent layouts in building design
- Employ different tactile surfaces for flooring
- Consistently place signage in large print braille, and audible formats

**References Heading**


Lanning, James, Architect, Dallas, TX, personal statement, 2007.
