



Workshop on Improving Building Design for Persons with Low Vision

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Executive Summary:

In the United States of America there is a growing population of citizens with “low vision” and a growing need for inclusive design that will create a safer and more comfortable experience for all citizens within the built environment. “Low vision” is defined as “chronic visual impairments that cause functional limitations or disability.” The National Eye Institute (NEI) of the National Institutes of Health (NIH) estimates that, currently, more than 38 million Americans age 40 and older experience blindness, low vision, and eye diseases such as macular degeneration, cone rod dystrophy, glaucoma, diabetic retinopathy, and cataracts. This number is expected to grow to more than 50 million by year 2020. The question is how does this population negotiate the built environment and what kinds of codes, standards, and guidelines exist for designers of new construction and renovations. Although a great deal of consideration regarding codes, standards, and guidelines has been given for the blind, very little design guidance is available that provides for the requirements of the partially sighted.

On 29-30 September 2010, the National Institute of Building Sciences and the U.S. General Services Administration conducted a workshop in Washington, D.C. with participants from the fields of medicine (specialists in ophthalmology and low vision), architecture, engineering, interior design, lighting design, professional associations, government, academia, advocacy, research and development with the following objectives:

1. Identify existing guidance for design and obtain expert recommendations for new guidance for the following.
 - i. Psycho-physiological definition of eye conditions that impact a person’s ability to navigate, interpret and use the built environment.
 - ii. Mitigation of changes in lighting levels such as between the outdoors and the interior, from one level of interior illumination to another, and within spaces between one surface and another.

- iii. Mitigation of glare from daylight through windows and other openings, from artificial lighting fixtures, surface reflections, etc.
 - iv. Mitigation of visual confusion due to poor contrasts of color and value in surfaces and forms, including wall finishes, work surfaces, furnishings, etc.
 - v. Improvement in building spatial organization, cues, and signage to assist in way-finding by persons with low vision.
 - vi. Enhancement of safety and ease of use by persons with low vision in areas such as toilet rooms, offices, doorways, corridors, stairs, elevators and escalators.
 - vii. Enhancement of occupant performance and productivity in work spaces where reading accuracy (e.g., visual acuity) is important.
2. Identify research that would be useful in developing and advancing this guidance.

While federal laws and regulations regarding accessibility have been in place for 40 years, for the first time this interdisciplinary workshop focused on developing guidelines in building design that will greatly improve the work environment for persons with low vision. From the results of the workshop, it was intended that a plan of action would be proposed to develop draft guidance for GSA to consider for inclusion in its publication, *Facilities Standards for the Public Buildings Service*, and for the U.S. Access Board to consider for inclusion in the *ADA/ABA Accessibility Guidelines*.

The workshop began with introductory presentations with opening remarks from the GSA and NIBS, the U.S. Access Board, and the National Eye Institute, followed by a Synopsis of the Objectives of the Workshop, and a keynote address on the state of science and medical research for persons with low-vision. A series of expert panels followed which included presentations and discussions on patient care, design, research, and case studies. The panels focused on:

1. *Requirements and Accommodations for Persons with Low Vision*
2. *Existing Standards and Design Guidance*
3. *Impacts on Vision – Glare, Contrast, Color*
4. *Natural Lighting*
5. *Artificial Lighting*
6. *Interior Design*
7. *Next Steps and Guidelines*

Each day was concluded with a summary discussion.

Based on the results of the interdisciplinary participation in the workshop, several learning outcomes were expressed:

- Clinicians need a better understanding of lighting and accessibility exposures that “Low Vision” patients experience while in “designed environments.”
- Designers need a better understanding of the lighting and accessibility needs of “Low Vision” persons while in “designed environments.”

- A common vocabulary is needed for clinicians, design practitioners (e.g., architects, interior designers, engineers) and policy makers.
- There is a need to balance federal mandates for reduced energy consumption against the needs of all building occupants including people with low vision to have adequate illumination.

A proposed first task is to draft a document titled “*Design Guidance for Persons with Low Vision.*” This guideline would be based on available information (i.e., not dependent on future research) from clinicians and the design community.

- The purpose of the document would be to integrate the special lighting and accessibility requirements of persons with “low vision” (a defined clinical term) into current design practices.
- The major topics were identified in the workshop that should be the focus of this document: *lighting, glare, color/texture*, and accessibility through *way-finding*.
- The guideline should be directed primarily to the design practitioner but with focus also on the clinician, and written in a common vocabulary. It should address both buildings and sites.
- The guidance could be a stand-alone document that might inform changes to the GSA’s *Facilities Standards for the Public Buildings Service (P-100)*, the Access Board’s Americans with Disabilities Act (ADA) and Architectural Barriers Act (ABA) Accessibility Guidelines, and model building codes used by most state and local governments.
- Another task is to begin development of a research proposal that would address basic scientific gaps, including:
 - A quantitative measure of glare within the eye.
 - A relationship between the measures of glare within the eye and within the built environment.
 - A scientific foundation for improvements in guidance for patient care and for environmental design.

“The issue of accessibility is huge in federal buildings and GSA is committed to making federal facilities fully accessible to all people,” GSA Deputy Administrator Susan Brita said during her opening remarks. “Achieving accessibility is reflected in our commitment to make sure that new buildings and those being retrofitted are designed with accessibility built-in, not added on. GSA is very aware of the needs of the disabled community, and fully committed to making sure that employees and visitors with disabilities are integrated in the workplace.” The participants set forth intent to continue collaboration on developing a structured way forward to better understand the needed accommodation, make editorial improvements to current guidelines, and to establish future guidelines, standards, or codes that assist in creating built environments that are more inclusive for people in our society.