Low Vision Design Standards
Awareness and Acceptance: Creating a Process

Low Vision Design Committee of the National Institute of Building Sciences

Henry Green, Hon. AIA
President
National Institute of Building Sciences

Vijay Gupta
Chief Mechanical Engineer (retired)
US General Services Administration
Opening Remarks

Why we are here and need world-wide support

Lions District Governor, District 24A
Lion Jay Moughon

Springfield-Franconia Host Lions Club
My Journey

Vijay Gupta, PE
Chief Mechanical Engineer, (Retired) U.S. General Services Administration

What is Retinitis Pigmentosa?
A brief overview of my condition
A brief overview of GSA

United States federal landlord for civilian agencies. GSA owns and operates 600 million square feet of space nationwide. This includes federal courthouses, federal buildings, US border stations, and other related buildings.
One of the programs Mr. Gupta was responsible for Post Occupancy Evaluations. He was familiar with The Americans with Disabilities Act (ADA) and other Federal Standards, which don’t address Low vision. He saw issues with numerous designs --some good and some poor.
Met with NIBS Project Manager and Architects and US Access Board Director in 2009

Conclusion: We needed more experts to discuss the issues, so we planned a workshop for September 2010.
Formation of the Workshop

Experts included:

- NIBS President and Executive Vice President
- Doctors from National Institutes of Health, Johns Hopkins, Mayo Clinic.
- Deputy Administrator of GSA
- U.S. Access Board director
- Several architects and engineers
- Lighting engineers and designers
- American Foundation of the Blind reps
- Building owners and managers
Executive Summary

Workshop on Improving Building Design for Persons with Low Vision

Thomas Jefferson Memorial
Washington, D.C.

September 20 - 30, 2010

www.nibs.org
Recommendations from the Workshop

• Need more research
• Need to convene a Low Vision Committee
Introducing the National Institute of Building Sciences and its Low Vision Design Committee

Henry L. Green, Hon. AIA
President, National Institute of Building Sciences and LVDC member
The Institute’s Mission

“. . . to serve the nation and the public interest by supporting advances in building sciences and technology to improve the built environment.”
The Institute’s Leadership Role

• Forum for Everyone: the Entire Building Community

• Consensus Process Recognized by Industry

• Providing “Tools” for the Building Industry
Low Vision Design Committee

The Institute’s Low Vision Design Committee (LVDC) is a multidisciplinary, team of volunteers established by NIBS in November 2011 to:

• Address the needs of all occupants of the built environment, including those with low vision, through improvements in designs and operational procedures for new and existing facilities to enhance the function, safety, and quality of life.

• Identify existing knowledge and needs for further research to accomplish these objectives.”
The LVDC Guideline Project

Low Vision Design Committee

Guideline Project:

Three Easy Steps:
Task 1: Guideline
Task 2: Standard
Task 3: Code Adoption
What do we mean by “Low Vision?”

Vision that can’t be…

• Corrected to 20/70 or better
• Improved with standard glasses or contact lenses
• Corrected with surgery or medicines
Population with Vision Impairment is Growing

From the World Health Organization:

- US visually impaired population is at 19 million.
- Worldwide, it is 285 million, among the countries that actually report data.
- As the population ages, this number will increase substantially.
What Goes Wrong with Vision?

Any part of the eye can be affected

- Glaucoma (light can’t reach the retina)
- Macular degeneration
- Degeneration of the retina (causing “tunnel vision”)
- Retinitis pigmentosa
- Optic nerve problems
- Also, brain (visual cortex) damage
Lessons Learned
Lighting is Key: Basic Concepts

- Minimize Glare
- Light surfaces
- Layers of light
- Controls, controls and more controls
Be Mindful of Glare

...Glaring concern

...Glare minimized
Consider Higher Lighting Levels in Circulation Spaces

Unknown building hallway

Lewis and Clark State Office Building – BNIM Architects
Control Daylight

Arapahoe County Building, Colorado
Good and Balanced Lighting

University of Illinois, Business Instructional Facility – Pelli Clark Pelli architect
Define Curbs, Ramps, and Steps

Contrast needed at ramps and curbs to alert for trip hazards

Avoid tapered steps or add a handrail at the location
Intensity of Sunlight Reflects Off Light-Colored Walking Surfaces

Value comparison of old and new concrete

Walking surfaces should be medium to dark in value
Avoid Reflective and Transparent Vertical Surfaces

Vertical mirrors at an entry way create optical illusions, and possibly lead to accidents.

Transparent panels lack definition, create hazards.
Eyes of Those with Low Vision Adapt More Slowly to Contrast

Bright daylight outside

Very dim entry vestibule with glass doors lacking definition
Avoid Patterns on Stairs; Make Lighting Consistent on Treads

Stairway looking down:
  Pattern is distracting

Stairway Looking Up:
  Light Placement Is Inconsistent
Increase Signage Contrast

- Contrast between letters and ground
- Contrast between sign and wall
Consider Wayfinding

Use high contrast features and accent lighting to highlight destinations
Key Learnings from the Process

• Designers must understand what creates low vision and the physical, physiological & psychological results

• Different forms of low vision may respond best to different design solutions

• Low vision design needs to be integrated into the overall design process (interior & exterior)
Key Learnings from the Process (Continued)

• Supportive environments consider lighting, architectural elements, finishes, & signage
• Federal guidelines and standards, such as ADA, as they currently exist, do not adequately accommodate people with low vision
Moving Forward

• Approach national standards writing organizations about developing a low-vision standard.

• Seek funding and commitments to further develop the design guideline.

• Continue outreach efforts to the American Institute of Architects and the Environments for Aging conferences.
How the Lions Can Help:

• Disseminate information worldwide to building owners, managers, and designers

• Provide support for research and advocate the cause of making the built environment accessible.
Visit our website

www.nibs.org

Henry L. Green, Hon. AIA
President
National Institute of Building Sciences
1090 Vermont Ave., NW • Suite 700
Washington, DC 20005, USA
202-289-7800
hgreen@nibs.org

Thanks!