The NIBS Low Vision Design Committee

Presented at:
NIBS Symposium:
Creating Supportive Environments for Persons with Low Vision

By
James E. Woods, Ph.D., P.E.
Chair, NIBS Committee on Low Vision Design

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“We don’t see with our eyes, we see with our brains.”

“Light from direct sources and from surface reflections comes into the eye and impacts the retina.”

“The signal then goes from the retina to the brain, and the brain translates it into what we know as vision.”

Quoted from Robert Massof, page 55 of the NIBS 2010 Workshop Proceedings.
What is Low Vision?

Generally, *Low Vision* means:

*Chronic visual impairments that cause functional limitations or disability*

In this definition:

- **Chronic** means that low vision cannot be corrected with medical or surgical interventions or refractive error corrections.
- **Visual Impairment** means loss of visual acuity, loss of contrast sensitivity, loss of peripheral vision, or the occurrence of central blind spots.
- **Functional Limitations** means increased difficulty with reading, mobility, visual motor activities, or interpreting visual information.
- **Disability** means unable to perform usual or customary daily activities.

From 2010 NIBS Workshop Keynote address by Robert Massof, Ph.D., Director of Lions Vision Research and Rehabilitation Center, Johns Hopkins University School of Medicine.
What is Low Vision?

- Technically, low vision is defined in terms of **loss of visual acuity**.
- But in clinical practice low vision also includes disabling visual impairments such as **loss of visual field** or **loss of contrast sensitivity**.
- The technical definitions of loss of visual acuity quantitatively distinguish between **legal blindness** and **low vision**.
Who is Affected?

• About 89 million people in the US, over the age of 40 (63%), have vision problems (NEI/NIH).
  – About 17 million have chronic visual impairments (low vision, blindness, macular diseases, retinal diseases, glaucoma).
  – About 4.5 million have low vision, as technically defined (Visual Acuity ≥ 20/70) (Massof).
    • Approximately 1/3 are legally blind (NEI/NIH)
  – Chronic visual impairments are primarily age-related or disease-related.
  – Most people have not received skills-training such as orientation to the environment, trailing or self-protective techniques, or Braille (American Foundation for the Blind).
Background: Issues

• The Architectural Barriers Act of 1968 (ABA) and the Americans with Disabilities Act of 1990 (ADA) require accommodations for legally blind persons but not for persons with low vision or other chronic visual impairments.
Background: Issues

• Current building codes, standards, and regulations do not address accommodations for persons with low vision or other chronic visual impairments.

• Reductions in building energy use are being mandated, which can compromise health and safety of occupants with visual impairments.
**LVDC Timeline**

<table>
<thead>
<tr>
<th>Period</th>
<th>Action</th>
<th>Support</th>
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<tbody>
<tr>
<td>2009</td>
<td>GSA requested NIBS to initiate work on low vision issues</td>
<td>GSA</td>
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<td>2010</td>
<td>NIBS conducted Workshop: <em>Improving Building Design for Persons with Low Vision</em></td>
<td>GSA</td>
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<td>2011</td>
<td>NIBS developed Concept Paper: <em>Environmental Design and Operations for Persons with Low Vision</em></td>
<td>GSA</td>
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<td>2011</td>
<td>NIBS established the <em>Low Vision Design Committee (LDVC)</em></td>
<td>Hulda B. and Maurice L. Rothschild Foundation</td>
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<td>2013</td>
<td>NIBS Symposium: <em>Creating Supportive Environments for Persons with Low Vision</em></td>
<td>Hulda B. and Maurice L. Rothschild Foundation</td>
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Premise for Workshop

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<th>GSA Design Objectives</th>
<th>HVAC Excellence Design Reviews</th>
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<td>“Provide dramatic improvement in the design, preservation and construction of federal buildings” (P100-2010)</td>
<td>Substantial increases in daylighting and corresponding thermal loads</td>
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<tr>
<td>Reduce energy consumption in federal buildings (EISA-2007)</td>
<td>Lowered allowable electrical power requirements (LPD) and corresponding illumination.</td>
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<td>Conduct Post Occupancy Evaluations to verify design objectives</td>
<td>Less than expected occupant satisfaction regarding: thermal, IAQ, acoustic, lighting, and accessibility conditions.</td>
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<td>Personal and professional experiences of Gupta and POE team members.</td>
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Learning Outcomes from Workshop

1. **Clinicians** need better understanding of **exposures** to “low vision” *patients* in “built environments.”

2. **Designers** need better understanding of **needs** of “low vision” *persons* in “built environments.”

3. A common vocabulary is needed.

4. Balance is needed between reduced energy mandates and adequate illumination.
Established by NIBS in November 2011, the Mission of the Low Vision Design Committee is 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.
Activities of LVDC

- Currently 20 members: designers, clinicians, researchers, educators
- Third meeting 10 Jan 13, 1-5 PM
- Three Subcommittees:
  - Codes, Standards, and Guidelines
  - Research and Development
  - Outreach and Education
Activities of Subcommittees

Codes, Standards And Guidelines

• Coordination with US Access Board
• Participation in revisions to three documents:
  – ANSI/ASHRAE/IES 90.1-(2014)
• Draft of “NIBS Design Guideline for Health and Safety in the Visual Environment”
Activities of Subcommittees

Research and Development

• Proposal submitted to NEI/NIH, based on Workshop: “Computational Model of the Perception of Environments by People with Low Vision”
  – Now being reviewed and revised for subsequent submittals
• Compiling evidence-based data
• Proposals submitted to two potential sponsors of the NIBS Guideline
Activities of Subcommittees

Outreach and Education

• Members have participated and presented at:
  – Four seminars and symposia
  – Three Invited presentations

• One Manuscript has been drafted and being edited for submittal to professional journal

• Sponsorship of this Symposium: *Creating Supportive Environments for Persons with Low Vision*:
  – Purpose: Acquire information from four perspectives:
    ▪ Architecture and Design
    ▪ Medical
    ▪ Resource Utilization
    ▪ Owner’s Requirements
  – Evidence for use in future LVDC activities
Conclusions

1. Nearly 20% of the people in the US over the age of 40 have chronic visual impairments.
2. Current codes and standards do not address accommodations for the visually impaired, except for those who are legally blind.
3. Interdisciplinary efforts are needed to develop criteria and standard methodologies for verifying building performance that involves the visual environment.
4. Improved control for health and safety in the visual environment will benefit all occupants and enhance environmental and economic sustainability.