Low Vision Design Standards
Awareness and Acceptance:
Creating a Process

Low Vision Design Committee of the National Institute of Building Sciences • January 13, 2016

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Low Vision Design Committee

1. Who are we and what are we doing?
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.”
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Three Easy Steps:
Task 1: Guideline
Task 2: Standard
Task 3: Code Adoption
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**Process:**
1. Guideline Development: 6 versions, 2 public reviews. Published May 9, 2015

*2. Standards Development: In discussions with ICC. Will form an advisory subset of LVDC (* we are here)*

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)
- Supportive environments consider lighting, architectural elements, finishes, & signage
- Federal guidelines, as they currently exist, do not adequately accommodate people with low vision

“Design Guidelines for the Visual Environment”
http://www.nibs.org/?page=lvdc
2. About Low Vision
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2. 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
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All Vision Impaired

Source: National Eye Institute
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What goes wrong with vision?

• Media Opacities
• Macular dystrophies and degenerations
• Peripheral retinal degenerations
• Optic nerve anomalies
• Visual cortex (brain) damage
Normal Vision

Diabetic Retinopathy
Age-Related Macular Degeneration
3. Architectural Lessons Learned
Lighting is Key: Basic Concepts

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

Tah Mah Lau Residence – HKS Architect
...Glaring concern

...Glare minimized
Unknown building hallway

Lewis and Clark State Office Building – BNIM Architects
Controlling Daylight

Arapahoe County Building, Colorado
Good and balanced lighting: University of Illinois, Business Instructional Facility – Pelli Clark Pelli architect
Define curbs, ramps & 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 walking surfaces w/ light values

Value comparison of old and new concrete

Walking surfaces should be medium to dark in value
Avoid Reflective & 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.
Inadequate Emergency Egress Lighting: NFPA Standard

- Inadequate for those with low vision
- Same for corridors and stairs (stairs are more hazardous)
- Current Regulations:
  -- Initial average of one footcandle, not less than one-tenth of a footcandle
  -- Minimum to maximum ratio not to exceed 40 to 1
Avoid patterns on stairs; make lighting consistent on each tread

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
Wayfinding

Use high contrast features and accent lighting to highlight destinations.
4. Onward!
Seven Major Points of the Guidelines:

1. **Need**: The ADA and ABA are not adequate to serve the needs of the growing population with low vision.

2. **More than lighting**: Emphasize the importance of other architectural elements.

3. **Site**: The site and transition from outside are as important as the interior design.

4. **Lighting design method**: The illuminance method is standard practice for today; the luminance method will be the design method of the future.
5. Different forms of low vision: Reconciling the different needs of various forms of low vision for an optimal solution.

6. Seniors: The senior population is disproportionately affected by low vision
   - Other causes of low vision including traumatic head injury

7. Design integration: Integrating low vision design into the overall design process is the goal
   - Thermal and energy implications are not included
   - The purpose is to concentrate on design for people with low vision
   - Design that does not support its occupants is inherently wasteful
Next steps:

- Approach national standards writing organizations about developing a **low-vision standard**.
- Seek placement for the LVDC committee on the **A117.1** development committee.
- Seek funding and commitments to further develop the **design guideline with graphics**.
Finally, thank you!

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