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GUIDELINES FOR UNIVERSAL DESIGN OF EXHIBITS

by Hal Aber

Introduction

As the National Museum, and with the Secretary's emphasis on increasing visitor attendance and user-friendly exhibits, designers must remember that we share a large responsibility for making exhibits fully accessible and memorable. Visitor perceptions are very critical and a lack of seating, poor lighting, sensory overload, illegible labels, confusing circulation paths and many other non-content related issues can contribute substantially to creating a negative experience. Our responsibility includes being the leading advocate for a universal approach to exhibit

programming and design so that our product, the exhibit, can reach a very diverse audience. Our audience varies greatly in age, gender, social and educational backgrounds, physical and intellectual learning capabilities. When we are in the early stages of conceptual development, we must be sure that there is something for everyone in our exhibits. As designers, we should imagine ourselves as representatives and members of each diverse group. We can mentally walk through the exhibit and continually consult with other experts and community representatives as a way of testing the design for diverse audiences.

This document is meant to challenge your thinking as you pursue a universal approach to design. The enclosures and reference material will provide you with additional stimulation and the technical knowledge for creating appropriate exhibit designs. Please refer to the "SI Guidelines for Accessible Exhibition Design" (AED) which was issued to you several years ago. If you need additional copies, please request this from Kay. I've provided several bulleted points in each of the categories that I think are critical and cannot be overlooked.

Visual Experiences

Visual design applications exist on the macro and micro level. The visitors' first impression is a macro

experience in which the visual ambience creates psychological responses; is this a safe space, will I be overwhelmed, can I get out if I need to, where am I, etc. The use of color and materials plays a major role in creating perceptions of safety and historical interpretation via non-verbal communication. Large and impressive artifacts, environmental graphics or historical recreations can communicate a wealth of information without requiring the visitor to read a lot of text.

On a micro level, text panels and labels require a great deal of design effort to ensure legibility and easy reading. Type face, color, contrast, lighting and shadows play prominent roles in creating easily read text. See "Accessible Publication Guidelines" (APD) and AED publications, lighthouse web site, www.lighthouse.org and \color_contrast.htm.

Gallery Colors (floors, walls, furniture) must create an environment that is clearly articulated, comfortable and safe

- Choose colors so that floors are visually separated from the walls and furniture
- Select light gallery colors if object conservation requires low light levels
- Design well-lighted spaces

with limited imagery and few objects in several places within an exhibition to provide a respite from busy surroundings and to allow people that use sign language to sort out sign movements from the visual background.
- Avoid highly-patterned carpets and floor tiles on uneven surfaces and in low-lit areas
- Select background colors that contrast with objects and graphic reproductions. A 70% contrast between background and foreground is recommended.

Lighting: The safety of visitors and their ability to read and perceive objects must be given equal importance to the lighting requirements required for conservation needs.

- Light and color must be combined to make gradual transitions between exhibit areas or galleries
- Provide sufficient light on circulation paths with a minimum of 10-foot candles
- Avoid creating pools of light and shadow which cause a false sense of depth
- Provide sufficient light levels on all objects to make them visible to all visitors unless the light level will do substantial damage to the objects

- Labels must have sufficient light on them to be read and should not create glare
- Avoid shadows on label text or objects

Label Design and Text: Main exhibition copy must be legible for all visitors. Information must be available within the exhibition in alternative forms (e.g., Braille, audio) for people who cannot read print.

- Use typefaces that are legible. Type fonts must have obvious ascenders and descenders. Avoid typefaces with large x heights, a wide variation in stroke width, condensed fonts or light fonts. Avoid bold fonts.
- Do not set text in all caps. Type set in caps is more difficult to read than C/LC. Limit all caps to titles. Use all caps very sparingly.
- Avoid script and italic type for essential information
- Select type size appropriate for viewing distance

24 pts.	less than 3" avg.
48 pts.	less than 39" avg.
100 pts.	less than 78" avg.
148 pts.	less than 118" avg.

- Line leading should be at least 20% greater than the font size wall
- Use constant letter spacing

and word spacing
- Justify text on the left margin and keep a ragged right margin
- Provide at least a 70% contrast between text and background. Print only on a solid background. Do not print on a visually-textured background.
- Locate labels in a consistent location throughout the exhibit
- Avoid shadows on labels. Ensure that visitors can read labels without interruptions from case seams
- Define labels with color or a raised surface
- Exhibit elements (objects, graphics, reproductions) must be visually accessible to all visitors.
- Design simple backdrops that do not conflict with the display of an exhibit element
- Place small items in front of cases. Do not allow labels in cases to lie flat on case deck. Angle labels at 45 degrees.
- Provide 10 foot candles on exhibit elements unless restricted due to conservation issues

PHYSICAL ENVIRONMENT

The design of the physical environment creates an ambience through the size and distribution of cases, availability of public seating, size of pathways and lighting design. The design of the physical environment can provide

intuitive wayfinding and create a greater sense of place and comfort.

The availability of public seating can enhance the visitors' experience substantially. We must provide adequate seating in all new exhibits. An approximate calculation is to have six linear feet of seating for every 1200 square feet of exhibit area. This roughly calculates to (3) 6-foot benches for a 3500 sq. ft. exhibit (Taylor Gallery). Seating must have backs and arm rests. Seating for video interactives or small theatres is not part of the general seating requirements. Reference AED, p. 55-59.

Circulation Routes within an exhibition must be accessible according to the SI Guidelines for Accessible Design for Facilities and Sites.

- Pathways must be 915 mm (36") wide for one-way traffic. A minimum of 1525 mm (60") is required for two-way routes. It is recommended that even one-way traffic routes be a minimum of 1525 mm (60") to allow wheelchair users to stop and look at cases without blocking the route.
- A wheelchair user's clear floor space is 760 mm (30") by 1220 mm (48"). Plan to allow a chair user to either move

parallel to the core or to move perpendicularly up to a case and then be able to back away from it easily.

- A chair user needs a 1525 mm (60") minimum turning radius
- Where the circulation route branches off to allow visitors to view cases, the end of the branch should provide a 1525 mm (60") diameter circle turning space or a 915 mm (36") T-shaped turning space. People in wheelchairs should not have to back out of spaces more than 915 mm (36") deep space.
- Objects on the floor that rise less than 305 mm (12") are tripping hazards. The problem worsens if the object's color does not contrast with the floor or if the lighting is poor.
- Exhibit barriers (e.g., railings) must be a maximum height of 915 mm (36").
- The slope of a circulation path cannot be more than 5%. If it exceeds, then it becomes a ramp and must meet the ramp requirements.
- Carpets must not exceed 13 mm (1/2") in thickness
- Provide non-verbal wayfinding assistance along the circulation route. Color coding, changes and surface texture assist people with disabilities in finding their way through complex environments.

- Color contrast of 70% between carpet path and edge is an effective way to define paths for people with low vision or cognitive disabilities.
- Provide an accessible floor plan to aid visitors in wayfinding
- Provide both visual and audio fire alarm system
- Provide more than one exit from an exhibition
- Design exhibit exists to either lead back to the accessible entry or to lead directly to an accessible exit.

Cases - all cases must provide viewing access to people who are short or seated, as well as to tall or standing people

- Design cases so they are as shallow as possible and, therefore, will enable visitors to view objects up close
- Design wall-mounted cases so that their lower edges are at 685 mm (27") above the floor. This allows for cane detectability.
- Design large wall cases so that they are distinguishable from wall openings. Floor to ceiling cases can be mistaken as wall openings for persons of low vision.
- Table cases must have a clearance of 685 mm (27") above the floor to provide both cane detection and knee

space for wheelchair users.

Public Seating - Seating must be provided in each exhibition. 50% of the seats must be accessible. Single gallery exhibitions must have seating nearby in a corridor or an adjacent gallery.

- Seating must be firm and between 430 mm (17") and 510 mm (19") above the floor
- Chairs or benches must have both arm and back support
- Seat backs must be firm and have an upper edge no less than 455 mm (18") above the seat
- Seating is best located where it will not be a tripping hazard. Seating must be clearly visible due to color contrast and good lighting.
- Seating needs include providing space for wheelchair companions. Therefore, seating must have extra space at the ends to meet this need.

TACTILE EXPERIENCES Visitors learn in many different ways. Tactile experiences are critical means of communicating ideas and providing memorable experiences. These experiences are especially important to low vision and blind visitors. We can create special tactile tours for low vision and blind visitors. The use of props or reproductions that can be touched should be considered. Reference AED p. 31-40.

Braille documents need to be created that contain the major text information and shapes of key artifacts. Discussions with Jan Majewski will reveal the variety of opportunities available for Braille communication.

Interactives: Although computer interactives are not really considered tactile experiences, they do engage the visitor in a more active manner than reading labels and look at artifacts or graphics. Tactile mechanical interactives need to be present in all major exhibits.

- Interactives instructions must be accessible to all visitors. They must be in a short step-by-step format. Instructions are more effective when an action follows a step rather that list a series of steps before a simple action is performed.
- Add illustrations to instructions to support verbal directions
- Present all instructions in audio and printed format
- Controls for the operation of interactives must be accessible by all visitors. This includes wheelchair users as well as short or tall visitors.
- Lower the reach height for controls that must be located over obstacles. The forward reach height over a table top of between 510 mm to 635

mm (20" to 25") is a maximum of 1120 mm (44") above the floor.
- Eliminate glare on instructional surfaces
- Provide tactile characters and Braille on or directly below the controls
- Prevent sound from overlapping between interactive areas
- Use of interactives must be from a location accessible to people using wheelchairs or other assistive devices (e.g., canes, crutches)
- Provide sufficient space around interactives so everyone can use it and so that family members and onlookers can observe the activity

AUDIO EXPERIENCES

Audio tracks can be both an enhancement or a detraction for visitors. People with attention deficits may find the competition between audio programs and the other exhibitry to be too distracting. Applications could include factory sounds or anything that adds to the historical interpretation. All content-based audio programs must have easily readable text-electronic or print-nearby.

Audio cassettes could make an exhibit experience accessible for many others. Major text information can be read into cassettes and made available at

the VIARC Desk or Education Office.

Captioning - Music with lyrics and speeches must be either open or closed captioned. An audio presentation not produced by the Smithsonian but shown in an exhibition for more than three months must be either closed or opened captioned. Such a program must have a verbatim script. Sound tracks for ambient sounds must be identified whether captioned or a script is used. Sounds may also be identified in label text.

- Provide all audio narration in a print format
- Open captioning translates the audio portion into visible subtitles
- Closed captioning requires a decoding capability for display and can be turned on or off by the user
- Volume controls and/or hand-held receivers must be provided for visitors

To SI Accessibility Home