

Accessibility Auditing: Four Case Studies

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Abstract

The accessibility audit is a largely underutilized tool of disabled community engagement in the design process. This essay shares four case studies of accessibility audits facilitated between 2021 and 2024 for four separate groups of landscape architects, designers, and students. Its methodology is centered in disability justice and crip theory. In the attempt to illustrate how to conduct an accessibility audit by including direct participation of disabled stakeholders and disabled designers and experts, the goal is to assist the landscape architecture and urban design professions in deviating from the usage of sensitivity studies (or disability simulations), which are inappropriate, misguided, and outdated attempts at measuring site accessibility. In this way, designers and students might learn to prioritize disabled lived experience in the design process.

Keywords

disability; accessibility; practice; pedagogy; methodology; audit; landscape architecture; urban design; inclusion

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Introduction

In “The Insensitivity of Sensitivity Studies,” I critiqued the use of sensitivity studies (also known as disability simulations) in making design decisions (Vaughn, 2021b). Although the goal of sensitivity studies is to build empathy and understanding of lived experience, presumably for the disabled community’s benefit, they are often carried out by non-disabled people who create “mock” situations and, as a result, rely on assumptions about disabled experiences, without ever consulting disabled people (Vaughn, 2021b; Hamraie, 2017)² For example, a non-disabled person seats themselves in a wheelchair and rolls around a site to simulate physical disability, blindfolds themselves and uses a white cane to simulate blindness, or wears earplugs to simulate deafness (Vaughn, 2021b). These attempts to come to a full understanding of a disability are still centered and embedded in the non-disabled body and their impressions of disability. These assumptions are then used to make accessible design choices that often inappropriately address the needs of disabled people.

Practicing as a Deaf landscape designer and holding a fellowship with the Landscape Architecture Foundation (LAF) during the height of the COVID-19 pandemic, I observed that the disabled community was left out of many conversations on the design of and access to outdoor spaces such as parks, outdoor dining, and meetings with colleagues, family, or friends. Using my fellowship in response to pronounced inaccessibility and exclusion experienced by the disabled community, I created a set of online toolkits for landscape architects, designers, and urban planners to aid them in practicing a more accessible and inclusive design process, as well as to design more accessible and inclusive public spaces (Vaughn, 2021a).

Through a disabled human-centered design³ process, disabled stakeholders and experts should be included throughout, and designers and planners should consider an underutilized practice in their process as an alternative to simulations: the accessibility audit. Accessibility audits—unlike simulations—bring disabled people directly into the design process, by allowing them to visit a built site and provide their genuine lived experience and feedback on a design (pre-, during, or post-construction). Since publishing my toolkits, I have worked to test different

² A note on language: in this essay, I use identity-first language to describe disabled people (e.g., physically disabled person, Deaf person, Blind person, neurodivergent person) and the term “non-disabled person” to describe people who do not have or identify with disabilities.

³ IDEO defines human-centered design as “a creative approach to problem-solving” and “a process that starts with the people you’re designing with and ends with new solutions that are purpose-built to suit their needs” (IDEO n.d.). It is a method of design that directly incorporates stakeholder and expert feedback. A disabled human-centered design process would therefore prioritize disabled people in the design process.

forms of accessibility auditing with a variety of disabled stakeholders and experts in design. In 2021, a proposal was made to host a disability simulation as an outdoor field session for the annual American Society of Landscape Architects (ASLA) National Conference in Nashville. This methodology was and is not appropriate to represent the disabled community's needs in the built environment, and I proposed a change: session leaders would invite several local disabled community members in Nashville and disabled designers to join them on what would be their first formal accessibility audit. This piece aims to illustrate a series of four case studies in accessibility audits. In each, I experientially educated participants on testing site accessibility through a lens of disability inclusion and justice, utilizing crip theory, through the guiding ethos of "nothing about us, without us."⁴

Accessibility Auditing: Theory, Pedagogy, and Methodology

It is first pertinent to discuss relevant scholarship in critical disability studies and its intersections with design, which have informed this work. Earlier forms of accessibility auditing occurred in the academic studio environment: for example, in the 1970s, Professor Emeritus Raymond Lifchez and Barbara Winslow instructed an architecture studio at the College of Environmental Design at Berkeley and brought disabled stakeholders into the classroom (Lifchez & Winslow, 1979; Lifchez, 1987). In this studio environment, disabled stakeholders critiqued non-disabled students' architecture projects, which served as a form of auditing the hypothetical design of the built environment. In this way, students turned away from simulations and assumptions about the disabled experience, listened to disabled people, and incorporated their feedback to create more accessible designs. While this pedagogy has not been fully replicated, professors in American universities, notably Dr. Aimi Hamraie (Vanderbilt University), Dr. Wanda Liebermann (University of Oklahoma), Dr. David Gissen (The New School), Dr. Ignacio Galán (Barnard College), and Dr. Victor Pineda (University of California, Berkeley); and in England, Dr. Jos Boys (London Metropolitan University) have taught seminars, studios, and other courses that center accessibility and disabled lived experience in architectural design and urban planning.

Between the 1960s to 1990s, Ronald Mace worked and practiced in architecture and contributed his own knowledge and lived experience as a disabled person and wheelchair user in the creation of Barrier-Free Design standards (pre-ADA) and in the development of the seven

⁴ "Nothing About Us Without Us" is a phrase popularized in the 1990s by James Charlton, a disability rights activist, during the second wave of the Disability Rights Movement. Charlton adopted the slogan from South African anti-apartheid activists and it advocates for full participation of everyone in the creation of policy or decision-making processes that affect them and their wellbeing.

principles of Universal Design at North Carolina State University.⁵ Mace's work was essentially a form of accessibility auditing, in that his lived experience alongside those of his friends and colleagues with disabilities informed the creation of standards and principles to design with and for the disabled community. In other words, disabled lived experience directly influenced design choices. As an architect, Mace also conducted some of the earliest formal accessibility audits in the form of retrofits: for example, for the Taylor School of Business, he took photos of design elements that could be made more accessible and drew directly on them with comments and measurements (Hamraie, 2017: 152).

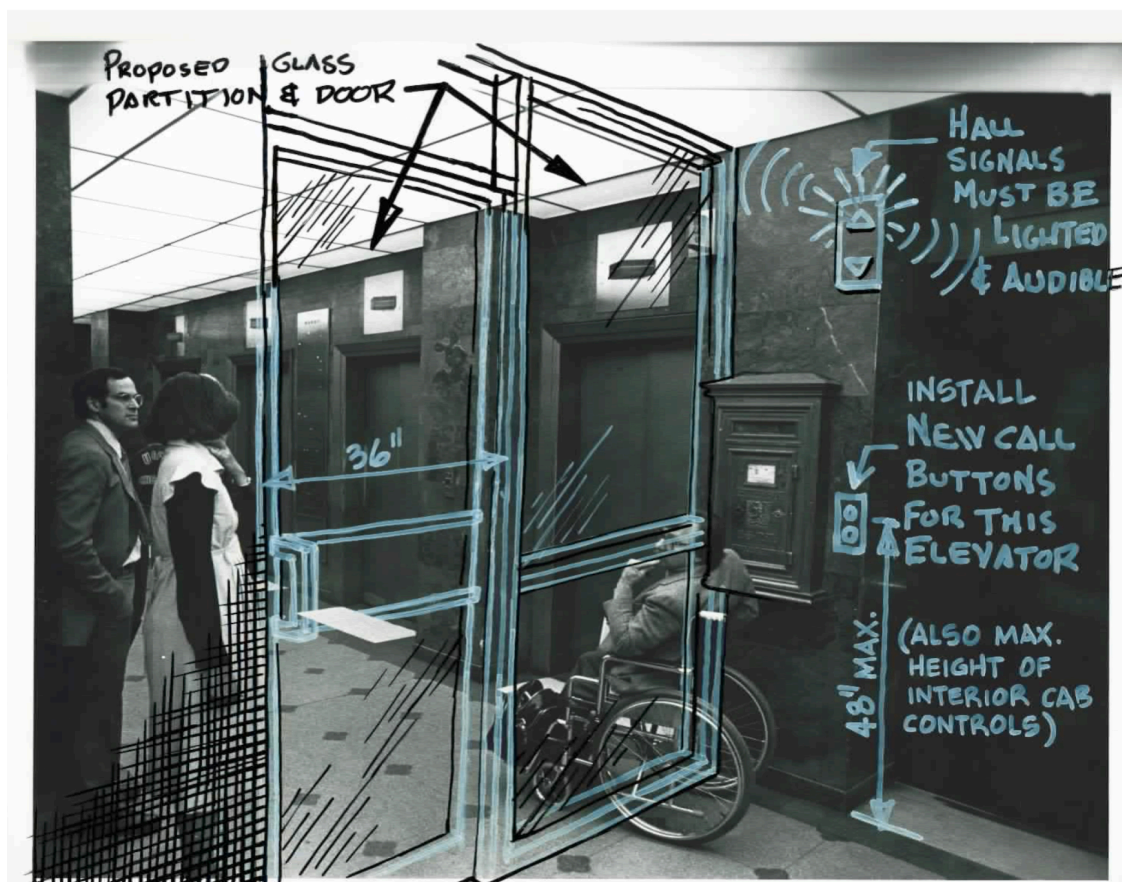


Figure 1: A black and white photograph of the Taylor School of Business, where Mace appears in the photo (in his wheelchair, c. 1978). He sketched directly over the photo in black and blue to indicate suggested changes to the glass door and lobby entrance, including: lighted and audible signals, new elevator call buttons, and 48" max

⁵ The Center for Universal Design at NCSU defines Universal Design (in version 2.0, 1997) as "the design of products and environments to be usable by all people, to the greatest extent possible, without adaptation or specialized design." The seven principles include: equitable use, flexibility in use, simple and intuitive use, perceptible information, tolerance for error, low physical effort, and size and space for approach and use (Center for Universal Design, 1997).

height for interior controls. Image courtesy of Ronald L. Mace Papers, MC 00260, Special Collections Research Center, North Carolina State University Libraries, Raleigh, N.C. Figure 5.9 in Hamraie, 2017: 152.

The aforementioned practices and pedagogy are a form of accessibility auditing, and also methodologies to entirely reframe the process and practice of design. Rob Imrie describes the predominant medical model worldview of disability as “an individual physiological condition which can somehow be treated or cured” and which considers disabled people to be “inferior, dependent, and by implication, of little or no value” (Imrie, 1996: 28). Victor Pineda reflects on John Rawls’ *A Theory of Justice* and Henri Lefebvre and Edward Soja’s concepts of spatiality in the shaping of his own sociospatial model of disability, which contrasts with the ableist medical model worldview. Pineda argues that by not considering the role that the built environment plays in enabling or disabling people, the city is “fixed and dead” (Pineda, 2008: 113). In again referring to Lefebvre, Pineda remarks that “space shapes social relations and social relations in turn shape space” and designers possess agency to create spaces where “tolerance and difference are nourished” for disabled people as well as other marginalized groups (Pineda, 2008: 117–118). Pineda notes that the ADA alone “falls short of informing a radical understanding of disability that accounts for the relationship between an individual and their environment” due to the lack of consideration for spatial relationships; likewise, definitions of disability are limited to a “physical or mental impairment that substantially limits one or more major life activities” (Pineda, 2008: 112–113). Thus, many barriers remain to access the built environment and are perpetuated by designers, despite the passage of the ADA and creation of the *ADA Standards for Accessibility*.⁶ In order to facilitate what Imrie calls “barrier freedom,” or the creation of accessibility through the removal of inaccessible and exclusionary barriers, institutional and cultural paradigms would need to be sustainably transformed (Imrie, 2001: 235).

“Crippling”⁷ the design process is a powerful method and lens with which to shift these paradigms: it is a form of “epistemic activism” capable of transforming the design process

⁶ For more on the *ADA Standards for Accessible Design*, refer to: U.S. Dept. of Justice Civil Rights Division. 2010. *2010 ADA Standards for Accessible Design*. <https://www.ada.gov/law-and-regs/design-standards/2010-stds/>.

⁷ “Crippling” is a relatively new concept in disability and design. The word “crip” (and the act of crippling) is derived from the word ‘cripple,’ which was in use earlier than the 12th century to describe “a lame [derogatory] or partly disabled person or animal; someone who is disabled or deficient in a specified manner; or something flawed or imperfect” (Merriam-Webster, 2024). While the original use of the word cripple is now considered derogatory, the word and its variations (e.g., crip) have been reclaimed by the disabled community and were popularized during the Disability Rights Movement in the 1970s. While crip likely originated and borrowed from queer studies, queer theory originated in academia while the practice of crippling originated in the disabled community (Lewis, 2015: 142–144). Robert McRuer, Merri Lisa Johnson, and Carrie Sandahl have conducted scholarship and conversations on crip theory in relation to queer theory and other intersectional theories (Sandahl, 2003; McRuer, 2006; McRuer & Johnson, 2014).

through “access-knowledge,” which is built directly by disabled people, and works to establish disability justice (Hamraie, 2017). Hamraie has defined crippling, historically, as the refusal of “the terms of productive citizenship” that asserted disabled people’s civil right to exist in public while Robert McRuer has defined crippling as a way of resisting the demands of “compulsory able-bodiedness” (Hamraie, 2017, 16; McRuer, 2006: 30). Rosemarie Garland-Thomson remarks that crip and disability theory alongside feminist and queer theories provide “critical tools for thinking about human variation in the complex material encounters of bodies and environments” (McRuer & Johnson, 2014: 154). Furthermore, cripistemology⁸ treats disability as a valid way of thinking and knowing the world as well as claiming space in it (McRuer & Johnson, 2014). Scholars such as Tanya Titchkosky and Jos Boys have also written about the critical need to crip phenomenology and methodologies of design. Boys treats the crippling of design as an “active verb” in both thinking and doing while Titchkosky reiterates the need to practice novel and practical methodologies to create belonging and access (Boys, 2018: 65; Titchkosky, 2011). Through the act of crippling the design process, the disabled community therefore acts in resistance against the status quo and asserts its agency in the design of the built environment. Whether or not the act of crippling is formalized and acknowledged by designers and planners in the design process does not determine its validity. Hamraie and Bess Williamson have written about the concept of “tinkering,”⁹ a form of hacking in which disabled people and activists practice their own self-taught design methodologies to create various forms of access, tools, and technology in their everyday lives: this is the original methodology of crippling the built environment (or objects) in order to fit it to the disabled body rather than vice versa (Hamraie, 2017; Williamson, 2019). Tinkering, as a form of crippling design, seeks to improve accessibility and to “reconcile the mis-fit between the disabled body and the world of mass-produced things and standardized spaces” (Williamson, 2019: 183).

Within these theoretical frameworks of crippling design, which seek to create disability justice in the built environment, Hamraie succinctly illustrates the historical and present need to shift from simulations to direct disabled community engagement:

⁸ “Cripistemology” is a crippled version of the theory of knowledge, in regards to methods. It validates disabled ways of knowing at the same level as non-disabled ways, and in solidarity with queer, racial, and feminist theory (McRuer & Johnson, 2014).

⁹ Tinkering encompasses the use and intentional editing of a broad array of designed environments and objects. It might include smashing curbs with a hammer to create a curb cut (as disabled activists did in Berkeley in the 1970s), creating a ramp out of LEGO for an entrance with a step-up, embossing dollar bills to feel which bill is which, adding thickness to a kitchen utensil handle to improve grip, modifying a jacket to fit a smaller or sitting body, or mixing technology and devices to make live captioning available for a software that doesn’t integrate it.

Disability simulation practices, in which nondisabled people would wear blindfolds or use wheelchairs for a day, were commonplace in rehabilitation research but increasingly challenged by disability activists, who claimed that these practices captured neither the adaptive resourcefulness of life with disability, nor the cultural dimensions of disability community. [Raymond] Lifchez and [Barbara] Winslow's user-led design practices, rich ethnographic data, and scenario planning reinforced the sense that simulation exercises were unnecessary if architects recognized disabled people as experts about their own lives, whose knowledge challenges what rehabilitation professionals or designers assume about disability. (Hamraie, 2017: 140)

Underlying this necessity to recognize "disabled people as experts about their own lives," is an essential shift from reliance on "intuition, rather than evidence" to understand accessibility and the diverse needs and preferences of the disabled community (Hamraie, 2017: 135). This has been the guiding ethos of the case studies shared within this article.

While there are several publications and online guides sharing methodology to conduct accessibility audits, many of these focus on areas outside of the design of the built environment (e.g., medical and therapeutic rehabilitation, technology, and website accessibility), and most do not consider the participation of disabled people as integral to the process.¹⁰ Instead, these audits are carried out on behalf of disabled people to comply with codes or regulations or to improve their experience without consulting them. The one resource that has most inspired methodology in the following case studies is the National Disability Authority (NDA) "Guidelines for Access Auditing of the Built Environment," which includes a plethora of information introducing readers to the concept of an accessibility audit, defining what it is, why to carry it out, and who the audit is for, while prioritizing the disabled community's participation in the process (National Disability Authority, 2005). This guide was particularly relevant in the creation of materials for dissemination for each case study (the "packet" as described below)

¹⁰ For example, the *Access Audit Handbook* published by the Centre for Accessible Environments includes several pages with information on disability discrimination acts and methods of achieving equality, but the "User Participation" section more generally remarks that "User consultation should be inclusive and involve a broad range of existing and / or prospective building or service users" (Grant and CAE 2013, 39). The handbook does not particularly prioritize the disabled community in accessibility and inclusion, but rather seeks to include as many diverse users as possible. While broader audits such as this are still much needed to diversify the design process and incorporate a variety of feedback, when considering accessibility it is critical to prioritize the disabled community who will benefit or detriment most from (in)accessible design choices.

and for educating professionals and students about the critical need to conduct accessibility audits with direct disabled stakeholder participation. These case studies also go a step further by incorporating not only disabled stakeholders in conducting the audits, but also disabled experts and professionals in design.

Audit Materials

For each of the following case studies, I was the lead organizer. I crafted proposals for three sessions chosen for the ASLA Annual National Conference and one for students at Pennsylvania State University, mapped out the routes (with assistance from other session leaders), and designed materials to be distributed to participants (accessibility audit “packets”). Each year, the packets were printed and made accessible to screen readers in Microsoft Word using simple, clear formatting and alt-text image descriptions. Generally, the packets included:

- the session title, date, time, and location to meet
- a list of field session leaders and contributors, and relevant titles or occupations, pronouns, and disabled identity (as applicable)
- a list of learning outcomes (for Continuing Education Units, or CEUs)
- information on accessibility audits (definition, how and why to conduct)
- a selection of accessible and inclusive design elements to consider while on the audit (various, dependent on the specific design lens being applied)
- the schedule, with detailed timetables for travel to and between sites and while conducting each audit
- steps on how to conduct the audit
- a brief design history of each site to be visited
- simple route maps to match the schedule
- aerial images of each site to be audited
- space for notes and sketches
- a list of relevant resources and graphic resources

In addition to a printed packet (or a digital version by request), participants were given a clipboard and a tape measure to take measurements while conducting the audit. All but one session was conducted by walking and rolling; the fourth (in Washington, D.C.) required walking or rolling and a MetroRail trip to and from the site. In this instance, participants were given a MetroRail day pass. All disabled session contributors (other than the disabled experts formally leading the session, who received free admission to the ASLA Conference) were given an

honorarium for their time and contributions. For each session, we also had American Sign Language interpreters. For the ASLA conference audits, fees for the previously mentioned materials were covered by ticket costs and ASLA funds. For the audit at Pennsylvania State University, materials were generously covered by a stipend granted by the Stuckeman School through the Bracken Lecture Series and Exhibition. In addition to these materials, one or two SmartLevels were brought by session leaders for the first three audits, to measure slopes of sidewalks and pathways for compliance.

Case Study 1: Accessibility Audit

ASLA Annual National Conference, Nashville, Tennessee (November 2021)

Sites: Walk of Fame Park and Riverfront Park

Duration: 3 hours, 8:30 – 11:30 am CDT

Session Co-Leaders: Alexa Vaughn, Karen Braitmayer (wheelchair user, Studio Pacifica), Dr. Aimi Hamraie (neurodivergent, Vanderbilt University), Emily O’Mahoney, and David Milligan

Session Contributors: Beth Thielman (wheelchair user, Nashville Disability Justice Collective) and Sarah

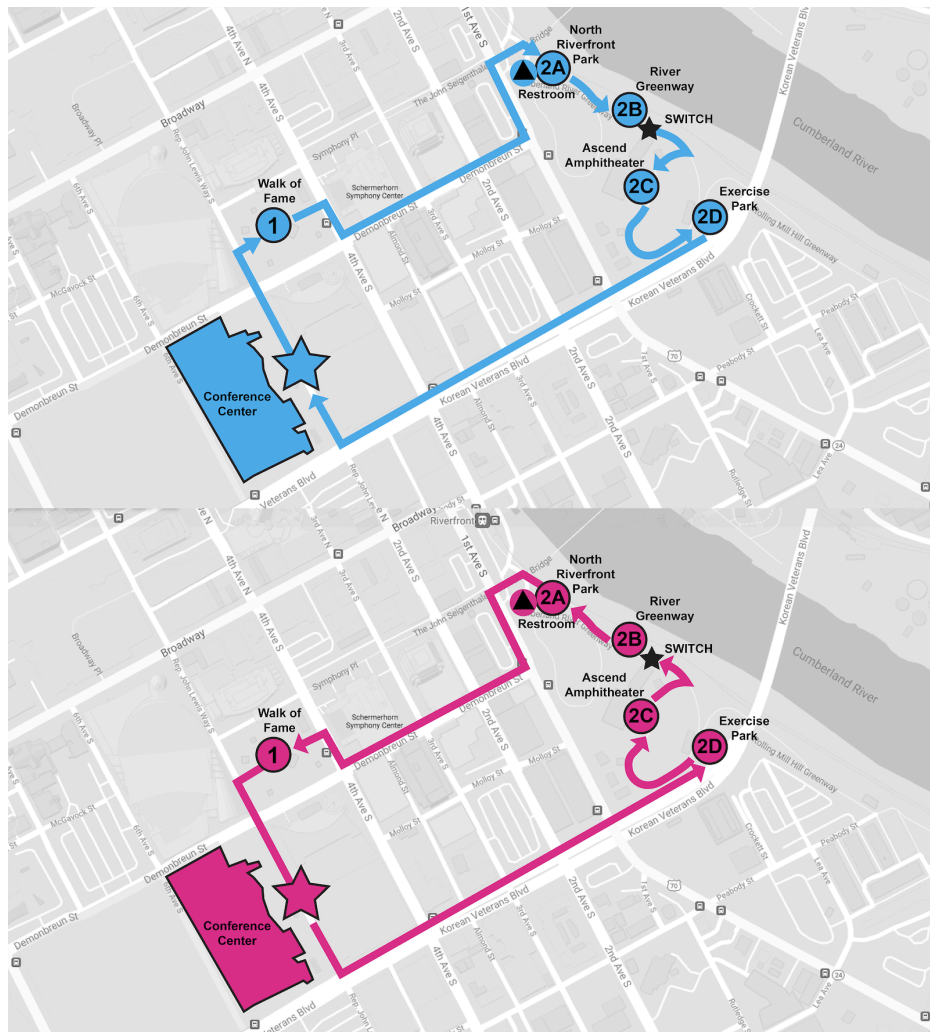


Figure 2: Two simple maps indicating access audit routes in Nashville, for two groups. Both maps use a grayscale base of downtown Nashville, exported from Google Maps. The first map uses bright blue lines with arrows and numbers to indicate the route from the conference center to Walk of Fame and to parts of Riverfront Park, including North Riverfront Park, the Greenway, Ascend Amphitheater, and Exercise Park, with a 'switch' at the middle. The second map, using bright pink, indicates the same, but in reverse order. Images created by Alexa Vaughn (author), 2021.



Figure 3: Photograph of one of the access audit groups (approximately 15 people) led by Alexa, Karen, and Sarah. Everyone is wearing jackets and gathers around a small ramp surrounded by young trees with fall color. Alexa holds a yellow level to measure slope, Sarah holds her white cane, and Karen is in her wheelchair. The ASL interpreter is also visible. Image courtesy of Sandra K. Raak, 2021.

The first accessibility audit was organized for the ASLA Annual National Conference in Nashville. In this first year, there were about 30 total participants at various stages of careers in landscape architecture, including some licensed individuals and students. Ticket costs (in addition to conference registration fees) were \$40 pre-sale and \$55 regular sale; the session sold out. As a field session, it complemented an education session presentation given by myself, Karen Braitmayer, and Dr. Aimi Hamraie titled “Design with Disabled People Now:

Including Disabled People in the Design Process.” The focus of this pilot audit was general accessibility: primarily on compliance to the 2010 *ADA Standards for Accessible Design* with some considerations beyond the ADA, such as Universal Design principles or non-code-related experiences of disabled leaders and contributors. The main goals were to assist designers in arriving at a better understanding of the effects of accessible versus inaccessible elements encountered while on the route and at the audit sites, become more familiar with some relevant accessibility codes in exterior spaces, and learn to respectfully incorporate disabled people, their lived experiences, and feedback into the design process as a direct challenge to simulations. Considerations ranged widely but included elements such as curb ramps, crosswalk striping and signals, lighting, furnishings, and running and cross slopes.

The participants were split into two groups of roughly 15 participants, with two to three leaders and one disabled contributor per group (a total of three to four per group). The session began at the conference center with introductory remarks, instruction on conducting the audit and what to expect, and distribution of materials. Each group moved in opposite directions along the route, starting with a different audit site, met at the middle for a break at the halfway point. After the break participants continued on in their respective directions while session leaders and disabled contributors returned back in the direction they came: while leaders and disabled contributors did not experience the entire route, each participant did experience the entire route while gaining feedback from each of the leaders and contributors whose disabilities and areas of expertise varied widely. The timing was balanced by the duration of the walk / roll relative to starting sites for each group: Walk of Fame Park was adjacent to the conference center, while Riverfront Park was a bit farther. I led the first leadership group (as a landscape designer, accessibility specialist, and late-Deafened person) alongside Karen Braitmayer (an architect and principal of an accessibility consultancy named Studio Pacifica, member of the US Access Board, wheelchair user, and hard of hearing person), David Milligan (a landscape architect and non-disabled ally), and collaborator Sarah (a blind and neurodivergent person local to Nashville and a member of the Nashville Disability Justice Collective) through the Walk of Fame Park, the north end of Riverfront Park including the dog park, and part of the greenway. The second leadership group was led by Dr. Aimi Hamraie (a professor at Vanderbilt, member of the US Access Board, director of Critical Design Lab,¹¹ co-founder of the Nashville Disability Justice Collective, and neurodivergent person), Emily O’Mahoney (a landscape architect, accessibility specialist, and non-disabled ally), and

¹¹ Critical Design Lab, founded by Dr. Aimi Hamraie, is “a multi-disciplinary arts and design collaborative centered in disability culture and crip techno-science” at Vanderbilt University; the lab’s work is centered upon access and they have created a number of projects and toolkits centering disabled experience. For more information, visit their website: <https://www.criticaldesignlab.com/>.

collaborator Beth Thielman (a wheelchair user local to Nashville and co-founder of the Nashville Disability Justice Collective) who led their participants through the opposite side of Riverfront Park including the exercise park and the Ascend Amphitheater. As disabled experts in design and members of the US Access Board, Karen and Aimi's leadership in this audit was indispensable: they answered questions based not only on their lived experience but also with knowledge of code. Sarah and Beth provided valuable lived experiences as locals to Nashville and they were recruited through their connection to Aimi: Aimi reached out to members of the Nashville Disability Justice Collective, and Sarah and Beth volunteered to participate (for an honorarium). I acted as a sighted guide or lead to Sarah during the session. Emily and David—conducting their first accessibility audit with these methods—provided years of experience in landscape architecture and specialization in accessibility code. Across this group of leaders and collaborators, many disabled experiences were represented in real-time for each site. Participants asked questions throughout the session which allowed them to come to a better understanding of these experiences. At the end of the session, both groups met back at the conference center to conclude, discussing lessons learned and any final questions.

This audit, as a pilot, was very successful. While on the audit routes, only two issues were encountered: the Ascend Amphitheater and public restroom in the park were closed on the day of the audit (likely due to the absence of scheduled events). To ameliorate the situation, the groups led by Aimi, Emily, and Beth adjusted to spend more time auditing the exercise park and other areas around the amphitheater. They were also able to minimally assess the amphitheater from the outside. There was one nearby restroom in a coffee shop for participants and leaders to use as needed but required the purchase of a snack or beverage. It is necessary to be able to pivot with backup plans in these unprecedented situations and particularly important to have an accessible restroom somewhere nearby.

Case Study 2: Accessibility Audit

Pennsylvania State University, State College, Pennsylvania (March 2022)

Sites: Recital Hall Plaza and Arboretum (Pollinator and Bird Garden)

Duration: 1 hour and 15 minutes, 1:35 – 2:50 pm ET

Session Leader: Alexa Vaughn

Session Contributors: Catherine Devereaux (neurodivergent, Pennsylvania State University) and Clareigh Ellis (neurodivergent, Pennsylvania State University)



Figure 4: A photograph of Alexa leading Penn State students up a ramp with metal rails and surrounded by planters located in front of Recital Hall Plaza. Surrounding trees are bare as they have dropped their leaves for the winter. Everyone wears jackets and some have backpacks. Alexa is visible in the background in a purple jacket with yellow level to measure slope. Image courtesy of Dr. Leann Andrews, 2022.

The second accessibility audit was at Pennsylvania State University and was grounded in crippling pedagogy. Invited by the Stuckeman School in the College of Arts and Architecture to visit for the week, I gave a lecture on including disabled people in the design process through the Bracken Lecture Series; integrated accessibility through co-teaching a class (LARCH 236: Design Implementation II: Materials, taught by Dr. Leann Andrews), and curated an exhibition featuring my practice-based research. The audit was planned as a participatory exercise for students in another of Dr. Leann Andrews' classes (LARCH 276, Human Dimensions of Design: History and Theory). It was a simplified version of the previous audit in Nashville: there were about 20 students present in this class and they remained as one large group with assistance from Leann. In order to find disabled collaborators for this session, I contacted the Student

Disability Resources (SDR) office at Penn State—an office responsible for coordinating accommodations and support services, and promoting disability awareness on campus—to send out an open call for participation to their listserv of disabled students. In the email, a description of the session, expectations for student collaborators, and a \$50 honorarium were offered. The amount of interest exceeded expectations: over two dozen responses were received, but only two to three students could be chosen with available funds. The two students were selected due to their enrollment in the landscape architecture program. They provided invaluable perspectives from their lived experiences with neurodivergence and as landscape designers.

The day of the audit, I provided an abridged version of the auditing packet for students to use. It included a list of steps to follow, a selection of accessible elements to consider, aerials of the two sites to be audited on campus, and a list of resources as well as graphic resources. This was the first auditing session to focus on the *ADA Standards* while informally branching into Universal Design and human-centered design principles like DeafSpace¹² (and DeafScape¹³). Because the route was particularly brief between sites on campus and familiar to students, a route map was not provided. The group started at the Stuckeman School with introductory remarks, instructions, agenda, and reasons for conducting the audit. It was clarified that students should be prepared to ask respectful and inquisitive questions of myself and the two student collaborators with disabilities throughout the session to make the audit a holistic learning experience. The group first visited the Recital Hall Plaza, directly adjacent to the Stuckeman School, primarily discussing the ramp there, path width, and planting selection (lack of color and shade in the winter were considered). Next, the group headed to the Pollinator Garden at the Arboretum which had recently re-opened in July of 2021. Along the way and in the garden, Catherine, Clareigh, and I appreciated the furnishings and sculptural structures (which provided degrees of enclosure), new paths, and a rich plant palette. The group then returned to the Stuckeman School to briefly wrap up the session and close with any further questions from the class. This audit was very successful for the students, who had little to no exposure to accessibility in their design curriculum and were given a variety of ways to be

¹² DeafSpace is a registered trademark of Gallaudet University. It is a set of design principles and guidelines created by Gallaudet University under the guidance of hearing architect Hansel Baumann. The process was extensive and incorporated direct feedback from the Deaf community at Gallaudet University. The principles are meant to enhance spatial understanding and modes of visual communication through the design of the built environment (Bauman, 2010). DeafSpace continues to be explored and practiced in a variety of ways by different Deaf designers and planners.

¹³ “DeafScape” is an application of DeafSpace principles to landscape architecture and urban design (Vaughn 2018). DeafScape draws from the first four sections of the *DeafSpace Design Guidelines*, including: Space and Proximity, Sensory Reach, Mobility and Proximity, and Light and Color.

involved that week. They asked critical questions and diligently listened to their peers who shared their neurodivergent lived experiences. Only a few concerns arose: the weather was cold, with snow earlier in the week, and the audit was an hour briefer than the ASLA Conference audit which required a shorter time frame to conduct the audit and host discussion afterward.

Case Study 3: Universal Design Audit

ASLA Annual National Conference, Minneapolis, Minnesota (October 2023)

Sites: Nicollet Mall, Peavey Plaza, Walker Art Center

Duration: 3 hours, 1:30pm – 4:30pm ET

Session Co-Leaders: Alexa Vaughn, Jill Moore (wheelchair user, Landscape Structures), Andrea LaCour, Elaine Anderson, and Ian Scherling

Session Contributors: Justin Bishop (blind skateboarder; and wife, Carol), Sam Schuler (autistic, Landscape Structures; and dad, Darren), and Alma Silver (wheelchair user, freelance consultant)

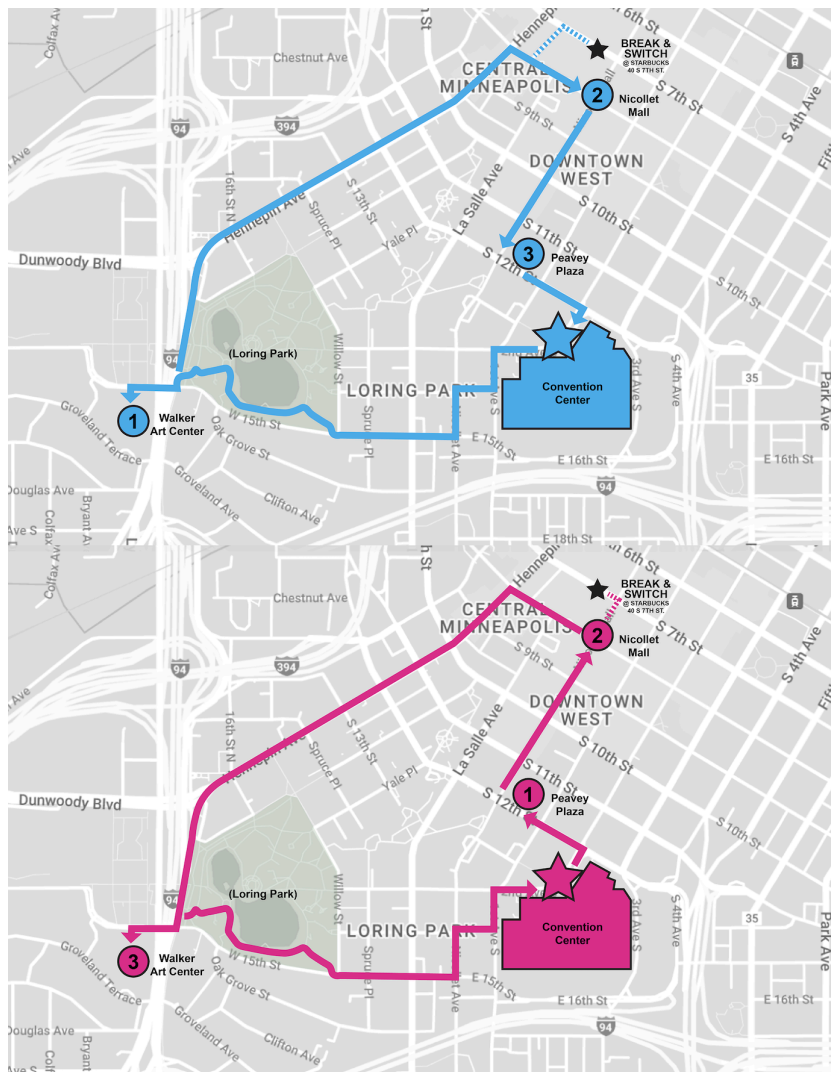


Figure 5: Two simple maps indicating access audit routes in Minneapolis, for two groups. Both maps use a grayscale base of downtown Minneapolis, exported from Google Maps. The first uses bright blue lines with arrows and numbers to indicate the route from the convention center to Walker Art Center, Nicollet Mall, and Peavey Plaza, with a 'switch' at the middle. The second map, using bright pink, indicates the same but in reverse order. Images created by Alexa Vaughn (author), 2023.



Figure 6: Photograph of one of the access audit groups (approximately 15 people) led by Alexa, Jill, Elaine, and Sam. Everyone is wearing jackets and gathers around a wall with images on it at Peavey Plaza. Jill is visible in the foreground in her wheelchair, with black jacket and beige beanie hat. Image courtesy of Contour Collective, 2023.

The third accessibility audit morphed into a Universal Design audit for the ASLA Annual National Conference in Minneapolis. There were about 30 total participants at various stages of careers in landscape architecture, including some licensed individuals and students. Ticket costs (in addition to conference registration fees) were \$70; the session sold out. While this audit still touched on compliance with the 2010 *ADA Standards for Accessible Design* its primary focus was to consider Universal Design principles and experiences of disabled leaders and contributors, beyond compliance. Goals were similar to previous audits conducted, expanding upon applications of seemingly ambiguous and creative principles of Universal Design: in addition to previously considered design elements, leaders and collaborators illustrated what Universal Design principles looked like in the urban landscape.

The participants were split into two groups of roughly 15 participants, with two to three leaders and one to two disabled contributors per group (a total of four per group). Like the audit in Nashville, the session began at the conference center with introductory remarks, instruction on conducting the audit and what to expect, and distribution of materials. This year, leadership spent more time discussing best practices and the role of the *ADA Standards* (compliance) in comparison to Universal Design (going beyond code). Again, each group moved in opposite directions, switching session leaders and contributors at the break. The timing was meant to be balanced by the duration of the walk / roll relative to starting sites for each group: Nicollet Mall was about half the distance from the conference center than Walker Art Center. I led the first leadership group alongside Jill Moore (an inclusive play specialist and wheelchair user local to Minneapolis), Elaine Anderson (an accessibility specialist and non-disabled ally), and collaborator Sam Schuler (an autistic person local to Minneapolis who had worked with Jill, accompanied by his father, Darren) through Nicollet Mall and Peavey Plaza. The second leadership group was led by Andrea LaCour (an accessibility specialist and non-disabled ally), Ian Scherling (a landscape architect and non-disabled ally), and collaborators Justin Bishop (a blind professional skateboarder and consultant, with his wife Carol as a sighted guide) and Alma Silver (a wheelchair user local to Minneapolis, disability advocate, educator, and writer) who led their participants to and through Walker Art Center. The session leadership had a wide variety of experiences to share in design and accessibility compliance. While Jill is an inclusive play specialist in playground design, her knowledge and lived experience were vastly applicable to the broader built environment. Sam and Alma provided valuable lived experiences as locals to Minneapolis; and Justin did as well, although not local. The three of them were recruited as friends and colleagues of Jill and each volunteered to participate (for an honorarium). Andrea and Elaine provided valuable experience in compliance to the ADA while Ian shared years of experience in designing public landscapes with Universal Design in mind.

The weather was highly unfavorable for this audit in comparison to the two audits previously discussed, but the groups made the best of the situation. Walker Art Center was a more difficult trek than planned, due to the weather, and delayed much of the session timetable. Most of the participants who started with Nicollet Mall and Peavey Plaza were not able to visit Walker Art Center because the walk / roll was too intolerable. Weather also made accommodations (e.g., interpretation, communication tablet used by Alma) difficult to use. Lastly, the accessible restroom in a shopping center coffee shop we had marked for our use was not open to the public. This extended the break and further delayed the audit. In future sessions, it was determined late fall to winter in the Midwest is not the ideal time to conduct an extensive audit. Leadership and participants made the best of the situation and lessons in auditing were still learned.

Case Study 4: DeafSpace / DeafScape Audit

ASLA Annual National Conference, Washington, D.C. (October 2024)

Sites: Gallaudet University Campus Green, Hanson Plaza, LLRH6 Sidewalk Expansion, and Louise B. Miller Memorial Proposed Site; 6th St NE Corridor

Duration: 4 hours, 9:30 am – 1:30 pm ET

Session Co-Leaders: Alexa Vaughn, Derrick Behm (Deaf, UCLA), Richard Dougherty (Deaf, Gallaudet University), and Jeffrey Mansfield (Deaf, MASS Design Group)

Session Contributors: N/A (all session leaders are Deaf)

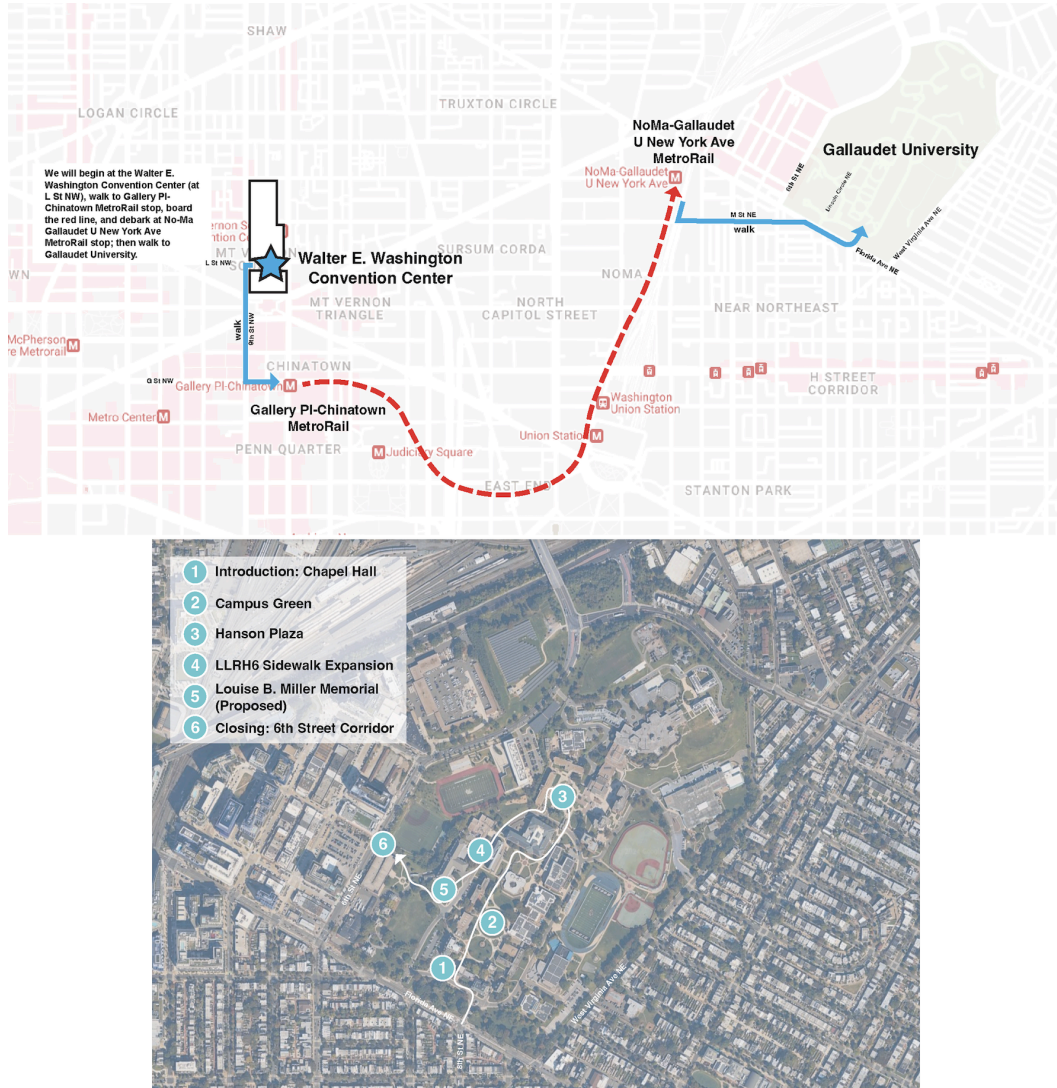


Figure 7: Two maps with access audit route information for the session at Gallaudet University. The first map is a simple grey and red base of Washington, D.C. exported from Google Maps, with the route from Walter E. Washington Convention Center to the Gallery Place-Chinatown Metro Stop indicated with a blue arrow line; the Metro journey to No-Ma Gallaudet U-New York Ave indicated with a dashed red line; and from there to the entrance to Gallaudet University at Florida Ave NE with a blue arrow line. The second map uses an aerial image base of Gallaudet University’s campus exported from Google Earth. A white arrow line indicates the direction of the route while each space audited is marked with a blue circle and numbered 1 to 6: Chapel Hall, Campus Green, Hanson Plaza, LLRH6 Sidewalk Expansion, Louise B. Miller Memorial, 6th Street Corridor. Images created by Alexa Vaughn (author), 2024.



Figure 8: Photograph of the access audit group (approximately 20 people) led by Alexa, Derrick, Richard, and Jeffrey. The weather is warm and sunny and everyone gathers around a planted area on campus near the 6th Street Corridor. Richard is visible at left in a dark blazer signing to the group, with Alexa to his left in a black vest. Image courtesy of Derrick Behm, 2024.

The fourth audit was a session centered specifically on investigating principles of DeafSpace applied to the Gallaudet University campus landscape (DeafScape) for the ASLA Annual National Conference in Washington, D.C. There were about 20 total participants at various stages of careers in landscape architecture, including some licensed individuals and students. Ticket costs (in addition to conference registration fees) were \$85; the session sold out. The primary focus of this audit was to integrate the lived experiences of the Deaf community (including some DeafBlind and DeafDisabled experiences) and specifically those of the Deaf session leaders, beyond compliance. Leaders indicated DeafSpace principles incorporated into the campus landscape¹⁴ to highlight successful applications which benefitted Deaf students, faculty, and staff.

¹⁴ DeafSpace principles applied to landscape architecture (known as DeafScape principles) of interest include: Tactile Cue / Textured Transition, Eddy, Shoulder Zone, Degree of Enclosure, Wider Pathway, Ramp / Sloped Walk, Visual Cue, Rhythm, Landmark, Night Lighting, Shade, U-Shaped / Circular Seating, and Flexible Furnishings (Vaughn 2018).

The participants were kept in one group for this audit, with four session leaders for the entire group. The session began at the conference center with two of the leaders (myself and Derrick Behm) and the distribution of materials. This year, walking and rolling as well as MetroRail travel was required to get to the audit site, which required more time and coordination. The group arrived at Gallaudet University and met with the other two session leaders (Richard Dougherty and Jeffrey Mansfield). This audit was unique in that all of the session leaders also acted as contributors: they are all members of the Deaf community and all experts in DeafSpace in disciplines across landscape architecture, architecture, and urban planning. I led the group alongside Derrick Behm (a consultant and PhD student in Urban Planning at UCLA), Richard Dougherty (Gallaudet University Campus Architect), and Jeffrey Mansfield (an architect and Principal of the DeafSpace and Disability Justice Lab at MASS) through different landscaped areas of Gallaudet University's campus. We began at the historic Chapel Hall near the original heart of campus, Olmsted Green (designed by Frederick Law Olmsted, Sr.), took a restroom break before continuing on to the Campus Green, Hanson Plaza, LLRH6 Sidewalk Expansion project, and the proposed site of the Louise B. Miller Memorial. This year, the weather was exceptionally clear in comparison to the audit in Minneapolis. This group of leaders represented many Deaf lived experiences in real-time for each part of campus. Throughout the session, ASL interpreters were on site, interpreting for all of the session leaders and relaying questions from participants. While I spoke English, the majority of the time (my native, primary language), I interchanged into ASL while communicating with session leaders while Derrick, Richard, and Jeffrey solely used ASL to communicate (their native, primary language). Leaders and participants were also privileged to have Karen Braitmayer (who co-led the Nashville audit) and Chris Downey (an architect, founder of Architecture for the Blind, and blind person) in attendance at the session. To make the session more accessible, we utilized a captioning app (for those who did not benefit from ASL interpreters), used ramps on campus and elevators in the Metro stations, shared image descriptions of graphics in the packet and the appearance of certain elements we discussed on campus, and provided volunteer sighted leading (by a participant, John Tatro, and myself). At the end of the session, the group closed at the 6th Street Corridor near ongoing development projects, which plan to incorporate more DeafSpace principles into the public streetscape and buildings. The group shared lessons learned and final questions, and the majority of the group returned to the conference center with me.

This audit was very successful, especially after the previous year's mishaps and unfavorable weather in Minneapolis. There were only a couple of concerns: the captioning app was not fully utilizable during the session outdoors with a medium-sized group. While the majority of participants in these audits have been non-disabled people, this session had

several disabled people in attendance and it is necessary to plan in advance for different access needs and accommodations for participants, not only for leadership. Communication and travel with more than 15 people can prove to be challenging with only one to two leaders coordinating the travel portions of the audit. This audit required more travel time with Metro and was longer than previous audits, at four hours long; this necessitated breaks and a consideration for a lunch hour in future audits. Lastly, while the cost for the session was still significantly cheaper than other field session offerings this year, \$85 is not affordable to many student and entry-level designer members of ASLA, on top of conference registration fees. The goal for each of these audits is to remain as affordable as possible. While not an option in the ASLA Annual National Conference field session format, it would be preferred to provide a fee at a sliding scale in future audits to keep them accessible to students and entry-level designers.

Future Considerations: Prototyping & Intersectional Experiences

Accessibility auditing has proven to be a successful method for including disabled people—both stakeholders and experts—in the design process. As mentioned earlier in this paper, crippling the design process takes many forms, and accessibility auditing of built sites pre-, during, or post-construction is only one possible step in that process. Similarly to accessibility auditing, the prototyping of accessible and inclusive design elements is not yet common practice. Many professional design firms will prototype a variety of custom furnishings or materials for aesthetic reasons. However, experimenting with prototyping design elements to increase accessibility for the disabled community (beyond code requirements) would be an impactful and inclusive design practice. Just as with site accessibility audits, prototyped materials must also be designed, developed, and built or constructed with direct feedback from disabled community members (both stakeholders and experts). There are many options to prototype accessible and inclusive materials and they might include: experimenting with different color and texture contrast in the design of pavers, creating custom furnishings to fit a variety of body types and preferences (both aesthetic and accessible), or testing different levels of lighting in different parts of a site. One example of successful prototyping was guided by Chris Downey, a Blind architect who practices in San Francisco. He consulted on the four-block-long Salesforce Transit Center in San Francisco, where he focused on the creation of textured paths and guides (beyond requirements for truncated domes in the *ADA Standards for Accessible Design*) to lead Blind and low vision transit riders across platforms and to mark locations of elements like escalators, stairs, and elevators. He not only tested these elements as a Blind person and expert in architectural design, but also with other disabled people such as wheelchair users and people with mobility disabilities to ensure the textures were not disruptive to their use (Bernstein, 2021).



Figure 9: A photograph of the interior of the Salesforce Transit Center in San Francisco, designed by Pelli Clarke & Partners (architect), Peter Walker Partners (landscape architect), with consulting by Chris Downey. Photograph shows a glass window wall and polished grey concrete floor with a metal tactile strip or groove set into the surface next to a wide, yellow painted stripe at the bus port. Image courtesy of Jason O’Rear.

Chris has also spent considerable time prototyping elements for the interior of the LightHouse for the Blind and Visually Impaired in San Francisco, CA, to the benefit of blind and low vision people using the building and its services. Notably, he designed tactile elements on the ground surface, lighting and acoustics, and lux custom handrails “molded to fit the grip of your hand” (Kilcrease, 2016: n.p.).

In addition to prototyping accessible design elements, future considerations for accessibility audits should span broadly across intersectional experiences. Designers and planners must challenge ableism in design, but also racism, sexism, and classism. The disabled community is the largest global “minority” community and can thus be considered the most intersectional: anyone can become disabled at any time, at any age, of any sex or gender, and of any racial or ethnic community or class. It is critical to consider intersections of disability with other “minority” identities as “people of color [especially Black people] with disabilities

seem to face double marginalization, discrimination and stigma that lead to poor socioeconomic outcomes” (Goodman et al, 2017: 12). In other words, there is a direct correlation between being Black or Brown, disabled, and poor. Much scholarship and practice in disability and design has continued to center upon White disabled experiences—a narrative I am not exempted from, as a predominantly White and speaking Deaf woman—yet these experiences are only one portion of the narrative and often center White privileges not experienced by disabled people who are also Black, Brown, queer, and/or experiencing poverty. As such, accessibility audits should be conducted not only with a group of disabled people experiencing a diversity of disabilities, but also disabled people with multiple disabilities and intersectional identities that might range from differences in race, ethnicity, class, gender and sexuality, religion, and age. Diversifying the group of disabled auditors illustrates that design really has no one-size-fits-all approach, yet designers and planners might learn to honor individual experiences and devise customized solutions for each site.

Many unhoused people also experience inaccessibility to the built environment. Disabled people “experience disproportionate rates of poverty . . . and there are higher rates of disability amongst communities of color,” as mentioned previously; and disabled people “are the most likely population to experience homelessness, be rent burdened or unable to afford housing, and face the highest rates of housing discrimination” (CADHCD, 2020: n.p.). In 2020 in California, 42% of people experiencing homelessness (PEH) also “reported a disabling condition” including “physical, mental, or emotional impairment that has a long-term disabling effect; a developmental disability; HIV/AIDS; or injury or illness incurred or aggravated during military service” (California Health Care Foundation, 2022: 1). Whether a houseless person is also disabled or is non-disabled, there are important considerations to make in designing public spaces and sidewalks that accommodate intersectional experiences, and in auditing them. For example, while principles of accessibility (like DeafSpace / DeafScape) might call for wider sidewalks, many designers and planners might argue that “overly” extending sidewalk widths would facilitate informal tent dwelling or occupation by houseless people. There might also be a fear, for example, in designing customized inclusive street furnishings that would encourage spaces for sleeping. Yet, the design and planning professions have long practiced defensive design mechanisms in public spaces, known as Crime Prevention Through Environmental Design (CPTED) (Atlas, 2008). Some of these strategies might include bright lighting throughout the night to discourage sleeping; 24-7 surveillance with cameras; spikes, skate-stoppers, or closely-placed armrests to deter lying down, sleeping, or skateboarding; excessive fencing; and intentional placement of vegetation to decrease lingering in certain places. While the aim of CPTED is to reduce crime, it also violently polices and restricts the use of public space. Ultimately, houseless people and other marginalized communities are

most profoundly affected by these design choices. Spaces that are intentionally designed to increase safety and decrease crime can often become what is known as ‘hostile architecture’ (Starolis, 2020). The violence of CPTED perpetuates exclusion, reduces the scale of the commons, and renders public spaces unusable by many people.

Call to Action: In Practice and in the Classroom

In a world where disability rights are constantly questioned, non-disabled designers, planners, and educators must consciously choose to practice forms of disability justice within the design process and in the classroom. Accessibility auditing and prototyping are two inclusive methods which can be put into practice professionally and pedagogically. The design process and the design curriculum are a type of infrastructure which many designers and planners consider linear and unchangeable. At the end of this seemingly linear process, their job is considered finished. However, the built environment is not static: it is meant to be used, tested, and reshaped by its inhabitants, as well as designed and re-designed through collective action. Frichot et al. (2022) write in their pedagogical study on teaching architectural care and support in the studio, that “affect is easily confused with feelings and emotions . . . but affect is what increases and diminishes one’s capacity to act in a world” (p. 64). While designers and planners should not base the design of the built environment on assumptions, they can utilize affect to “provoke” critical thought on “how we enable and disable bodies” and furthermore to design more inclusive environments (Frichot et al. 2022: 64). Until we reassess our inherent responsibility as designers and planners to create more accessible and inclusive cities—and to create professional practices, pedagogies, and communities of care—we will not achieve disability justice. We are each called upon to be allies to and advocates for the disabled community in the design process: included here is a call to action.¹⁵ Read it, pledge to incorporate it into your work, sign it, and share it:

1. Ally and Advocate: pledge to be an ally of and advocate for the disabled community.
2. Inclusion in the Process: pledge to include the disabled community in the design process.
3. Remap Practice: pledge to hire disabled designers and consultants.

¹⁵ This call to action is adapted from a version distributed by Alexa Vaughn, Ian Scherling, and Joshua Halstead at the ASLA National Conference in San Francisco in 2022, during an education session presentation titled, “(Re)Defining Universal Design: Case Studies and Explorations in Inclusion and Access.”

4. Accessible Design: pledge to design with accessible and inclusive principles (such as Universal Design and DeafSpace) as a creative tool, alongside direct disabled community engagement.

Signed: _____

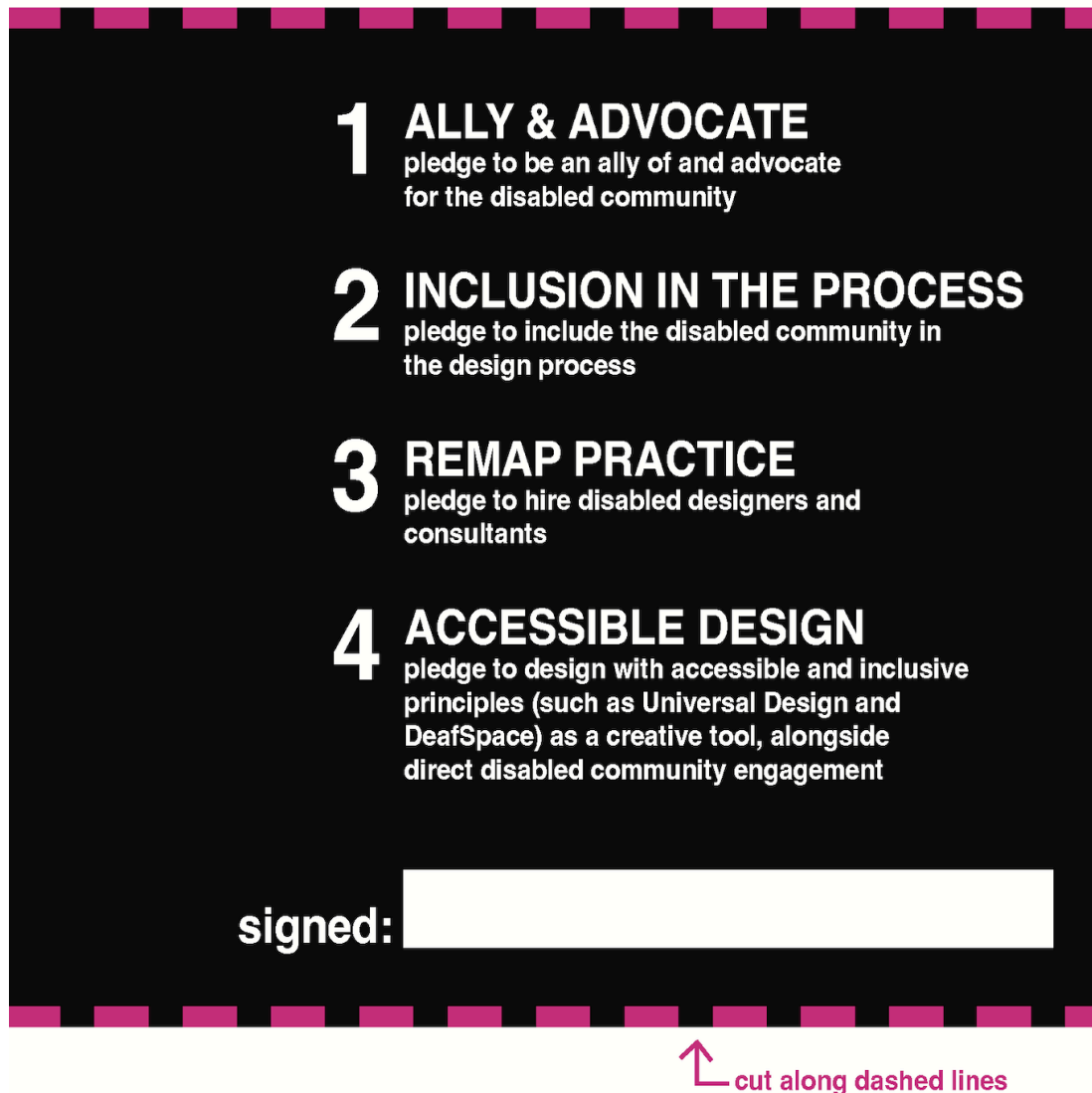


Figure 10: Black graphic with white text reading : 1) Ally and Advocate: pledge to be an ally of and advocate for the disabled community. 2) Inclusion in the Process: pledge to include the disabled community in the design process. 3) Remap Practice: pledge to hire disabled designers and consultants. 4) Accessible Design: pledge to design with accessible and inclusive principles (such as Universal Design and DeafSpace) as a creative tool, alongside direct disabled community engagement. At the bottom is a white box to sign the pledge and dashed pink lines indicate where the graphic can be cut out for dissemination. Image created by Alexa Vaughn (author), 2021.

Acknowledgments

I owe many thanks to the generosity of so many collaborators across these four accessibility audits, to those who helped me to learn along the way how to best put our words into practice, and those who shared their incredible disabled lived experiences across four cities. Thank you also to all participants who were eager to learn how to integrate the disabled perspective and accessibility audits into their own practice: your thoughtful questions and dedication to allyship fuel my work. I dedicate this piece in memory of Professor Emeritus Raymond Lifchez (1932-2023), who was a true ally to the disabled community and inspired me early on in my graduate studies to replicate the work he did in architecture at the College of Environmental Design at Berkeley, to bring disabled stakeholders into the studio. May we continue his legacy.

A Note on Font Choice

The font used in this essay, Atkinson Hyperlegible, was developed by the Braille Institute to help low vision readers. It improves legibility and readability through clear and distinctive letters and numbers. To download this free, accessible font, visit:

<https://www.brailleinstitute.org/freefont/>.

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