Science Museum of Minnesota

Section 504 Compliance Report

September 2020

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I. INTRODUCTION

The National Aeronautics and Space Administration ("NASA" or "the Agency") conducted a compliance review of the Science Museum of Minnesota ("SMM" or "the Museum") to ensure that, as beneficiaries of a NASA grant, the Museum's program participants have equal access to its benefits, services, and activities regardless of disability. NASA conducted this review under Section 504 of the Rehabilitation Act of 1973 ("Section 504") and NASA's implementing regulations and policy, which prohibit grantees from excluding from participation, denying the benefits of or subjecting to discrimination individuals with disabilities in its programs, services or activities.[1]

NASA finds SMM noncompliant with Section 504 and NASA's regulations in several respects. The noncompliance includes procedural requirements, such as Section 504 coordination and notice, and program-related requirements, such as effective communication, particularly related to digital technologies, as well as architectural accessibility issues. We provide analysis, corrective actions and recommendations below.

A. Background

SMM is a private science center in Saint Paul, Minnesota. In 2019, the most recent year for which the Museum reports data on its visitors, SMM attracted 788,000 visitors and its out-of-museum programs included 71,526 teachers and students in all 87 counties of Minnesota. The Museum's facility includes exhibit and program space covering 230,500 square feet and includes a multi-story IMAX Digital Omnitheater. The Museum employs 217 full-time and 316 part-time employees. In 2019, the Museum had 801 active volunteers (providing 55,550 hours of service). SMM actively competes for and develops exhibits and content for other museums.

In April 2016, NASA awarded SMM $14.5 million dollars through 2021 to spearhead the Space and Earth Informal STEM Education ("SEISE") project, in partnership with other NASA grant recipient institutions across the country, including Arizona State University, the Museum of Science in Boston, and the University of California at Berkeley's Lawrence Hall of Science and Space Sciences Laboratory.

B. Objectives and Scope

NASA's objective in conducting this review is to evaluate the Museum's compliance with NASA Section 504 regulations in the following areas:

- Procedural requirements including: (1) performance of a Section 504 self-evaluation; (2) identification of SMM's Section 504 Designated Responsible Employee ("Section 504 Coordinator"); (3) existence of grievance procedures; (4) notice to program participants; and (5) existence of a transition plan; and

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[1] Section 504 of the Rehabilitation Act of 1973, as amended (29 U.S.C. § 794); Nondiscrimination on the Basis of Disability, 14 CFR Part 1251; NASA Policy Directive 2081.1A, Subject: Nondiscrimination in Federally Assisted and Federally Conducted Programs of NASA - Delegation of Authority.

- Program requirements including: (1) ensuring that program participants are not subject to discrimination on the basis of disability; (2) providing effective communication in its programs, including in digital technologies, such as the Museum website; and (3) ensuring that architectural features comply with requirements.

The summary charts for these topics present NASA's findings, followed by narrative explanations. We provide additional technical details regarding digital and architectural accessibility in Appendices B through D.

II. COMPLIANCE ANALYSIS AND FINDINGS

Under each main topic in the review, we have provided compliance standards and NASA's findings of fact. The tables used in each section indicate whether SMM is compliant or not under Section 504. The report then analyzes SMM's performance and identifies the corrective actions that must be undertaken to enable SMM to come into compliance and also provides additional recommendations for further improvement.

A. Section 504 Procedural Requirements

1. Compliance Standards

NASA's Section 504 regulations include several procedural requirements:

a. **Self-Evaluation.** Within one year of first becoming a recipient and with the assistance of interested persons, including people with disabilities, a recipient of NASA funds must conduct a self-evaluation of its current policies and practices that affect Section 504 compliance and modify, as necessary, its policies and practices to eliminate discrimination against people with disabilities. Upon completion of this report, the recipient must retain this report for three years for public inspection.[2]

b. **Section 504 Coordinator.** Recipients with 15 or more employees, such as SMM, must designate a Section 504 Coordinator[3] and notify all employees and program participants, such as patrons, of the Coordinator's identity.[4]

c. **Grievance Procedures.** Recipients with 15 or more employees must adopt and publish grievance procedures to promptly and equitably resolve complaints alleging violations of Section 504.[5]

d. **Notice.** NASA's Section 504 regulations require grant recipients to take specific and continuing steps to notify employees, volunteers, and program participants of their rights under Section 504 and the identity of the organization's Section 504 Coordinator. This

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[2] 14 C.F.R. § 1251.105(c)(1).
[3] 14 C.F.R. §1251.106(a).
[4] 14 C.F.R. §1251.107(a).
[5] 14 C.F.R. §1251.106(b).

notification should also include a statement that the recipient does not discriminate in its programs or activities on the basis of disability.[6]

e. **Transition Plan.** Where a recipient determines that its facilities do not comply with the requirements of Section 504 based on its self-evaluation, the recipient must create a transition plan to implement physical changes to enable access for individuals with disabilities. This transition plan, which must be available for public inspection, requires grantees to:

- Identify barriers that limit accessibility of programs or activities to individuals with disabilities;
- Describe methods for eliminating these barriers in detail;
- Include a schedule for removing these barriers; and
- Identify the person responsible for implementing the transition plan.[7]

Review Criteria: Section 504 Procedural Requirements	Yes	No
a. Self-Evaluation		
• SMM has conducted a Section 504 Self-Evaluation within one year of becoming a grant recipient with interested persons (including people with disabilities).		X
b. Section 504 Coordinator		
• SMM has designated a Section 504 Coordinator.		X
c. Grievance Procedures		
• SMM has created a grievance procedure specific to Section 504 program participants.	X	
d. Notice		
• SMM provides notice that it does not discriminate on the basis of disability.		X
• The non-discrimination notice identifies SMM's Section 504 Coordinator.		X
e. Transition Plan		
• SMM has identified barriers in its facilities and created a transition plan		X
• The transition plan is available for public inspection and includes: • Identification of barriers that limit accessibility of programs or activities to individuals with disabilities, • Description of methods for eliminating these barriers in detail, • Schedule for removing these barriers, and		X

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[6] 14 C.F.R. §1251.107(a).
[7] 14 C.F.R. §1251.301(d).

• Identification of the person responsible for implementing the transition plan.		X

2. Assessment

a. Self-Evaluation. SMM is obligated to perform a self-evaluation that must be made available for public inspection and for NASA review upon request. SMM has not performed the required self-evaluation and therefore is noncompliant in this area.

b. Section 504 Coordinator. SMM does not meet this requirement. The Museum has not named a Section 504 Coordinator. The Museum must ensure that it maintains a Section 504 Coordinator at all times while receiving federal funds and must name a Coordinator who has been provided with Section 504 training and resources to perform the role effectively.

c. Grievance Procedures. The Museum complies with this requirement because it does have a grievance procedure for program participants. SMM receives feedback through several avenues, such as social media and comment cards. The Museum also has a dedicated Evaluation and Research Team that conducts regular surveys. The Museum's Evaluation and Research team staff noted that groups with people with disabilities uniformly rated their overall satisfaction with the museum higher than groups without a person with a disability.

d. Notice. The Museum does not fully comply with this requirement. While the Museum maintains a web page dedicated to assisting users with disabilities (https://www.smm.org/visit/accessibility-amenities), it does not have a non-discrimination policy explicitly stating that it does not discriminate against people with disabilities, as required.

e. Transition Plan. SMM does not comply with this requirement, as it does not have a transition plan in place to rectify the accessibility barriers facing individuals with disabilities.

3. Corrective Actions and Recommendations

a. Self-Evaluation. The Museum must conduct a Section 504 self-evaluation within one year of first becoming a recipient and must modify its policies and practices that do not meet Section 504 requirements. As the Museum has not conducted a Section 504 evaluation, it must do so now in accordance with 14 C.F.R. § 1251.105(c). The National Endowment for the Arts provides a suggested Section 504 Self-Evaluation Workbook at https://www.arts.gov/open-government/civil-rights- office/section-504-self-evaluation- workbook. Once SMM has completed its self-evaluation, it must modify its policies and practices based on its findings and in conformity with NASA compliance requirements, to ensure that people with disabilities are not subject to discrimination.

b. Section 504 Coordinator. The Museum must name a Section 504 Coordinator and notify NASA of the name and title of the Section 504 Coordinator, as well as staff, resources, and training provided to the Coordinator. We recommend that the Coordinator and the staff attend regular trainings and conferences dedicated to disability-related issues. In addition, SMM may benefit from creating an accessibility committee to enhance the Museum's knowledge base and to provide further assistance to the Coordinator.

c. Grievance Procedures. The Museum complies with this requirement because it has developed grievance procedures specific to program participants. SMM should enhance existing compliance in this regard by:

- ensuring that the grievance procedures include specific timelines for review and resolution of complaints, identify reasonable deadlines for appealing complaint findings, and ensure that complainants are notified at each stage of the complaint process;
- posting the procedures publicly on the Museum's website and referencing them in publications;
- training Museum personnel regarding the availability and location of the procedures; and
- tracking all complaints to identify patterns or potential areas for improvement.

d. Notice. The Museum must take steps to notify employees and program participants of:

- its non-discrimination policy in its programs and activities; and
- the identity of its Section 504 Coordinator.

While not specifically required under NASA's Section 504 regulations, NASA recommends SMM make available its grievance procedures, including any necessary forms, as part of this notice and that all employees and volunteers should be familiar with this page and should be able to locate it. In addition, NASA recommends that SMM include its non-discrimination statement and reference to its accessibility web page in all brochures, print media, and electronic communications.

e. Transition Plan. The Museum must develop and implement a clear plan for remediating the barriers identified in this report (see Sections II.C and D and Appendices B through D below regarding the substance of the plan). This plan shall:

- be available for public inspection;
- identify barriers that limit accessibility of programs or activities to individuals with disabilities;
- describe methods for eliminating these barriers in detail;
- include a schedule for removing these barriers; and
- identify the person responsible for implementing the transition plan.

A. Section 504 Program Requirements

1. Compliance Standards

NASA's Section 504 regulations also include several specific requirements to prevent discrimination against program participants.[8] This section assesses the Center's efforts to address these requirements.

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[8] 14 C.F.R. § 1251.103(b). In addition, NASA regulations require recipients to take appropriate steps to ensure effective communication with program participants. 14 C.F.R. § 1251.112.

a **Effective Communication.** The NASA regulations require grant recipients to provide auxiliary aids and services (e.g., sign language interpreters, assistive listening devices, braille and large print documents, etc.) as well as a general requirement to ensure effective communication with all program participants regardless of disability. [9] In addition, as discussed in more detail below, grant recipients must meet architectural requirements, which include the obligation to provide assistive listening systems in all assembly areas.[10]

b **General Programs**. Grant recipients need to ensure that their programs, services, and activities are accessible to people with disabilities. Where barriers exist, recipients must either remove the barriers or provide meaningful alternatives that ensure that the programs, services, or activities are still accessible when "viewed in its entirety."[11] For instance, if an existing exhibit includes an inaccessible element that the recipient cannot make accessible, Section 504 would permit the use of an adjacent accessible alternative that conveys the same content and learning opportunities as the inaccessible element.

c **Special Programs**. Science centers and museums often run special programs, both on-premises and off-premises. These programs typically focus on local students in K-12 programs and pre-school participants and provide educational opportunities that foster an interest in STEM topics. Federal funding recipients must ensure that these programs do not exclude or discriminate against participants with disabilities.

d **Emergency Response.** Emergency response is a practical reality in today's world and people with disabilities need to be considered in planning emergency response. In some instances, emergency evacuation plans do not require actually evacuating a facility immediately. For instance, during a fire, the recipient can relocate people with disabilities to specially-designated areas of rescue assistance. [12] Also, "active shooter" plans may include developing "shelters-in-place" (e.g., rooms with barricaded doors). While not specifically identified in the NASA Section 504 regulations, emergency responses should be considered an important part of program access.

Review Criteria: Section 504 Program Requirements	Yes	No
a. Effective Communication		
• The Museum has successfully met requests for auxiliary aids and services to meet the communication needs of program participants.	X	
• The Museum provides effective communication in its lecture halls and theaters through the use of assistive listening devices	X	

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[9] 14 C.F.R. § 1251.112.

[10] NASA regulations require developing a transition plan for barriers in existing facilities. These regulations also recognize a "safe harbor" for facilities that meet the Uniform Federal Accessibility Standards (UFAS). 14 C.F.R. § 1251.301(e). UFAS requires assistive listening systems in all assembly areas, including lecture halls and theaters. 41 C.F.R. § 101-19.6 App. A, available at https://www.access-board.gov/guidelines-and-standards/buildings-and-sites/about-the-aba-standards/ufas.

[11] 14 C.F.R. § 1251.301.

[12] Modern building codes anticipate emergency evacuation by requiring features like evacuation elevators. These elevators are fundamentally different from normal elevators insofar as they require a separate smoke-free airshaft and a dedicated electrical system. Where such elevators are not required or available, accessibility standards may require designating areas of rescue assistance where people with disabilities can await assistance from emergency services personnel.

("ALDs)", captioning, audio descriptions, or other auxiliary aids and services to meet the communication needs of program participants.		
b. General Programs		
• The Museum ensures that all programs, services, and activities are accessible to users with disabilities.	X	
• Where elements that are part of programs, services, and activities are inaccessible to users with disabilities, the Museum ensures that the program, service, or activity is accessible when viewed in its entirety.	X	
c. Special Programs		
• The Museum ensures that all programs, services, and activities are accessible to users with disabilities.	X	
• Where elements that are part of programs, services, and activities are inaccessible to users with disabilities, the Museum ensures that the program, service, or activity is accessible when viewed in its entirety.	X	
d. Emergency Response		
• The Museum has developed emergency response plans for fire, natural disasters, and other emergencies that include plans specific to persons with disabilities.	X	
• The Museum regularly trains its employees and volunteers on these emergency response plans.	X	

2. Assessment

a. Effective Communication. The Museum complies with this requirement by providing captioning and other auxiliary aids and services and ensuring that assistive listening devices are available in its programs, including theaters and lecture spaces. [13] In addition, the Museum is engaging in promising practices, as noted below.

b. General Programs. SMM complies with this requirement. The Museum possesses the advantage of having special expertise in exhibit design and construction. In addition, it has engaged in outreach to the local disability community to provide a higher level of accessibility for its visitors.

c. Special Programs. SMM's Education Team performs extensive outreach to K-12 STEM programs throughout the state of Minnesota and conducts special science-oriented camps during the summer. The Museum uses detailed intake forms to identify any special needs. As parents do not consistently identify all disabilities, SMM also provides extra staffing at camps to meet the needs of campers with disabilities.

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[13] 14 C.F.R. § 1251.103(b)(3).

d. Emergency Response. The Museum has basic emergency procedures, including specific steps to safely evacuate persons with disabilities. In addition, the Museum conducts regular training on evacuation for visitors, including visitors with disabilities.

3. Promising Practices

a. Effective Communication - IMAX Theater. SMM's systems and policies for ensuring effective communication in its digital IMAX theater are a model for the industry. Other Museums have even stated that systems like SMM's were technologically impossible. For example, SMM has devised a system to illuminate the hands and gesturing of sign language interpreters during a presentation. A stool and light on a microphone stand are provided for the interpreter, who sits just below the visitor(s) when interpreting. In addition, SMM requests a time-coded script of the film for each feature it exhibits. The script is printed in regular font, as well as large-print. Scripts are available at the box office and at the theater entrance. The Museum can mail or email scripts to any visitor requesting this service. It also created its own sensory descriptive scripts for autistic visitors. By carefully considering the needs of its visitors, the Museum is truly inclusive for all visitors in its theater.

b. General Programs - Wayfinding. The SMM website includes helpful "wayfinding" instructions. These describe the Lobby Area, Exhibit Spaces and the 2nd Level Educational Commons spaces in a manner that helps define the "geography" of spaces for those who are blind and/or visually impaired.

C. Digital Accessibility

1. Compliance Standards

The effective communication requirement includes digital technologies,[14] such as the internet and interactive electronic exhibits. While digital technologies offer tremendous opportunities, they also create the risk that participants with disabilities will not be able to participate if the exhibits are inaccessible.

a. **Website Accessibility**. NASA reviewed the Museum's website and found significant communication barriers for people with disabilities. As these barriers deny effective communication, the Museum must correct them.

b. **Other Digital Technology Accessibility**. NASA reviewed the Museum's other digital technologies (e.g., kiosks, interactive displays and exhibits, etc.) to ensure that they provided effective communication to program participants. The Museum can use these technologies, along with physical displays and exhibits, to accommodate multiple modes of communication. For instance, the Museum may choose to use an interactive touch-panel display and a nearby physical exhibit to convey a lesson. In this case, the Museum can make the same lesson accessible through a physical or electronic exhibit.[15]

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[14] 14 C.F.R. § 1251.103(a).

[15] As a best practice, the Center could also consider evaluating these technologies using WCAG 2.0 A/AA. The Federal government has adopted WCAG 2.0 A/AA for procurements of all digital technologies. 82 Fed. Reg. 5,790 (Jan. 18, 2017).

This section briefly summarizes the overall outcome of this review. More complete details are available in Appendices B and C.

Review Criteria: Digital Accessibility	Yes	No
a. Website Accessibility		
• SMM's website ensures effective communication to users with disabilities.		X
b. Other Digital Technologies		
• SMM's digital technologies incorporated into exhibits, displays, and other interactive elements ensure effective communication to users with disabilities (with or without adjacent displays or fixtures).		X

2. **Assessment**

a. Website Accessibility. SMM is aware of accessibility issues in its website. The Museum is currently moving to a new web system and hopes to incorporate accessibility more thoroughly in the future. The Museum currently uses automated testing tools but some of the issues on the website (such as lack of keyboard access) can completely block users with disabilities. NASA provides detailed findings in Appendix B, Web Accessibility Review.

b. Other Digital Technologies. SMM generally provides captioning for video content in the exhibits that it designs but some exhibits, such as the Body Worlds RX exhibit on loan to SMM, include video content without captioning. The Museum also includes audio descriptions in many of the exhibits. The Museum includes several areas where it can make digital technologies more accessible or where it can better use digital technologies to improve accessibility. NASA describes these in Appendix C, Other Digital Accessibility Issues.

3. **Corrective Actions and Recommendations**

a. Website Accessibility. The Museum must modify its website to address the accessibility changes identified in Appendix B, Web Accessibility Review, and carry these principles forward in its next website redesign.

b. Other Digital Technologies. SMM must ensure that it provides captioning for all spoken content in its exhibits, including traveling exhibits. SMM must also address the issues identified in Appendix C, Other Digital Accessibility Issues, to ensure accessibility relating to digital technologies.

In addition, the European Union has also incorporated WCAG 2.0 A/AA into its procurement standards for member states (EN 301-549). The European standards are particularly helpful because they carefully map WCAG 2.0 A/AA to software, electronic documents, and other technologies. A copy of these standards is available at http://www.etsi.org/deliver/etsi_en/301500_301599/301549/01.01.02_60/en_301549v010102p.pdf.

4. Promising Practices

> SMM has worked with local blind advocates to help ensure the audio descriptions via handsets and other aspects of their exhibits are beneficial to those who will make use of these features. This work is considered a promising practice as it helps make exhibits accessible to blind and visually-impaired visitors.

D. Architectural Accessibility

1. Compliance Standards

NASA undertook a detailed architectural analysis of the Museum's facility using the Uniform Federal Accessibility Standards ("UFAS") or the 2010 Americans with Disabilities Act Standards for Accessible Design ("2010 Standards") for each element in all program areas of the Museum's facility. This section briefly summarizes the outcome of this review. We provide a detailed punch list of deficiencies in Appendix D.

a **New Construction or Alterations**. NASA's Section 504 regulations require that newly constructed[16] and altered[17] facilities be "readily accessible to and usable by" people with disabilities. [18] For projects built before January 23, 2017, NASA grantees must fully comply with either UFAS or the 2010 Standards. For projects built after January 23, 2017, NASA grantees must meet the 2010 Standards.[19]

b **Existing Facilities**. For existing facilities that have not been altered, NASA-funded institutions must ensure that their programs or activities are accessible "when viewed in their entirety."[20] This obligation usually means making the location accessible, relocating an existing program to an accessible location, or providing an equivalent experience in an accessible location.

As a private entity, the Museum may have additional accessibility obligations under the 2010 Standards, including "readily achievable" barrier removal and "path of travel."[21] As these obligations are separate from Section 504, this report does not include a review of these issues.

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[16] 14 C.F.R. §1251.302(a).

[17] 14 C.F.R. §1251.302(b).

[18] 14 C.F.R. § 1251.302(a)-(b).

[19] 14 C.F.R. § 1251.302(c). UFAS is available at https://www.access-board.gov/guidelines-and-standards/buildings-and-sites/about-the-aba-standards/ufas.

[20] 14 C.F.R. § 1251.301.

[21] The 2010 Standards' path of travel obligation is a detailed requirement set forth in the Department of Justice's Title III regulations, 28 C.F.R. § 36.403 (2010); see also, 42 U.S.C. §12183(b). It requires places of public accommodation, like the SMM, to make accessibility upgrades to its existing facility when those upgrades serve primary function areas being directly altered. Furthermore, places of public accommodation like the SMM are required to spend up to 20% of the total cost of the alteration in making these upgrades before they are considered "disproportionate" to the cost of thealteration.

Review Criteria: Architectural Accessibility	Yes	No
a. New Construction or Alterations		
• The Museum is in compliance with the requirements for new construction and alterations and the requirements for existing facilities.		X
b. Existing Facilities		
• The Museum's existing facility is fully accessible.		X
• Where architectural barriers exist in existing facilities, the Museum ensures that the program, service, or activity affected by these barriers are accessible when viewed in their entirety.		X

2. **Assessment**

New Construction, Alterations and Existing Facilities. The Museum does not comply with the requirements for new construction and alterations and the requirements for existing facilities, although it has undertaken a number of alterations since opening its current facilities. While the Museum is generally required to conform to the UFAS because it opened in December 1999, the Museum must ensure that recent alterations to the Gender-Neutral Restrooms/Wellness Room on Level 4 (and any future alterations) comply with the 2010 Standards. This noncompliance occurs in the Museum's program space and thus negatively affects the ability of program participants to take advantage of the Museum's programs, services, and activities. Despite architectural barriers creating noncompliance, the Museum is also engaging in some promising practices relating to greater accessibility for individuals with disabilities, and NASA takes note of these below.

3. **Corrective Actions and Recommendations**

Architectural Accessibility. The Museum must ensure that it provides all of its programs in accessible locations or that it provides accessible alternatives in accessible locations. The Museum must correct the architectural barriers detailed in Appendix D, Architectural Accessibility. To assist in this effort, NASA highly recommends the Museum create an Accessibility Triage Committee that includes representatives from affected departments to coordinate correcting the deficiencies noted in Appendix D.

4. **Promising Practices**

a. The new public restrooms in the Native American Exhibition area on Level 4 include two Single-User Gender Neutral and Family Restrooms designed in a manner that allows caregivers to aid users with disabilities in complete privacy. These companion or family restrooms also provide significantly more maneuvering space for disabled visitors than is required in the typical accessible toilet stalls in multi-stall restrooms.

b. During the same alteration project, the Museum also created a Wellness Room to provide a quiet place for guests with anxiety-related conditions.

III. CONCLUSION

NASA finds the Museum in noncompliance with several Section 504 procedural requirements as well as architectural and digital accessibility requirements. Regarding compliance with Section 504 procedural requirements, the Museum must provide evidence of the completion of the corrective actions identified above within 90 days of the date of this report. Regarding compliance with architectural and digital accessibility requirements, the Museum must provide a written architectural and digital accessibility plan to rectify outstanding compliance issues identified above and in Appendices B through D no later than 180 days from the date of this report. The plan must incorporate timelines for resolution of these issues. NASA stands ready to provide civil rights technical assistance to the Museum. To the extent NASA deems that progress is insufficient, we may require the Museum to take further action.

Appendix A. Methodology

1. Pre-onsite Review Activities

Prior to the onsite review, SMM provided extensive written material and documentation regarding its compliance with Section 504, including the Museum's policies, procedures, and communications materials. It also worked with NASA to arrange a suitable time frame for NASA's on-site visit and coordinated schedules to ensure that the proper personnel would be available for interviews during the time of the on-site visit.

2. Onsite Compliance Review Activities

The NASA compliance team conducted an onsite review of SMM on October 22 to 24, 2019. During the visit, the compliance team conducted interviews with SMM employees and contractors.

In addition to these interviews, part of the NASA team conducted a full architectural review of the program spaces at SMM's facility as well as a review of all exhibits and technology used in these exhibits. The architectural review focused on whether SMM's facility (1) meets the relevant accessibility standards in place at the time of their construction or alteration and (2) provides overall program accessibility when viewed in its entirety. The exhibit and technology review focused on overall program access as no specific accessibility standards exist for information technology. Lastly, after the on-site review, the NASA team conducted an accessibility review of SMM's website.

NASA obtained the facts cited in our compliance analysis concerning SMM's Section 504 compliance from the sources outlined above, unless otherwise specified.

Appendix B. Web Accessibility Review

Accessibility Audit Report – Science Museum of Minnesota

ComplianceSheriff
By Cyxtera

Background

There are a range of disabilities that can affect computer users, including permanent or temporary impairments to mobility, hearing, sight and cognition. Different people can have different levels of disability and different levels of computer skills. Consequently, it is impossible to anticipate the needs of all users with disabilities in designing online content.

However, there are guidelines and assessment techniques that can address the most common problems. This document will use Web Accessibility Guidelines WCAG 2.1 Levels A and AA as its reference for accessibility.0F[22]

Many people with disabilities cannot access online material directly using a keyboard and mouse alone. Online material, however, can be read via third party "assistive technology" (AT) programs to make online information more accessible.

A popular AT program, used in this review, is "JAWS for Windows;" it reads aloud the user interface, in order to describe controls, graphics and text. Its functionality is generally a proxy for the programmatic accessibility of a program or website (i.e. ability of a 3rd party tool to read and interpret content).

Assessment Overview

This accessibility assessment is based on findings from a manual evaluation of web pages using AT, keyboard-only access and various system settings. This accessibility assessment is also based on findings from freely available automated accessibility scanning tools on the Internet. The goal is to identify and summarize the issues that can impact the accessibility of the website. The assessment is based on the latest guidelines available, WCAG 2.1, which includes newly added criterion to the Web Content Accessibility Guidelines 2.0 (WCAG 2.0).

Scope of the Evaluation

The accessibility audit of the website was performed by selecting representative page samples (test sample) of the site which capture the different page layouts and types of content that may exist on those layouts. While not an exhaustive page-by-page audit, the results demonstrate the overall accessibility of the site and the types of accessibility issues that currently exist. Usingthis

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[22] The Web Content Accessibility Guidelines Working Group, which includes representation from industry, disability communities, accessibility research and government, has developed a set of standards for HTML to make webpages accessible (WCAG 2.1).

information, current issues can be addressed by applying the feedback from this review across the entire site. Additionally, best practices can be put into place to avoid introducing future accessibility issues as new content is added and updates to the site design are implemented. Taking into consideration accessibility at design time is always the most cost and time effective approach to creating accessible web content.

The following table outlines the pages of the test sample selected for this audit:

Item	Description	URL
1	Home	https://www.smm.org/
2	Membership	https://www.smm.org/membership
3	Coming Soon	https://www.smm.org/comingsoon
4	Exhibits & Films	https://www.smm.org/exhibits-films
5	Hours & Admission	https://www.smm.org/visit/hours-admission
6	Parking & Directions	https://www.smm.org/visit/parking-directions
7	First Time Visitors	https://www.smm.org/first
8	Accessibility & Amenities	https://www.smm.org/visit/accessibility-amenities
9	Food & Drink	https://www.smm.org/visit/food-drink
10	Store	https://www.smm.org/store
11	Event Space Info Request Form	https://www.smm.org/visit/private-events/contact
12	Birthday Party Costs	https://www.smm.org/birthdays/costs
13	Birthday Party Planning Tips	https://www.smm.org/birthdays/tips
14	Youth Camps & Classes	https://www.smm.org/classes
15	Meet Our Instructors	https://www.smm.org/classes/instructors
16	Camp Drop-off	https://www.smm.org/classes/drop-off
17	Camp Participate Waiver	https://www.smm.org/waiver
18	Computer Classes	https://www.smm.org/comped/Classlist
19	Privacy Policy	https://www.smm.org/privacy
20	Computer Classes FAQ	https://www.smm.org/comped/FAQ
21	SciEd Email List Sign Up	https://www.smm.org/educators/subscribe
22	Book Field Trip Form	https://www.smm.org/educators/field-trips/reservation-request
23	Field Trip Page	https://www.smm.org/educators/field-trips
24	Standards Database Search	https://www.smm.org/educators/standards
25	Donate	https://www.smm.org/donate
26	Join Now	https://www.smm.org/membership/join
27	Tickets & Admissions	https://www.smm.org/tickets

How to read this report
Testing in this report emphasized compliance with government and/or industry standards. As is the nature of working with any subjective, broad standard, there is no binary "pass/fail" implied. One cannot say that software or websites are "100% compliant". One *can* say that they make complying with published standards, and accessibility of their website and services in general, a priority.

Applicable standards will be called out as appropriate. Except where noted, assume that issues presented here are general to the site, and not page specific. Further, these issues can often be addressed systematically via style sheets or by update of common code.

It is recommended that all issues in this report be addressed but priority given to those issues that are noted as [Blocking] or [Critical].

Context and assumptions
Unless otherwise noted, major scenarios and user interfaces are working correctly for keyboard access and system settings. The same applies for compatibility with AT such as JAWS for Windows.

Also note that unless otherwise stated, the primary browser in use for testing is Chrome and the OS is Windows 10. Assume that issues reported apply to all browsers and AT combinations unless otherwise stated.

Detailed Audit Results
Following are the details audit results from the accessibility audit. These results represent the types of issues that were identified on the website and should not be considered the only accessibility issues that exist. This information should be used to help content creators and developers be aware of various types of issues to avoid introducing them into the site as well as to review exiting content for similar issues throughout the site beyond the sample pages selected for the audit.

The severity of each issue will be indicated after the issue title. The following provides an explanation of the severity ratings:
- **Blocking** = Will prevent some users from accessing content or accomplishing a task.
- **Critical** = May prevent some users from accessing content or accomplishing a task
- **Major** = Will have a significant impact on user experience and prevents conformance with accessibility guidelines
- **Minor** = May an impact some users negatively but primarily prevents conformance with accessibility guidelines
- **Low** = Not likely to impact users but prevents conformance with accessibility guidelines

Note: Only Success Criterion that failed are included in the audit results below. No failures were identified within the test sample for the following Success Criterion:
- Success Criterion 1.1.1 Non-text Content: (Level A)
- Success Criterion 1.2.1 Audio-only and Video-only (Prerecorded): (Level A)
- Success Criterion 1.2.1 Audio-only and Video-only (Prerecorded)
- Success Criterion 1.2.4 Captions (Live)

- Success Criterion 1.3.1 Info and Relationships
- Success Criterion 1.3.2 Meaningful Sequence
- Success Criterion 1.3.3 Sensory Characteristics
- Success Criterion 1.3.4 Orientation: (Level AA)
- Success Criterion 1.3.5 Identify Input Purpose: (Level AA)
- Success Criterion 1.4.1 Use of Color
- Success Criterion 1.4.2 Audio Control
- Success Criterion 1.4.4 Resize text: (Level AA)
- Success Criterion 1.4.5 Images of Text: (Level AA)
- Success Criterion 1.4.10 Reflow: (Level AA)
- Success Criterion 1.4.12 Text Spacing: (Level AA)
- Success Criterion 1.4.13 Content on Hover or Focus: (Level AA)
- Success Criterion 2.1.2 No Keyboard Trap
- Success Criterion 2.1.4 Character Key Shortcuts: (Level A)
- Success Criterion 2.2.1 Timing Adjustable
- Success Criterion 2.2.2 Pause, Stop, Hide
- Success Criterion 2.3.1 Three Flashes or Below Threshold
- Success Criterion 2.4.1 Bypass Blocks: (Level A)
- Success Criterion 2.4.2 Page Titled
- Success Criterion 2.4.3 Focus Order: (Level A)
- Success Criterion 2.4.4 Link Purpose (In Context)
- Success Criterion 2.4.5 Multiple Ways
- Success Criterion 2.4.6 Headings and Labels
- Success Criterion 2.5.1 Pointer Gestures: (Level A)
- Success Criterion 2.5.2 Pointer Cancellation: (Level A)
- Success Criterion 2.5.3 Label in Name: (Level A)
- Success Criterion 2.5.4 Motion Actuation: (Level A)
- Success Criterion 3.1.1 Language of Page: (Level A)
- Success Criterion 3.1.2 Language of Parts
- Success Criterion 3.2.1 On Focus
- Success Criterion 3.2.2 On Input
- Success Criterion 3.2.3 Consistent Navigation
- Success Criterion 3.2.4 Consistent Identification
- Success Criterion 3.3.1 Error Identification
- Success Criterion 3.3.3 Error Suggestion
- Success Criterion 3.3.4 Error Prevention (Legal, Financial, Data)
- Success Criterion 4.1.3 Status Messages: (Level AA)

Success Criterion 1.2.2 Captions (Prerecorded): (Level A)
Captions are provided for all prerecorded audio content in synchronized media, except when the media is a media alternative for text and is clearly labeled as such. For more information, please see: [Understanding](#) & [How to meet](#)

Identified Issue(s):

No captions on videos. [Major]

On the Field Trip page there are several videos with spoken dialog that do not contain captions. Providing captions for videos allow those who are hearing impair to benefit from the video content. Found on page(s): Field Trips.

Success Criterion 1.2.3 Audio Description or Media Alternative (Prerecorded): (Level A)
An alternative for time-based media or audio description of the prerecorded video content is provided for synchronized media, except when the media is a media alternative for text and is clearly labeled as such. For more information, please see: Understanding & How to meet.

Identified Issue(s):

No Audio Descriptions or Media Alternative provided for videos. [Minor]

The intent of this Success Criterion is to provide people who are blind or visually impaired access to the visual information in a synchronized media presentation. This Success Criterion describes two approaches, either of which can be used.

One approach is to provide audio description of the video content. The audio description augments the audio portion of the presentation with the information needed when the video portion is not available. During existing pauses in dialogue, audio description provides information about actions, characters, scene changes, and on-screen text that are important and are not described or spoken in the main soundtrack.

The second approach involves providing all the information in the synchronized media (both visual and auditory) in text form. An alternative for time-based media provides a running description of all that is going on in the synchronized media content. The alternative for time-based media reads something like a screenplay or book. Unlike audio description, the description of the video portion is not constrained to just the pauses in the existing dialogue. Full descriptions are provided of all visual information, including visual context, actions and expressions of actors, and any other visual material. In addition, non-speech sounds (laughter, off-screen voices, etc.) are described, and transcripts of all dialogue are included. The sequence of description and dialogue transcripts are

the same as the sequence in the synchronized media itself. As a result, the alternative for time-based media can provide a much more complete representation of the synchronized media content than audio description alone.

On the Field Trip page there are several videos with spoken dialog and visuals. Describing what is shown in the various scenes either through an audio description or through a text alternative would be required to conform to this criterion. It is important to note that this is noted as a Minor issue as the videos are also lacking captions. Found on page(s): Field Trips.

Success Criterion 1.2.5 Audio Description (Prerecorded): (Level AA)

Audio description is provided for all prerecorded video content in synchronized media. For more information, please see: Understanding & How to meet.

Identified Issue(s):

No Audio Descriptions provided for videos. [Minor]

This criterion is a stricter version of Success Criterion 1.2.3 Audio Description or Media Alternative (Prerecorded). Success Criterion 1.2.3 allows for an Audio Description OR a Media Alternative whereas this stricter criterion required an Audio Description. For the video on the Field Trip page, describing what is shown in the various scenes through only an audio description would conform to this criterion. It is important to note that this is noted as a Low issue. Found on page(s): Field Trips.

Success Criterion 1.4.3 Contrast (Minimum): (Level AA)

The visual presentation of text and images of text has a contrast ratio of at least 4.5:1, except for the following:

- **Large Text** Large-scale text and images of large-scale text have a contrast ratio of at least 3:1;
- **Incidental** Text or images of text that are part of an inactive user interface component, that are pure decoration, that are not visible to anyone, or that are part of a picture that contains significant other visual content, have no contrast requirement.
- **Logotypes** Text that is part of a logo or brand name has no minimum contrast requirement.

For more information, please see: Understanding & How to meet.

Identified Issue(s):

#24A9E4 foreground on #FFFFFF background does not meet color contrast requirements. [Minor]

#24A9E4 foreground on #FFFFFF background does not meet color contrast requirements. The visual presentation of text and images should have a contrast ratio of at least 4.5:1, and large-scale text and images should have a contrast ratio of at least 3:1. Found on page(s): All pages with main menu.
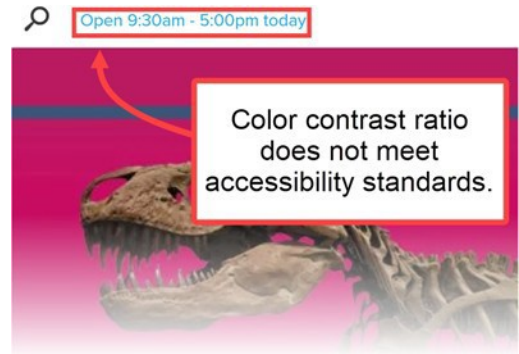
#0AA98C foreground on #FFFFFF background does not meet color contrast requirements. [Minor]

#0AA98C foreground on #FFFFFF background does not meet color contrast requirements. The visual presentation of text and images should have a contrast ratio of at least 4.5:1, and large-scale text and images should have a contrast ratio of at least 3:1. Found on page(s): All pages with main menu.

*#FFFFFF foreground on #24A9E4background does not meet color contrast requirements. [Minor]*

#FFFFFF foreground on #24A9E4 background does not meet color contrast requirements. The visual presentation of text and images should have a contrast ratio of at least 4.5:1, and large-scale text and images should have a contrast ratio of at least 3:1. Found on page(s): Home, Coming Soon, Exhibits & Films, Hours & Admission, Store, Event Space Info Request Form, Camp Participate Waver, Computer Classes, Computer Class Detail Page, SciEd Email List Sign Up,

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Book Field Trip Form, Field Trip Page, Standards Database Search, Donate, Join Now, Tickets & Admissions.

#FFFFFF foreground on #F05B36 background does not meet color contrast requirements. The visual presentation of text and images should have a contrast ratio of at least 4.5:1, and large-scale text and images should have a contrast ratio of at least 3:1. Found on page(s): Home, Membership, Coming Soon, Exhibits & Films, Hours & Admission, First Time Visitors, Field Trip Page, Tickets & Admissions.

#FFFFFF foreground on #B1D354 background does not meet color contrast requirements. The visual presentation of text and images should have a contrast ratio of at least 4.5:1, and large-scale text and images should have a contrast ratio of at least 3:1. Found on page(s): Membership, Field Trip Page, Standards Database Search.

#FFFFFF foreground on #0AA98C background does not meet color contrast requirements. The visual presentation of text and images should have a contrast ratio of at least 4.5:1, and large-scale text and images should have a contrast ratio of at least 3:1. Found on page(s): Membership, Parking & Directions, Accessibility & Amenities, Food & Drink, Birthday Party Costs, Birthday Party Planning Tips, Meet Our Instructors, Camp Drop Off, Computer Classes, Computer Class Detail Page, Privacy Policy, Computer Classes FAQ, Field Trip Page, Tickets & Admissions.
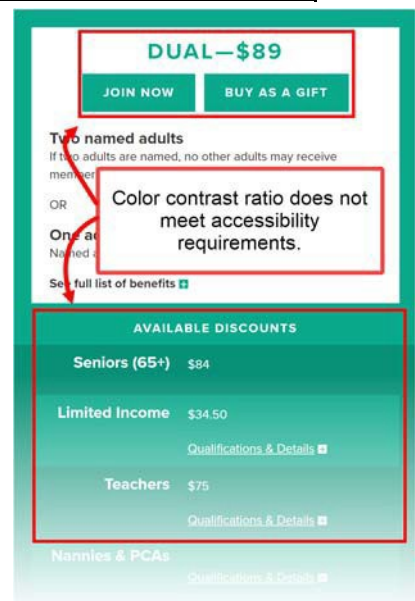
Success Criterion 1.4.11 Non-text Contrast: (Level AA)

The visual presentation of the following has a contrast ratio of at least 3:1 against adjacent color(s):

User Interface Components

Visual information required to identify user interface components and states, except for inactive components or where the appearance of the component is determined by the user agent and not modified by the author;

Graphical Objects

Parts of graphics required to understand the content, except when a particular presentation of graphics is essential to the information being conveyed.

For more information, please see: Understanding & How to meet.

Identified Issue(s):

#24A9E4 foreground on #FFFFFF background on Non-text image link does not meet color contrast requirements. [Minor]

#24A9E4 foreground on #FFFFFF background does not meet color contrast requirements. The visual presentation of text and images should have a contrast ratio of at least 3:1. Found on page(s): All pages with main menu.
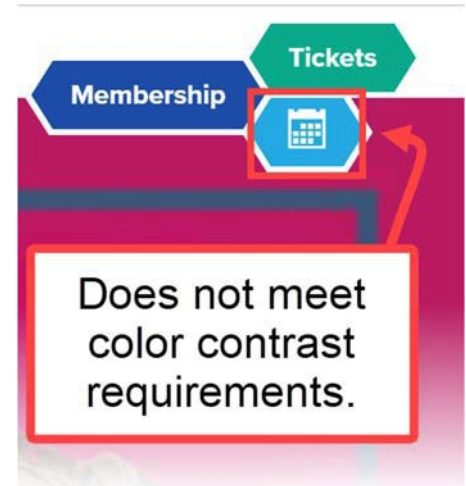

Success Criterion 2.1.1 Keyboard: (Level A)

All functionality of the content is operable through a keyboard interface without requiring specific timings for individual keystrokes, except where the underlying function requires input that depends on the path of the user's movement and not just the endpoints. For more information, please see: Understanding & How to meet.
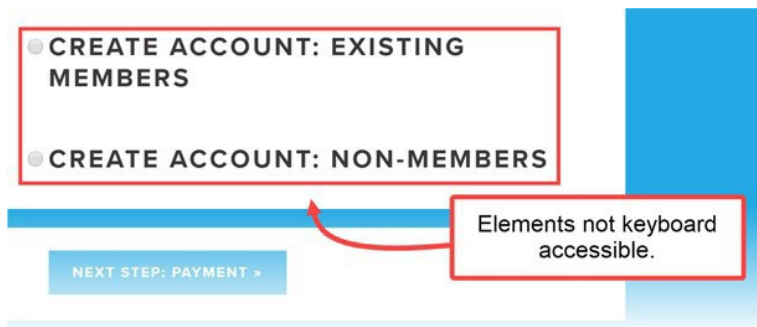
Identified Issue(s):

"Accessibility for PDFs" element not keyboard accessib...

On the Computer Classes page the "Accessibility for PDFs" element is not keyboard accessible. This prevents keyboard-only users from accessing this element and the information it contains. Ensure that all elements can be successfully navigated using only keyboard controls. Found on page(s): Computer Classes.
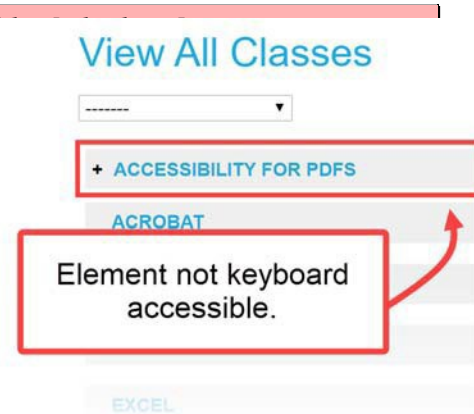
"Create Account: Existing Members" and "Create Account: Non-Members" elements not keyboard accessible. [Blocking]

On the Donate page, the "Create Account: Existing Members" and "Create Account: Non-Members" elements are not keyboard accessible. This will prevent keyboard-only users from accessing this content and making a selection. Found on page(s): Donate.

On the Join Now page, the radio buttons for membership options under "Supporting Members" and "Curie Society Members" headings are not keyboard accessible. This prevents keyboard-only users from accessing this content and making a selection. Ensure that content is keyboard accessible. Found on page(s): Join Now.
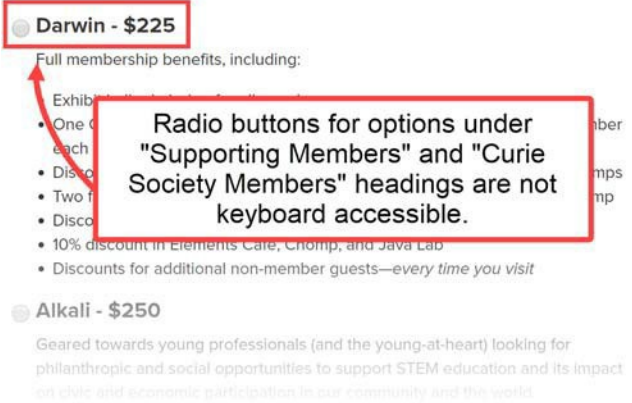
On the "Join Now" page the "Choose your own amount" radio button is not keyboard accessible. This prevents keyboard-onlyusers from accessing this content and making a selection. Ensure that all content is keyboard accessible. Found on page(s): Join Now.

When navigating the main menu, the expandable menu items are not keyboard accessible. This will prevent keyboard-only users from accessing this content. Ensure that all content is keyboard accessible and that users can navigate through all menu items using keyboard-only tools.

Found on page(s): All pages with main menu.

On the Standards Database Search page, the "By Grade", "By Format" and "By Subject" drop menus are not accessible using keyboard-only tools. This prevents keyboard-only users from accessing this content. Ensure that all content is keyboard accessible. Found on page(s): Standards Database Search.
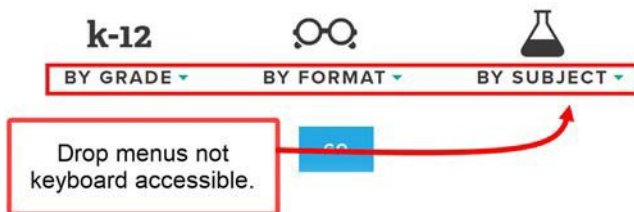
Success Criterion 2.4.7 Focus Visible: (Level AA)

Any keyboard operable user interface has a mode of operation where the keyboard focus indicator is visible. For more information, please see: Understanding & How to meet.

Identified Issue(s):

When navigating through the page header, keyboard focus is no longer visible when navigating through "Membership", "Tickets" and Calendar elements. This prevents compliance with accessibility guidelines. Ensure that an indication of keyboard focus is visible. Found on page(s): All with main menu.
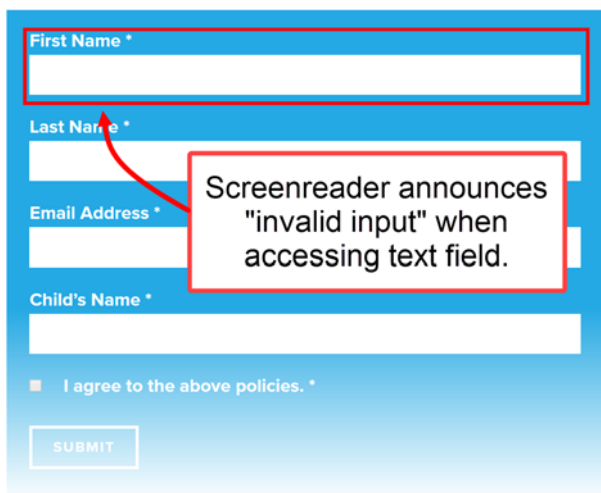

Success Criterion 3.3.2 Labels or Instructions: (Level A)

Labels or instructions are provided when content requires user input. For more information, please see: Understanding & How to meet.

Identified Issue(s):

Screenreader announces "invalid input" when accessing text field. [Minor]

When accessing text field, screenreader announces "invalid input" when there is no input yet in the text field. This can confuse non-visual users and prevents compliance with accessibility guidelines. Ensure that "invalid input" is only announced when it is necessary for a user to edit the input previously entered in the text field. Found on page(s): Camp Participate Waiver, SciEd Email List Sign Up, Field Trip Page.

Checkbox not labeled. [Critical]

On the Camp Participate Waiver page, the checkbox is displayed next to the text, "I agree to the above policies," but is not labeled independently. This causes the screenreader to read the checkbox but not define its related purpose. This can prevent non-visual users from understanding and making use of this element. Ensure that the checkbox is labeled defining its purpose. Found on page(s): Camp Participate Waiver.

Success Criterion 4.1.1 Parsing: (Level A)

In content implemented using markup languages, elements have complete start and end tags, elements are nested according to their specifications, elements do not contain duplicate attributes, and any IDs are unique, except where the specifications allow these features. For more information, please see: Understanding & How to meet.

Identified Issue(s):

Pages do not validate without errors against HTML and CSS parsers. [Low]

For assistive technology and built-in accessibility features of languages such as HTML and CSS to work properly, the code must be structured within the guidelines of those languages. To ensure this is done, pages should return zero errors when run through validators. In most cases failing to pass a validation scan without errors does not have a huge impact on users and this issue is being marked as minor. It is recommended as a best practice to validate pages during the creation phase and to address any issues identified before publishing the page. The two validators used for this testing are:

- The W3C Markup Validation Service (https://validator.w3.org/)
- The W3C CSS Validation Service (https://jigsaw.w3.org/css-validator/)

Found on page(s): All pages failed to successfully pass the HTML and CSS validation services.

Success Criterion 4.1.2 Name, Role, Value: (Level A)

For all user interface components (including but not limited to: form elements, links and components generated by scripts), the name and role can be programmatically determined; states, properties, and values that can be set by the user can be programmatically set; and notification of changes to these items is available to user agents, including assistive technologies. For more information, please see: Understanding &How to meet.

Identified Issue(s):

Menu elements not read as expandable by screenreader. [Critical]

When navigating the main menu, the "Camps", "Educators" and "Support" elements are not specified as expandable. This will prevent visually impaired users from understanding the function of these elements. Ensure that these elements are defined as expandable. Found on page(s): All pages with main menu.
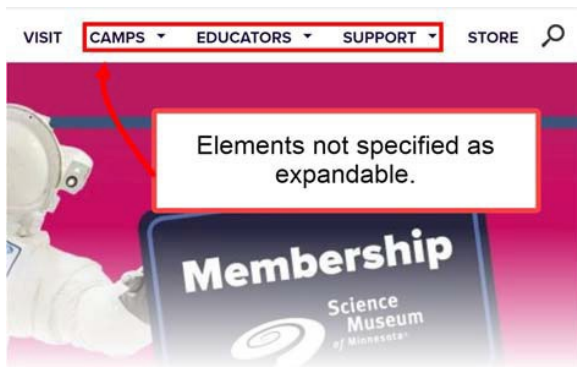
On the Camp Dropoff page, the screenreader reads the displayed map as "clickable, clickable, clickable". This may confuse screenreader-reliant users and does not clearly specify the content of the page. Ensure that screenreader announces that a map is displayed. Found on page(s): Camp Drop-off.
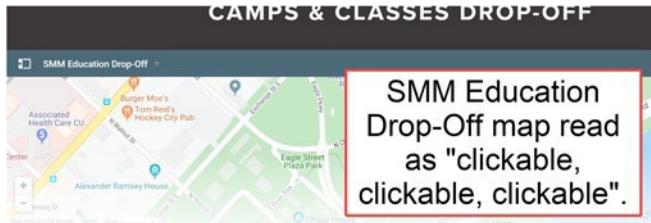
When hovering over the star element with the cursor, "star this map to view in google maps" is displayed. This is not displayed when navigating with keyboard or using screenreader. This prevents screenreader and keyboard users from understanding the purpose of this element. Ensure that this information is provided by labeling the element. Found on page(s): Camp Dropoff.
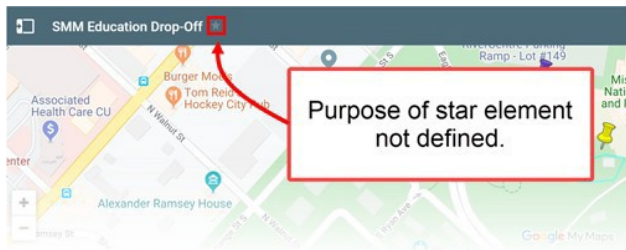
Appendix C. Other Digital Accessibility Issues

a. <u>Body Worlds Exhibit Captioning:</u> The Body Worlds Exhibit has many video displays that do not contain captions. While this exhibit is on loan to the museum it would be beneficial to those who are hearing impaired to provide a text transcript if possible.

b. <u>Job Kiosk:</u> In the main lobby of the museum, there is a kiosk that allows user to search for and apply for employment opportunities at the museum. This kiosk does not currently support screen reader technology or allow for uploading a copy of the applicant's resume, even though this is an included step in the on-screen process. Recommend a screen reader such as the open source NVDA screen reader would provide the ability of non-visual user to make use of the kiosk. Also, recommend providing the ability for users to attach a flash drive to the kiosk for the purpose of attaching their resume would allow users to complete this step of the application process.

c. <u>Early Explorers:</u> On the 4th floor there is an exhibit for Early Explorers that include a Little Tykes toy car on display. This placement of the toy car blocks the wheelchair side approach to the button which must be pressed to start the video display playback. While the wheelchair user can use a frontal approach to access the button, the button is placed too high for easy reach. Recommend adjusting placement of the toy car or the button placement.

d. <u>Body Worlds Interactive Display:</u> The Body Worlds Exhibit has an interactive display for "How Tobacco Changes You". This display is placed on a pedestal and the center of the display is 48.5" from floor. This will prevent a wheelchair user from accessing the display. Recommend allowing the pedestal height to be adjustable.

e. <u>Rising Sea Levels Interactive Display:</u> On the 5th floor there is an interactive display on Rising Sea Levels. This display is large and sits flat which can make it difficult for a wheelchair use to access. Recommend having these types of interactive displays angled so both an individual standing or in a wheelchair and use the display.

f. <u>Infestation – The Evolution Begins:</u> The live show, "Infestation – The Evolution Begins", does not include an audio system and it can be difficult for those who are hard of hearing to understand the spoken dialog. An elderly volunteer at the museum expressed this issue and that he would appreciate a printed copy of the script so he could follow along with the dialog of the show. Recommend adding an amplification system to this show or providing a printed copy of the script to those in need.

g. <u>Public Address Announcements:</u> An elder volunteer at the museum expressed concern over the inability to hear the announcements of when a show or demonstration is about to begin. Recommend installation of text-based PA Translation System displays around the facility to allow those with a difficulty hearing the ability to benefit from the PA announcements. Another option would be printed schedule that is made available at entry.

h. <u>Exhibit Language Support:</u> Some of the exhibits in the museum include English along with Spanish, French or Arabic. To add support to all the exhibits for many languages it is recommended to consider the use of Quick Response (QR) codes at all exhibits that allow access to the same

written text via a web browser in many languages. At a minimum, text can be provided in English with the ability to use Google Translate until such time the content can be translated by the museum.

Appendix D. Architectural Accessibility

The following "punch list" of accessibility barriers found in the Science Museum of Minnesota is organized based on different types of barriers for people with disabilities or those related to significant spaces. Under each barrier type, there are specific locations noted so the barriers may be identified easily by those tasked with retrofitting those barriers. Included in the description of the different accessibility barriers are specific UFAS and Standards citations customarily included in NASA accessibility evaluations. NASA can clarify any observed accessibility issues for Museum staff or consultants.

Based on information provided by the Museum, the original opening date for the facility was December 1999 and while this is after the January 26, 1993, effective date for newly constructed buildings under the Americans with Disabilities Act (ADA) Title III regulations, the facility is also covered as a newly constructed facility under NASA Section 504 regulations because it was constructed after the January 18, 1991, effective date established by NASA. The original facility was required to comply with the new construction provisions of the UFAS accessibility standards and those standards are the basis for this facility compliance review, but recent restroom and Wellness Room alterations as well as the remediation work in response to this accessibility review must comply with the 2010 ADA Standards.

Accessible Parking, Passenger Loading Zones and Accessible Pedestrian Approach Issues

1. Designated accessible parking spaces and passenger drop-off areas lack curb ramps per UFAS 4.7 and ADA Standards 406 in the following locations:
    a. Accessible van parking space east of the elevator core in Parking Deck Level P1 (barrier curb)
    b. Accessible parking space east of the elevator core in Parking Deck Level P3 (barrier curb)
    c. Accessible parking space east of the elevator core in Parking Deck Level P4 (barrier curb)
    d. Accessible parking space east of the elevator core in Parking Deck Level P5 (barrier curb)
    e. Main Entrance Passenger Drop-off along Kellogg Blvd. (barrier curb)
    f. Passenger Drop-off area at Target Education Commons off North Chestnut Street (34% roll-over curb)

2. Designated accessible parking spaces are served by curb ramps that exceed the maximum allowable 8.3% running slopes per UFAS 4.7 and ADA Standards 406 in the following locations:
    a. Accessible van parking space west of the elevator core in Parking Deck Level P1 (at 11.0%)
    b. Accessible parking space west of the elevator core in Parking Deck Level P2 (at 10.3%)
    c. Accessible van parking space east of the elevator core in Parking Deck Level P2 (at 12.2%)
    d. Accessible parking space west of the elevator core in Parking Deck Level P3 (at 10.4%)
    e. Accessible parking space west of the elevator core in Parking Deck Level P4 (at 11.1%)

   f. Accessible parking spaces west of the elevator core in Parking Deck Level P5 (at 10.0%)

   g. Accessible van parking space west of the elevator core in Parking Deck Level P6 (at 9.6%)

3. Two designated van accessible parking spaces on Parking Deck Level P5 lack an 8' wide access aisle or an alternate 11' wide vehicle space with a 5' wide accessible aisle per ADA Standards 502 – remove the van accessible signs or restripe for ADA compliant parking spaces and access aisle.

4.   There is an expansion joint at the threshold of the west Elevator Lobby door on the following parking deck levels that has an abrupt level change greater than 1/4" without a flush accessible metal expansion joint cover per UFAS 4.5.2 and ADA Standards 403.4:

   a. Accessible parking space west of the elevator core in Parking Deck Level P2

   b. Accessible parking space west of the elevator core in Parking Deck Level P3

   c. Accessible parking space west of the elevator core in Parking Deck Level P4

   d. Accessible parking spaces west of the elevator core in Parking Deck Level P5

   e. Accessible van parking space west of the elevator core in Parking Deck Level P6

5. The clear width of the curb ramps serving the following parking deck accessible spaces is less than the minimum required 36" between flared sides per UFAS 4.7 and ADA Standards 406:

   a. Accessible van parking space west of the elevator core in Parking Deck Level P1 (at 35")

   b. Accessible van parking space west of the elevator core in Parking Deck Level P2 (at 35")

   c. Accessible parking space west of the elevator core in Parking Deck Level P3 (at 34 1/2")

6. The wall mounted ash trays located near the entrance doors of the Parking Deck elevator lobby on each level project further (at 10") than the maximum allowable 4" between 27"-80" AFF per UFAS 4.4 and ADA Standards 307 and must include cane detectable elements below.

7. The typical accessible parking space signs on each level of the Parking Deck have the bottom of the signs below the 60" AFF minimum height and these signs may be obscured when a vehicle is parked in the parking spaces per UFAS 4.6.4 and ADA Standards 502.6.

1. The "Lending Library" parking area off the circular driveway on North Chestnut Street serving the Target Educational Commons on Level 2 lacks a van accessible parking space per UFAS 4.1.1(5) and ADA Standards 208 (note that because there are only 3 parking spaces at this location ADA 216.5 Exception 1 allows the omission of the sign that would otherwise be required to reserve this van accessible parking space therefore anyone can park in any of the three parking spaces in a lot with 4 or fewer spaces).

2. The National Park Service plaque located on the front entrance wall of the Museum projects further (at 5 1/2") than the maximum allowable 4" between 27"-80" AFF per UFAS 4.4 and ADA Standards 307 and must include cane detectable elements below.

Restroom Issues

1. Accessible toilet stall door lacks accessible pull hardware on both sides of the door in the following restrooms as required by UFAS 4.17.5 and ADA Standards 604.8.1.2:
   a. Omnitheater Level 5 Women's Restroom
   b. Omnitheater Level 5 Men's Restroom
   c. Omnitheater Level 6 Women's Restroom
   d. Omnitheater Level 6 Men's Restroom
   e. Discovery Hall Women's Restroom
   f. Discovery Hall Men's Restroom
   g. Native American Exhibit Level 4 Women's Restroom
   h. Native American Exhibit Level 4 Men's Restroom
   i. Riverview Lobby Level 2 Women's Restroom
   j. Riverview Lobby Level 2 Men's Restroom

2. The bottom of the reflecting surface of the mirrors in the following restrooms are higher than 40" AFF without a full height mirror elsewhere in the restroom per UFAS 4.19.6 and ADA Standards 603.3:
   a. Native American Exhibit Level 4 Back Gender-Neutral Restroom (at 44 1/2")
   b. Native American Exhibit Level 4 Front Gender-Neutral Restroom (at 44 1/2")

3. The locking mechanism in the following single-user restroom requires tight pinching to operate in violation of UFAS 4.13.9 and ADA Standards 404.2.7:
   a. The Sick Room Restroom on Level 2

4. The following multi-stall public restrooms which have the sign at the entry door located on the hinge, rather than the latch side of the door as required by UFAS 4.30.6 and ADA Standards 703.4.2:
   a. Exhibit Women's Restroom on Level 5

5. The height of the coat hook in the accessible toilet stalls of the following rooms is higher than the maximum 54" AFF specified by UFAS 4.25.3 and 48" per ADA Standards 603.4:
   a. Omnitheater Level 5 Women's Restroom
   b. Omnitheater Level 5 Men's Restroom
   c. Omnitheater Level 6 Women's Restroom
   d. Omnitheater Level 6 Men's Restroom
   e. Discovery Hall Women's Restroom
   f. Discovery Hall Men's Restroom
   g. Native American Exhibit Level 4 Women's Restroom
   h. Native American Exhibit Level 4 Men's Restroom
   i. Riverview Lobby Level 2 Women's Restroom
   j. Riverview Lobby Level 2 Men's Restroom
   k. Native American Exhibit Level 4 Front Gender-Neutral Restroom

    l.   Native American Exhibit Level 4 Back Gender-Neutral Restroom
    m. Educations Commons Level 2 Men's Restroom
    n.   The Sick Room Restroom on Level 2

6.   The drain and/or hot water pipes under the accessible lavatories are not insulated or otherwise protected in the following restrooms as required by UFAS 4.19.4 and ADA Standards 606.5:
    a.   Omnitheater Level 5 Women's Restroom
    b.   Omnitheater Level 5 Men's Restroom
    c.   Omnitheater Level 6 Women's Restroom
    d.   Omnitheater Level 6 Men's Restroom
    e.   Exhibit Level 5 Women's Restroom
    f.   Exhibit Level 5 Men's Restroom
    g.   Native American Exhibit Level 4 Women's Restroom
    h.   Native American Exhibit Level 4 Men's Restroom
    i.   Exhibit Level 4 Women's Restroom
    j.   Exhibit Level 4 Men's Restroom
    k.   Exhibit Level 3 Women's Restroom
    l.   Exhibit Level 3 Men's Restroom
    m. Chomp Café Women's Restroom
    n.   Chomp Café Men's Restroom
    o.   Riverview Lobby Level 2 Women's Restroom
    p.   Riverview Lobby Level 2 Men's Restroom
    q.   Educations Commons Level 2 Women's Restroom
    r.   Educations Commons Level 2 Men's Restroom

7.   The wall mounted lavatory in the following restrooms is set into an alcove that has less than the minimum 30" width specified per UFAS 4.19.3 and ADA Standards 606.2:
    a.   Native American Exhibit Level 4 Front Gender-Neutral Restroom (at 29 5/8")
    b.   Native American Exhibit Level 4 Back Gender-Neutral Restroom (at 29 1/2")

8.   The diaper changing station work surface in the following restrooms was higher than 34" as specified by UFAS 4.32.4 and ADA Standards 902.3:
    a.   Discovery Hall Women's Restroom (at 36" AFF)
    b.   Discovery Hall Men's Restroom (at 36" AFF)
    c.   Riverview Lobby Level 6 Women's Restroom (at 35 1/2" AFF)
    d.   Riverview Lobby Level 6 Men's Restroom (at 35" AFF)
    e.   Exhibit Level 5 Women's Restroom (at 35 3/4" AFF)
    f.   Exhibit Level 5 Men's Restroom (at 35 3/4" AFF)
    g.   Omnitheater Level 5 Women's Restroom (While the work surface of this vertical DCS is at 34" AFF the handle is at 56" AFF and out of wheelchair user reach range per UFAS and ADA)
    h.   Omnitheater Level 5 Men's Restroom (The work surface of this vertical DCS is at 37 1/2" AFF and the handle is at 56" AFF and out of wheelchair user reach range per UFAS and ADA)

 i. Main Lobby Women's Restroom Level 5 (at 35" AFF)
 j. Main Lobby Men's Restroom Level 5 (at 36" AFF)
 k. Native American Exhibit Level 4 Front Gender-Neutral Restroom (at 36"AFF)
 l. Native American Exhibit Level 4 Back Gender-Neutral Restroom (at 36 1/2" AFF)
 m. Exhibit Level 4 Women's Restroom (at 35 1/2" AFF)
 n. Exhibit Level 4 Men's Restroom (at 35" AFF)
 o. Exhibit Level 3 Women's Restroom (at 35 1/2" AFF)
 p. Exhibit Level 3 Men's Restroom (at 35 1/2" AFF)
 q. Chomp Café Women's Restroom (at 35 1/2" AFF)
 r. Educations Commons Level 2 Women's Restroom (at 36" AFF)
 s. Educations Commons Level 2 Men's Restroom (at 37" AFF)
 t. Riverview Lobby Level 2 Women's Restroom (at 38" AFF)
 u. Riverview Lobby Level 2 Men's Restroom (at 36" AFF)
 v. Wellness Room at Native American Exhibit (at 35")

9. The center of the accessible toilet is further than 18" from the side wall per UFAS 4.16.2 and ADA Standards 604.2 in the following restrooms:
 a. Omnitheater Level 5 Men's Restroom (at 18 7/8")
 b. Omnitheater Level 6 Men's Restroom (at 19")
 c. Riverview Lobby Level 6 Women's Restroom (at 18 5/8" AFF)
 d. Exhibit Level 5 Men's Restroom (at 19 3/8" AFF)
 e. Main Lobby Women's Restroom Level 5 (at 18 3/4" AFF)
 f. Main Lobby Men's Restroom Level 5 (at 19 1/4" AFF)
 g. Native American Exhibit Level 4 Women's Restroom (at 18 5/8")
 h. Native American Exhibit Level 4 Men's Restroom (at 19 1/4")
 i. Exhibit Level 4 Women's Restroom (at 19 3/4" AFF)
 j. Exhibit Level 4 Men's Restroom (at 19 5/8"AFF)
 k. Exhibit Level 3 Women's Restroom (at 19"AFF)
 l. Exhibit Level 3 Men's Restroom (at 18 5/8"AFF)
 m. Chomp Café Women's Restroom (at 19")
 n. Chomp Café Men's Restroom (at 19 1/2")
 o. Educations Commons Level 2 Men's Restroom (at 18 3/4" AFF)
 p. The Sick Room Restroom on Level 2 (at 19 1/2")

10. A door in the following restrooms lacks the minimum required maneuvering clearance for wheelchair users per UFAS 4.13.6 or 4.17.5 and ADA Standards 404.2.1.2 or 604.8.1.2:
 a. Native American Exhibit Level 4 Women's Restroom (Pull side of entry door is less (at 46 1/2") than the minimum 48" required for this latch side approach)
 b. Native American Exhibit Level 4 Men's Restroom (Pull side of entry door is less (at 46 1/2") than the minimum 48" required for this latch side approach and the right corner of the lavatory counter encroaches into the minimum 41" push side maneuvering clearance per UFAS)
 c. Omnitheater Level 5 Men's Restroom (a trash can blocks the minimum 18" latchside, pull side maneuvering clearance of the entry door)
 d. Native American Exhibit Level 4 Front Gender-Neutral Restroom (chair blocks pull side clearance of the entry door)

e. Native American Exhibit Level 4 Back Gender-Neutral Restroom (chair blocks pull side clearance of the entry door)

f. Chomp Café Women's Restroom (Pull side of entry door is less (at 46 1/2") than the minimum 48" required for this latch side approach)

g. Chomp Café Men's Restroom (Pull side of entry door is less (at 46 1/2") than the minimum 48" required for this latch side approach and the right corner of the lavatory counter encroaches into the minimum 41" push side maneuvering clearance per UFAS)

h. Riverview Lobby Level 2 Women's Restroom (a trash can blocks the minimum 18" latch side, pull side maneuvering clearance of the entry door)

11. The end of the rear grab bar at the accessible toilet in the following restrooms is mounted further than 6" from the adjacent side wall per UFAS 4.16.4 or 1.17.3 and ADA Standards 604.5:
    a. Exhibit Level 5 Men's Restroom (at 8")
    b. Native American Exhibit Level 4 Men's Restroom (at 7")
    c. Exhibit Level 4 Women's Restroom (at 8")
    d. Exhibit Level 4 Men's Restroom (at 8")
    e. Exhibit Level 3 Women's Restroom (at 7")
    f. Exhibit Level 3 Men's Restroom (at 7")
    g. Chomp Café Men's Restroom (at 7")
    h. Riverview Lobby Level 2 Women's Restroom (at 7")
    i. The Sick Room Restroom on Level 2 (at 7")

12. The top gripping surface of the side grab bar at the accessible toilet in the following restrooms is mounted higher than the 33"-36" range specified by ADA Standards 604.5:
    a. Native American Exhibit Level 4 Back Gender-Neutral Restroom (at 37" AFF for the side garb bar and 36 3/4" AFF for the rear grab bar – there is no construction tolerance for these elements)

13. In the following restrooms, there is a movable element that encroaches into the required clear floor space or minimum turning space required in the restroom per UFAS 4.22.3 and ADA Standards 603.2:
    a. Native American Exhibit Level 4 Front Gender-Neutral Restroom (a chair blocks door clearance and a trash can blocks turning space)
    b. Native American Exhibit Level 4 Back Gender-Neutral Restroom (a chair blocks door clearance and a trash can blocks turning space)

14. There are surface slopes at floor drains along the accessible route to require accessible elements in the following restrooms exceed the maximum allowable 2% per UFAS 4.22.3 and ADA Standards 403.3:
    a. Omnitheater Level 5 Men's Restroom (at 9.5% on route to ADA urinal)
    b. Omnitheater Level 6 Women's Restroom (3.9% just under ADA toilet)
    c. Omnitheater Level 6 Men's Restroom (6.4% just under ADA toilet)
    d. Discovery Hall Women's Restroom (4.7% just under ADA toilet)
    e. Discovery Hall Men's Restroom (3.3% just under ADA toilet)

Protruding Objects Not Cane Detectable

The following features in this facility lack a cane detectable element below and project more than 4" into the adjoining pedestrian circulation route above 27" AFF or have the bottom below 80" AFF in violation of UFAS 4.4 and ADA Standards 307:

1. The end of the guardrail along the Dining Patio on Level 6 projects 8" beyond the face of the parapet wall at 41 1/2" AFF.
2. The wall mounted brochure holder at the Meeting Room Entry Lobby on Level 6 projects more than 4" out at 55" AFF.
3. The typical tape barrier stanchions used throughout the facility have fabric tape extending between posts and are not cane detectable because the bottom of the tape is approximately 36" AFF. The company that produces these stanchions makes a retrofit kit that allows an additional row of tape to be added between posts with the bottom at or below 27" so it is cane detectable for blind and visually impaired customers using canes as wayfinding devices.
4. The hi-low drinking fountains nearest the Exhibit Elevators on Levels 3, 4 and 5 project 18 1/2" into the adjacent circulation route.
5. "Placebo Effect" video kiosk near Level 4 drinking fountains is not cane detectable.
6. "A Modern Charlatan" display" on Level 4 (at 6 1/2" out).
7. "What happens when you catch a cold" display on Level 4 (at 5 1/4" out).
8. Guest Bookshelf at Mummy Display on Level 4 (at 13" out).
9. "Why talk about race?" monitor on Level 4 (at 7" out).
10. The 3 panels at the Canoe Exhibit in Level 4 Native American Exhibit (at 7" out).
11. "My early growth chart" monitor on Level 4 (at 5 3/4" out).
12. Typical Elevator Lobby Directories (at 5" out) on each Level of the Museum.
13. Level 2 support beam under stairs at Riverview Lobby (head height at 68" AFF)
14. Main Entrance Vestibule has two silver columns angled into the adjacent circulation route (at 8").
15. Main Lobby ticket counter angled columns project 10" into adjacent circulation route.
16. Entrance of Museum Store angled columns project 10" into adjacent circulation route.
17. Level 5 "Pipe Tunnel" display projects more than 4" into the adjacent circulation route.
18. Bronze railings around exhibits on Level 5 at Tree Trunk & Duck Pond (at 28 3/4" AFF).
19. Underside of "Changing Seasons" display on Level 5 is not cane detectable.
20. "Space Suit" Video recording kiosk on Level 5 (at 28 1/4" AFF).
21. Underside of "River Pilot" Simulator is not cane detectable (at 29" AFF).
22. Top railing at Exhibit Stairs on Level 5 is not cane detectable.
23. All wall mounted paper towel dispensers in public restrooms project 6"-10" into the circulation route above 27" AFF.

Elements Café Accessibility Issues Level 6
1. The following elements in the food service area are out of reach for wheelchair users per UFAS 5.3 and ADA Standards 227.4:
    a. Coffee cups (located 54" AFF at 30" back from the edge of the counter)
    b. Takeout soup bowls (49 1/2" AFF at 29" back from the edge of the counter)
    c. At the soda dispenser the water/soda button (55" AFF at 15" back)

2. None of the (14) four-person metal dining tables on the exterior dining balcony overlooking the Mississippi River have adequate knee/toe clearance for a wheelchair user to pull underneath per UFAS 5.1 and ADA Standards 226. There must be 5% that are accessible.
3. There is no sign informing disabled customers that staff will be happy to bring their Poke dish around the inaccessible 55" high glass counter.

Chomp Café Accessibility Issues Level 3
1. The following elements in the food service area are out of reach for wheelchair users per UFAS 5.3 and ADA Standards 227.4:
    a. Ketchup Dispenser (located 52" AFF at 19" back from the edge of the counter)
    b. Salt (located 50" AFF at 19" back from the edge of the counter)
2. None of the (16) four-person metal dining tables on the exterior dining balcony overlooking the Mississippi River have adequate knee/toe clearance for a wheelchair user to pull underneath per UFAS 5.1 and ADA Standards 226. There must be 5% that are accessible.
3. None of the (20) four-person or (7) two-person dining tables at this Cafe have adequate knee/toe clearance for a wheelchair user to pull underneath per UFAS 5.1 and ADA Standards 226. There must be 5% that are accessible.

Target Educations Commons Area Issues
1. None of the picnic tables on the exterior dining patio have adequate knee/toe clearance for a wheelchair user to pull underneath per UFAS 5.1 and ADA Standards 226. There must be 5% that are accessible. Confirm that the interior dining tables that were stored at the time of the accessibility inspection will accommodate wheelchair users as well.
2. The pedestal-style drinking fountain serving the exterior dining patio area is not cane detectable by blind students and must be screened with cane detectable elements/railings per UFAS 4.4 and ADA Standards 307.
3. The vending machines in this commons area do not include money slots that are within 54" of the floor as required by UFAS 5.4. The snack vending machine and one of the drink vending machines have slots at 56"-60" AFF.

Omnitheater Accessibility Issues (Main Lobby on Level 5 – ADA Entry on Level 6)
1. The 16 designated wheelchair seating locations at the upper level of this large screen theater which seats 340 are adequate based on the minimum number required by UFAS 4.1.4(18)(a), but there are a few accessibility issues that must be addressed:
    a. The outer railing for the two ramps which lead to the wheelchair seating locations right and left of the projector from the 6th Level lobby area are lacking per UFAS 4.8.5 and ADA Standards 405.8.
    b. The new 43 1/2" high rolling concessions sales counter at the Level 5 Lobby lacks an accessible lowered portion for wheelchair customers to purchase snacks per UFAS 7.2 and ADA Standards 227.

Level 3 Auditorium Accessibility Issues
1. The 4 wheelchair seating locations at the upper level of this 289 seat auditorium combined with the 4 wheelchair accessible seating locations (provided below removable seats) in the front row are adequate to meet the minimum 7 wheelchair seating locations required by UFAS 4.1.4(18)(a), but there are a few accessibility issues that must be addressed:

a. There appears to be no assistive listening system for those who are hard of hearing installed in this auditorium as required by UFAS 4.1.2(18)(b) and ADA Standards 219.

b. The portable bars at the back of the Auditorium have a 47" high counter with no lowered accessible sales counter for wheelchair customers per UFAS 7.2 and ADA Standards 227.

Other Miscellaneous Accessibility "Punch List" Issues Observed

1. The room identification sign at the Kitty Anderson Youth Science Center on Level 2 lacks tactile and Braille letters required by UFAS 4.30.4 and ADA Standards 225.

2. None of the dining tables in the Main Lobby Atrium served by Java Lab coffee shop have adequate knee/toe clearance for a wheelchair user to pull underneath per UFAS 5.1 and ADA Standards 226. There must be 5% that are accessible.

3. The ramp leading up to the lower level of the Tow Boat Exhibit on Level 5 has a steep (at 28.5%) transition portion that exceeds the maximum allowable 8.3% and this ramp lacks horizontal extensions on the top and bottom ends of the handrails as required by UFAS 4.8 and ADA Standards 405.

4. In Classrooms 5 & 6 on Level 2, the hand wash/utility sinks have rims higher (at 36 3/8") than the maximum allowable 34" per UFAS 4.19.2 and ADA Standards 606.

5. The area where guests line up as they wait to go into the Lab Theater is defined by a set of stanchions which are positioned so there is less than 32" between the stanchion bases and the adjacent wall per UFAS 4.3.3 and ADA Standards 403.5.

6. There are no assistive listening system headsets provided for the all assembly areas with PA systems, such as the Learning Labs, Classrooms, Lab Theater, etc. per UFAS 4.1.4(18)(b) and ADA Standards 219.

7. The vending machines in the Locker Area of the Main Lobby do not include money slots that are within 54" of the floor as required by UFAS 5.4. The snack vending machine has a slot at 63" AFF.

8. The following exhibit areas appear to be "technically infeasible" to make accessible due to constraints beyond the control of the operator of this facility and information/experiences offered in these areas should be presented in an alternate accessible format (staff orientation with auxiliary book, alternate video experience, web or app based experience, recording, etc.) for disabled guests who cannot physically access them:

a. The Tow Boat Exhibit on Level 5 accessed by very narrow steps;

b. The school locker display on Level 4 "Race Exhibit" area because cane detection would destroy the effect of the core display.