Physical Accessibility Guide for LeMay - America's Car Museum

Adrienne Duran-Rios

2025 Thesis Project
University of Washington Museology Graduate Program

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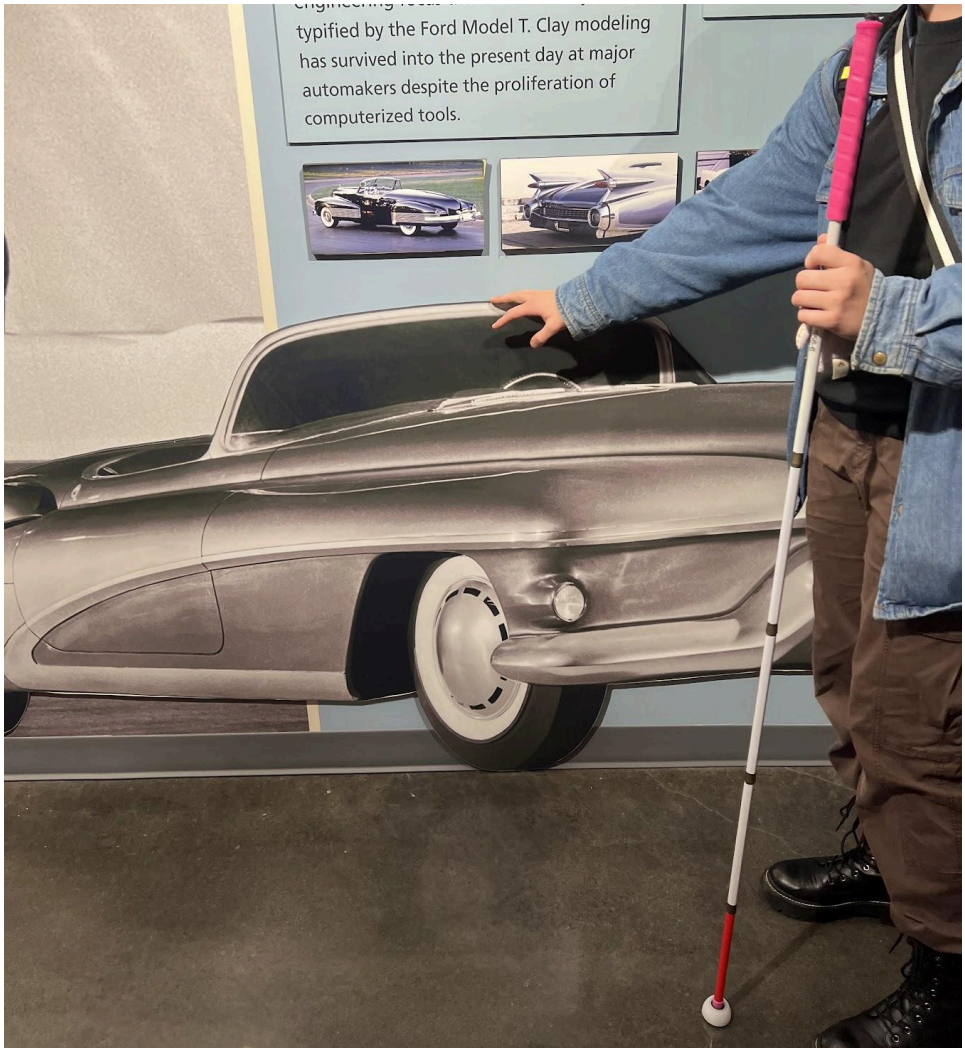
Introduction

Why make museums more accessible?

Disabled people are just as worthy of access to information as any other group of people, which is why creating an accessible museum is so important. We are living in a country with an aging population: 10,000 people turn 65 every day in the United States and most of us will become disabled one day. A person's interest in cars doesn't go away simply because they may be disabled, in fact, one in four people are disabled in some way (AARP International). Making things more accessible is also beneficial to non-disabled people, such as children and people who learn best through different mediums.

The mission of Lemay - America's Car Museum (ACM)'s is to "interpret the history and technology of the automobile and its influence on American culture." In order to reach the goal of engaging the general public, the interpretation must be in an accessible format.

ACM has already taken steps to become more accessible, beginning with hiring Barry Long, an accessibility consultant, to do an evaluation in March 2023. Since then, the museum has begun implementing some of his advice in installing automatic doors at the entrance and the bathrooms, which is a huge step forward. ACM also has ramps located by the entrance and the parking lot. They have two cars visitors can touch: one in which to take pictures and the other in which to sit. Although the initial reason for installing these exhibits may not have been for the blind, this is a fantastic step towards accessibility for the blind/low vision. Finn, a member of this project's focus group, pointed out that the cutouts on the walls (pictured below), which were probably just designed this way for aesthetic reasons, are actually a good alternative to touching the cars or models since visitors can get a feel for the shape of the car. The museum has also added captions to the three TVs in the State Farm Theater, and is on its way to implementing touch tours in 2026.



This is a photo of Finn touching a cut out of a car on the wall to feel its shape.

How are museums becoming more accessible?

Over the last 20 years, great strides have been made in accessibility in and outside of museums. This guide has taken inspiration from many of these museums, who are doing this work. Many of them, as well as independent museum and accessibility professionals, have already created guides for accessibility based on their work and their observations. The Smithsonian Institute has published multiple comprehensive guides such as the Smithsonian Guidelines for Accessible Exhibition Design and A Guide for Museums Accessibility Toolkit. The Museum of Modern Art is an example of a museum that has worked extensively on accessibility, featuring a sizable

accessibility page on their website, promoting their accessibility features. They employ QR codes that contain maps, audio descriptions, and additional information about artworks.

Museums are beginning to employ Universal Design when implementing new ideas. When most people think of accessibility, they think of inclusive design. Inclusive design is, for example, creating a ramp next to stairs, or Netflix's language subtitles, or the ability a phone has to display bigger text. These are alternatives to the original design that are accessible. Universal Design, however, is created with everyone in mind from the beginning. Think of the cutouts in the sidewalks. They were originally meant for wheelchair users; however, they benefit many different groups of people: parents pushing strollers, people with carts, travelers with luggage, and children on bikes. Both designs informed the creation of this guide.
https://www.arts.gov/sites/default/files/Design-for-Accessibility.pdf
https://www.nisenet.org/sites/default/files/catalog/uploads/2971/ud_guide_exhibits_10_23_print.pdf

How did I come up with these changes?

My name is Adrienne Duran-Rios and I am a graduate student in the Museology program at the University of Washington. Making sure information is accessible to everyone, no matter their research experience, knowledge, or ability, is very important to me. As a disabled person with hearing loss and mobility impairment, I used my experience, as well as that of the focus group, to inform which areas of the museum needed accessibility improvement.

ACM embarked on an accessibility initiative in 2023 beginning with a consultation and recommendations by an accessibility consultant, Barry Long. The museum received funding to make improvements, which included installing automatic doors for the entrance and all bathrooms. They requested further support in understanding which specific areas needed improvement in physical accessibility.

The purpose of this project is to improve accessibility at ACM for visitors with physical disabilities. From this guide, the staff will learn about what aspects of their space are inaccessible and how to make them more inclusive. Visitors with disabilities

will feel more welcome, and visitors of all abilities will benefit from the implementation of inclusive design.

I started my process in April of 2024 by walking through the museum with Kelsey Cross, the education manager at ACM, and using my own experience as someone with hearing loss and mobility impairment to begin taking notes. Around this same time, I reviewed the assessment by Barry Long, which aided in creating an initial plan. What Kelsey and I decided was that I'd do an assessment and then create a guide that would direct the museum in possible plans of action. Through the summer of 2024, I conducted research into literature pertaining to accessibility in museums (see bibliography). I then applied this research into best practices to ACM. The next step I took was to do a second walk through with this new information, in addition to leaving my glasses off (my prescription is a very mild one) to determine the accessibility of the exhibit signs. Lastly, I organized a focus group of people, Finn Paynich and Kennysha Johnson, with various physical disabilities and did a walk through along with a discussion. One member was recruited from a disability studies' class I was taking and another I recruited from the Tacoma disability community. As we walked through the museum, I pointed out areas that I had already decided needed adjusting. In some places, I pointed out issues that I did not have a solution for and needed their input, and in many cases as we walked through the museum, they were able to come up with many ideas and point out problems that I didn't know were there. This is exactly the reason I got together a focus group. The following guide is formed by these different methods of research.

What sort of changes?

Kelsey Cross, Education Manager, has requested that organization of accessibility changes be around ease of implementation, price, and immediate benefit. This guide is organized into three phases based on these criteria. The changes in Phase 1 are relatively inexpensive and require less staff time comparatively. Phase 2 and 3 increase in price and/or staff time. These tasks do not need to be done in order. This is also not a budget, instead I give price estimates to aid in the decision making

process. Ultimately, this is a guide for how to implement accessibility changes specifically at the ACM.

Color-coded by topic: signage is red, exhibits are blue, training is purple, tours are green, website is pink, other is black.

Phase 1		Considerations	Page #
	Signage for ramp grades	One sign ~$50-100 (uline) 12 signs needed	15
	Signage for accessible entrances	One sign ~$50-100 (uline) 2 signs needed	17
	Raised tape for white cane users		27
	Additional seating	Current bench model and pricing were not made available Estimate: $200-$600 per bench	28
	Disability Sensitivity Training	May consider hiring a professional to train staff	41
	Training for pre-existing guided tours	May consider hiring a professional to train staff	42
	Keep staff and volunteers updated		42
	Portable microphones and speakers	1 = $35 (WinBridge) 5 = $170 10 = $315	43
	Touch tours	May consider hiring a professional to train staff	43
	Offer ASL interpretation quarterly	$78-110 per hour per interpreter; typically need two interpreters	45
	Assistive Listening Devices		45
	Automatic Speech Recognition for presentations		46
	Map of museum on website		47

	Create an accessibility page on the website. Announce on social media what the museum is doing to become more accessible.		47
Phase 2			
	Make audio descriptions available for mini-theaters in exhibitions. This could be part of a larger, audio description podcast/audio tour		30
	Add captions to all videos	One TV costs ~$200-600	31
	Large print/braille options		33
	Tactile reproductions	A model car can cost anywhere between $15 and $200 for premade, whereas custom ones can go between $500 and $2000	38
	Wheelchair accessibility		40
	ASL interpreted tours on a monthly or weekly basis (can get a grant for this)	$78-110 per hour per hour per interpreter; typically need two interpreters	45
	Buying CART devices	$60-200 per hour per person; one or two needed	45
	Update accessibility page on website		48
	Ensure the website and mobile sites are compliant with low-vision standards		49
Phase 3			
	Replacing exhibit signs	This is an expensive and time consuming project that would require replacing the majority of the signs in the museum	Pg 11 for easy/temporary fixes Pg 18 for extensive fixes
	Audio guides		50
	Access Coordinator/Advisory Committee	This would require hiring a new employee or paying people to be on an advisory committee	51

Based on **NISE Network's Universal Design Guidelines and** the **Smithsonian Accessibility Toolkit**

Signage

Other than the objects themselves, the exhibit signs are the most important part of a museum. Not only do they provide information, but they also interpret the facts for the visitors, in addition to how the museum communicates its mission. This is why it is so vital that everyone be able to access the information the museum has put so much work into creating. The most universal issue within the museum's exhibit signs is the fact that most of the text is too small for a good amount of visitors to be able to read. Other issues are the text to background contrast, sign height, and lack of signage for ramp grades and accessible entrances.

According to the ADA, signs should be 48” above the floor for lowest character, and the highest character should be no more than 60” off the floor. “Type size varies depending on the distance from which the label will be read. Fonts should be sans serif, such as Arial or Helvetica, with easily recognizable characters” (Design for Accessibility). When viewed from six feet away, the text should be a minimum of 3/4ths of an inch big (19mm). However, many of the individual signs for the cars are on the ground, which is a logical placement for them given the kind of objects being displayed, so to take this into account, the font size should be between 3/4th (19mm) and 1 and 1/8ths of an inch (28mm), which is size 100 pt to 148 pt. Ideally, the labels should be mounted in such a way that the reader can get within 3 inches of them. Locate labels in consistent locations throughout the exhibit (Accessible Exhibition Design).

Avoid using bright or glossy mediums. Use a 70 percent minimum contrast (black on white is 100) between the text and background. Avoid bright whites that produce glare (Design for Accessibility). Do not center more than three lines of text, justify the left margin, and keep a ragged right margin (such as this paper). Print only on solid backgrounds. “Print on a surface that is textured or that has differing colors and tones (e.g. faux marble, woodgrain), which can result in the same illegibility as overprinting” (Accessible Exhibition Design).

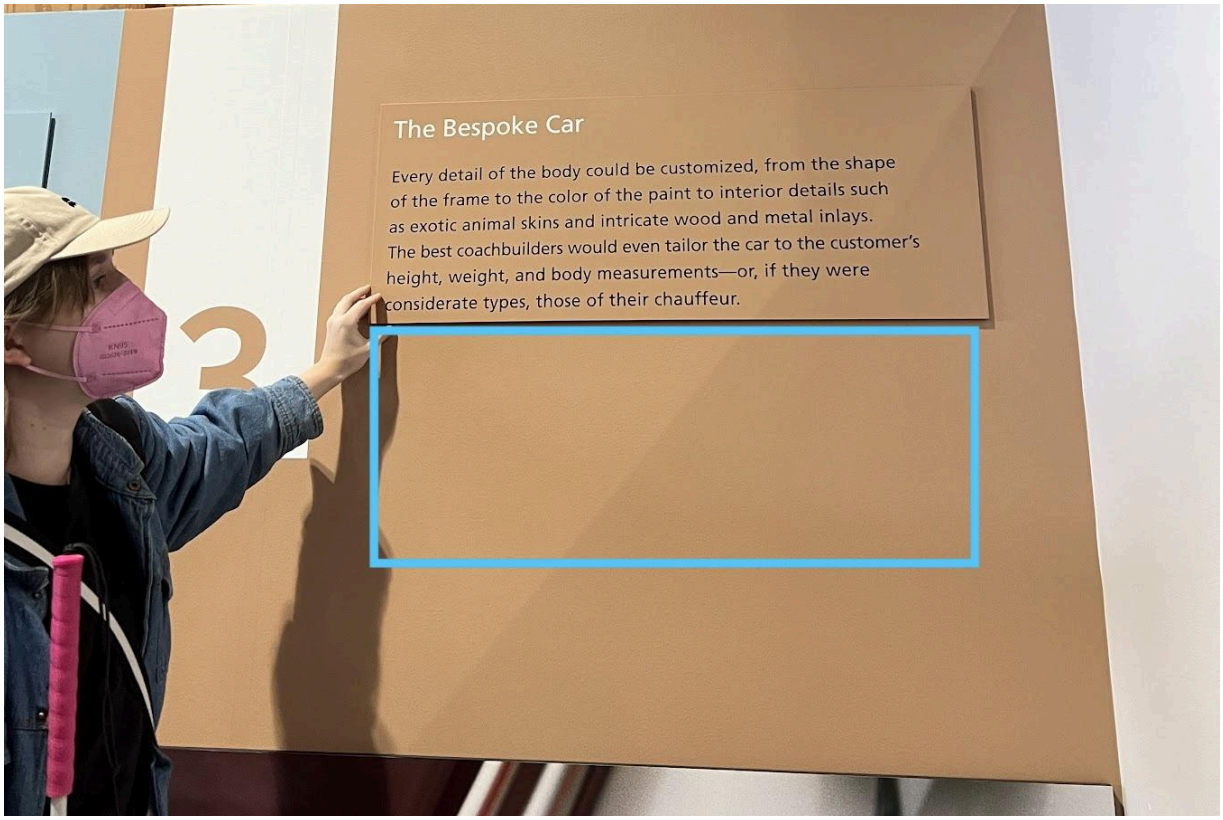
https://www.aam-us.org/2021/07/01/accessible-communications-guidelines/

https://graphicartistsguild.org/downloadable-disability-access-symbols/

Exhibit Signs (easy and/or temporary fixes)

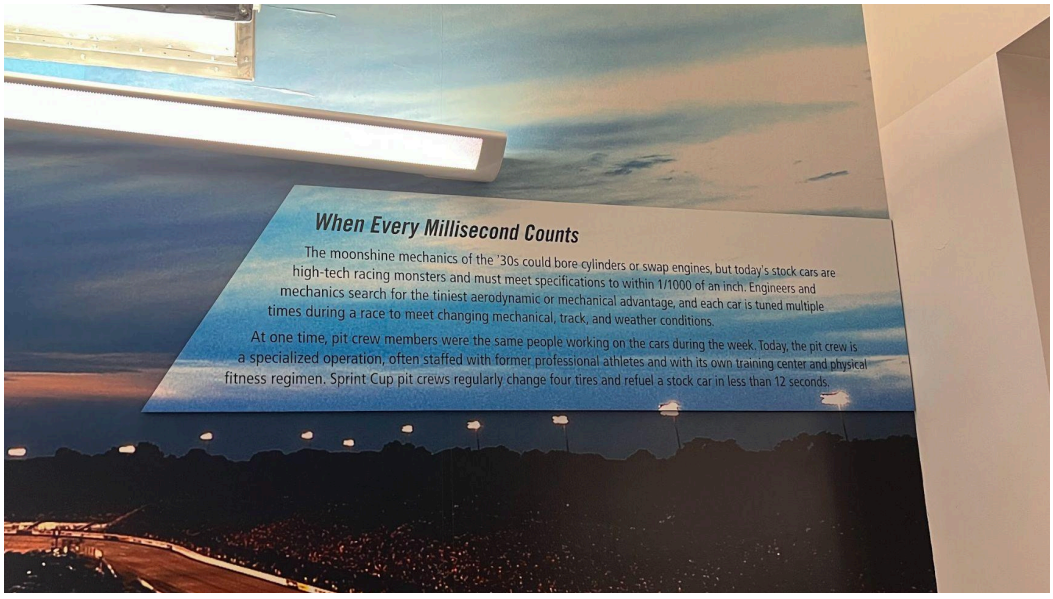
Many of the exhibit signs within the museum are difficult to read, but a few of them are relatively easy to fix. “Exhibit signs” are split into two separate phases: phase 1 and phase 3. This first section contains the easier fixes and/or temporary fixes. The issues observed that are easily and/or temporarily fixed are relating to the height of exhibit signs and the lack of contrast in the text.

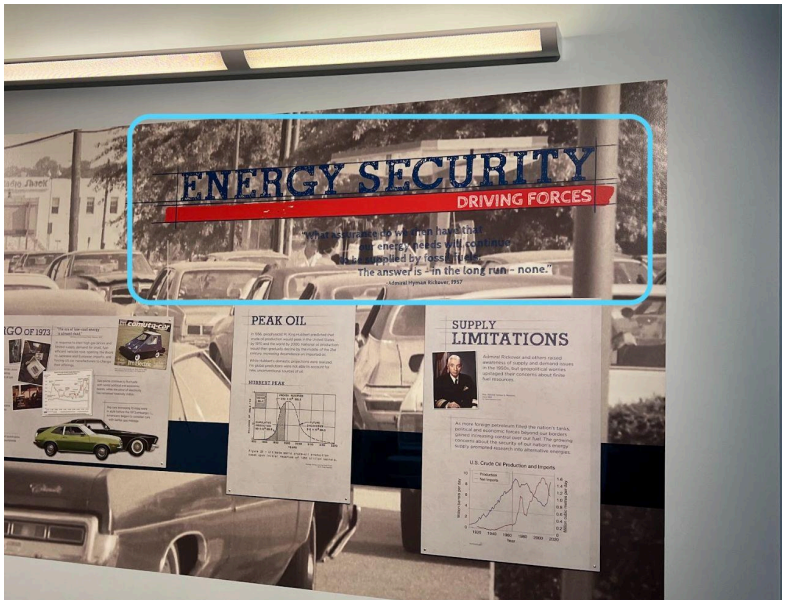
A temporary fix for this transparent sign would be to put a piece of white paper behind it; this way the red and black letters have contrast which will enable it to be read.


The Bespoke Car
Every detail of the body could be customized, from the shape of the frame to the color of the paint to interior details such as exotic animal skins and intricate wood and metal inlays. The best coachbuilders would even tailor the car to the customer's height, weight, and body measurements—or, if they were considerate types, those of their chauffeur.


Roscoe "Fatty" Arbuckle
Harley Earl designed a vast and unmistakable blue-violet Pierce-Arrow for Arbuckle, one of the highest-paid silent film stars of the day. The car featured Arbuckle's signature on the radiator and a hidden cabinet for Prohibition-era contraband liquor. Arbuckle, who paid the equivalent of more than $300,000 in today's dollars for the car, enjoyed turning heads as he drove it along the streets of Hollywood—but only in good weather, as the car had neither side curtains nor windshield wipers.
The Rockefellers
John D. Rockefeller plastered his estate with signs proclaiming, "No Motor Cars Allowed"—until 1905, when the New York Times reported that he had "taken such a great interest in automobiling that it is reported here that he will learn to run a machine himself." The Rockefeller family acquired many coachbuilt autos over the years, including a 1918 Simplex Crane Model 5 outfitted with two Brewster touring bodies, an open one for summer and a closed one for winter.
Tom Mix

The signs pictured above are too high. Exhibit signs should be 48” at lowest character above the floor and highest character should be no more than 60” off the floor (ADA). For reference, Finn here, a member of the focus group, is 5’8”. The easy solution here would be to move the existing signs down as pictured above.





The signs shown above are difficult to read due to being overlaid on pictures. The section of the sign with text can be covered up with decals displaying the same text, but overlaid onto a plain background.

Signage for ramp grades

The ACM's insurance prevents it from being able to rent wheelchairs to the public. This is due to the steepness of some areas of the museum. Although this does not fix the grade of the floors, signage for ramp grades is a warning for people who may have a harder time with the steepness. This can be approached from several directions both figuratively and literally. These signs should be placed at the bottom and top of the ramps that are too steep, and for a cheaper option, sign stands can be bought from Uline and then place your own sign in there, which could state, for example: "The floor in this area of the museum may be too steep for some individuals. There are elevators at," then direct them to the nearest elevator. This sign could include the picture shown below as well as the ramp grade, for example: 9%.

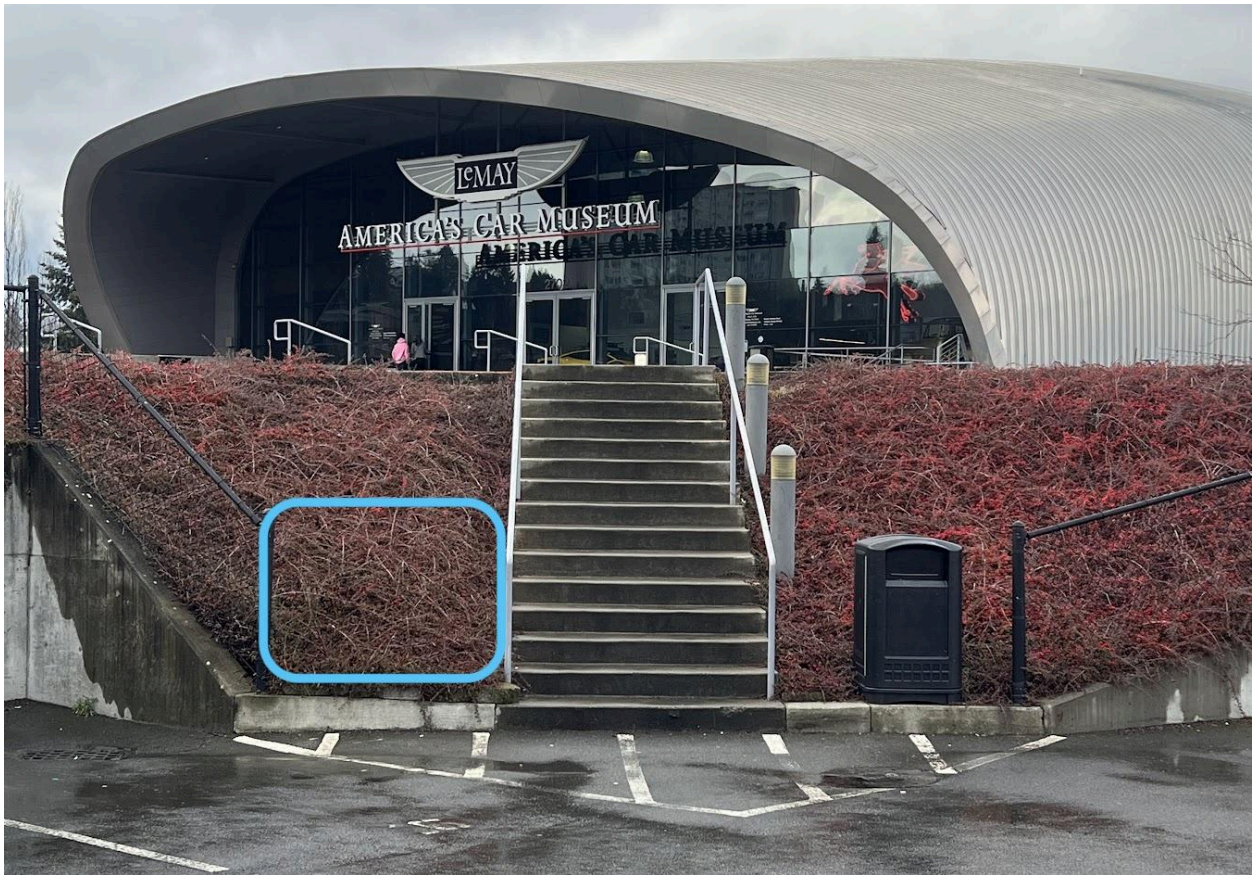
It is possible that placing a freestanding sign could create an obstacle for people, and maybe even a tripping hazard. The alternative is to have a sign on the wall. The downside to the sign on the wall is that people are more likely to miss it. Another option would be to put a decal on the floor. No matter what signage is decided on, the grade should be put on the website in the accessibility and tickets section and on the map pamphlet.

Below is a map of the museum with locations marked where signs should be placed:

The staff may consider this sign truck grade highway sign as an alternative symbol to the one mentioned above, as it would be both informative and context-related.

Signage for accessible entrances

The Museum's parking lot has a staircase leading directly to the entrance, which is easy to find. However, the ramp equivalent on the other side of the parking lot is not as easy to find. It would be more accommodating if there were a sign pointing to the left indicating the ramp's location. (See annotated picture below.)



The main entrance's automatic door button is easy to miss. Creating a sign indicating where it is will allow more people to utilize this important and expensive accessibility upgrade.

Exhibit signs (extensive fixes)

There are some inconsistencies in how signage in the museum adheres to ADA and museum accessibility standards. The font sizes of the majority of the signs throughout the museum have a font that is too small, with the exception of the signs decaled on the walls. The signs that have a font that is too small are mostly the ones in front of the cars and the signs that can be moved around. There are 6 in Custom Coachworks, over 50 in Lucky's Garage (every single sign), 7 in Motorsport, 4 in the State Farm theater area, 59 or almost all on level two, 10 in Route 66, 42 on level 1, 6 in Powering The Future, 8 in Master Collector and 8 in British Invasion.

Because of these extensive replacements, this section is considered “phase 3,” but can be broken up and done exhibit by exhibit.

Other considerations, that are lower in priority, would be changing the text in the “Powering the Future” exhibit from blue to black, so it is easier to read. Additionally, the members of the focus group said they would have preferred the signs on the ground to be raised to a height of 30-35” but still slanted. This would allow the signs on the floor to be accessible to touch and thus include braille.

Examples:
https://www.fastsigns.com/auburn-wa/
https://www.displays2go.com/Class/Signage-1001
https://www.artdisplay.com/information-systems.html

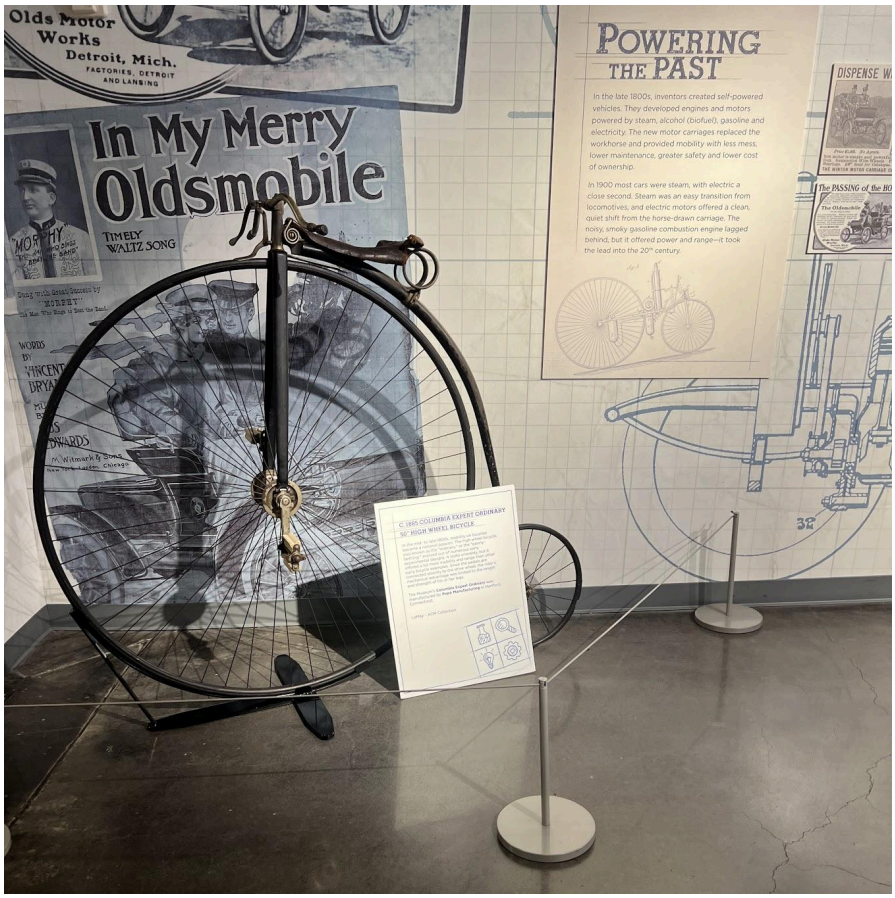
The following pictures are examples of exhibit signs that have a font that is too small to read:


1973 Dodge Dart Swinger


LEVEL THREE
BOARD CHAIRS
VINTAGE
7124
BRITISH COLUMBIA


EMERGENCY
AAA
SERVICE
Harold's first business was a wrecking yard.
Following that, he would sell surplus goods from McChord Air Force Base and Fort Lewis. The start of the garbage business was a one-man route Harold purchased in 1942. After returning from volunteering in the Navy, he purchased a garage and began buying up other routes.
Harold often purchased used trucks for his garbage business much as he did old cars. In fact, he famously combined business and pleasure in one trip, bringing home a 1914 Chevrolet Baby Grand inside a demonstration model garbage truck with Plexiglas covering the hopper.
At every stop, people gathered around the spectacle of an antique car inside a garbage truck.
American Success Story
HAROLD E. LEMAY ENTERPRISES HAD 475 EMPLOYEES AND WAS THE NATION'S TENTH LARGEST PRIVATE REFUSE BUSINESS WHEN HAROLD PASSED AWAY.
Employees tended to stick around, some for 40 years or more.
The tall stacks of paper in his office represented eight or more businesses plus numerous board memberships and presidencies. He seemed to know the exact location of every document—unless he filed it.
Company Christmas parties were multi-generational, including retirees, active workers, and their families. Harold and Nancy sent letters to each employee's family asking about their children's interests, and then personally bought and wrapped a gift for each child. The year before the company was sold, 1,500 people attended, including more than 300 kids—one of whom was a great-grandchild of a retired employee.
He also owned Lucky's Towing, HELM Manufacturing, a car sales business and several others.
Lucky's
Mobil
Tires

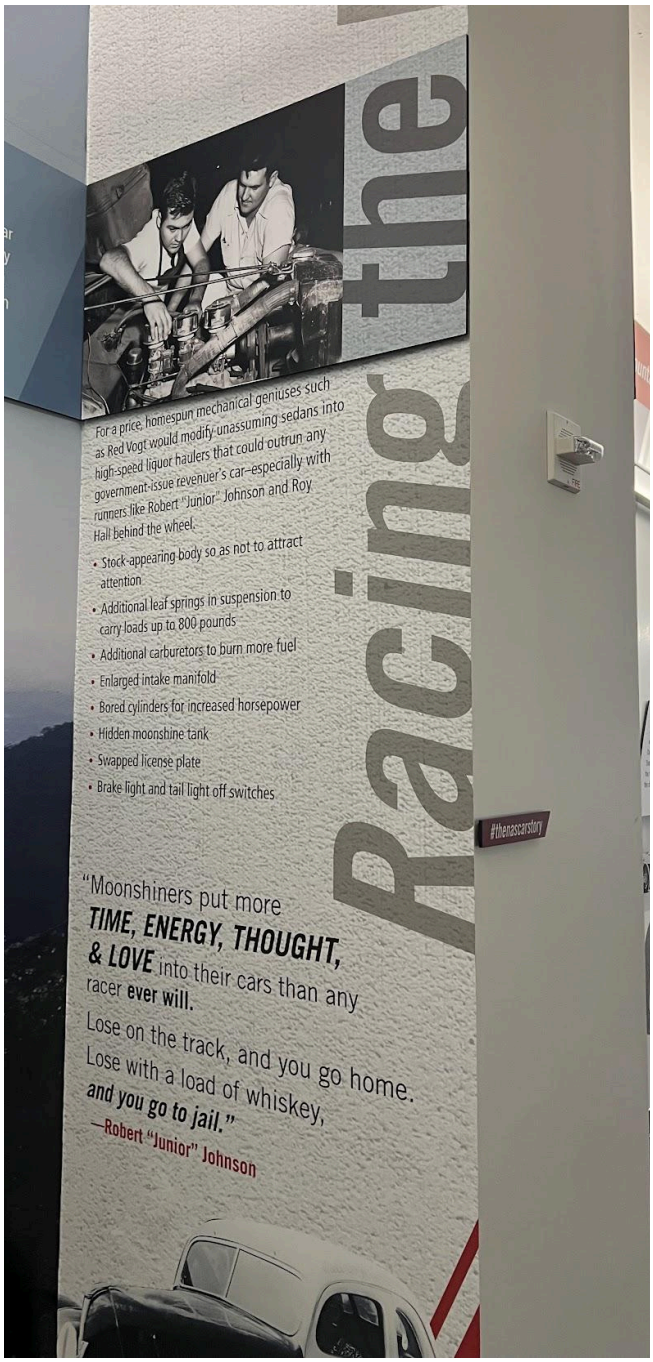

WAKE UP
PERFECT CIRCLE
YIELD
RIGHT OF WAY
STOP
A Real Character
IN THE 1940S, SOMEBODY IN HIS SHOP BET HIM THAT HE COULDN'T RIDE HIS HARLEY-DAVIDSON DOWN PACIFIC AVENUE. NO HANDS.
HAROLD DID IT STANDING ON THE SEAT.
Harold was a bit of a daredevil in his younger days.
Born in 1919, Harold grew up on a small farm at the bottom of Muck Creek Hill in southwest Pierce County.
Harold was three years old.
Lucky's

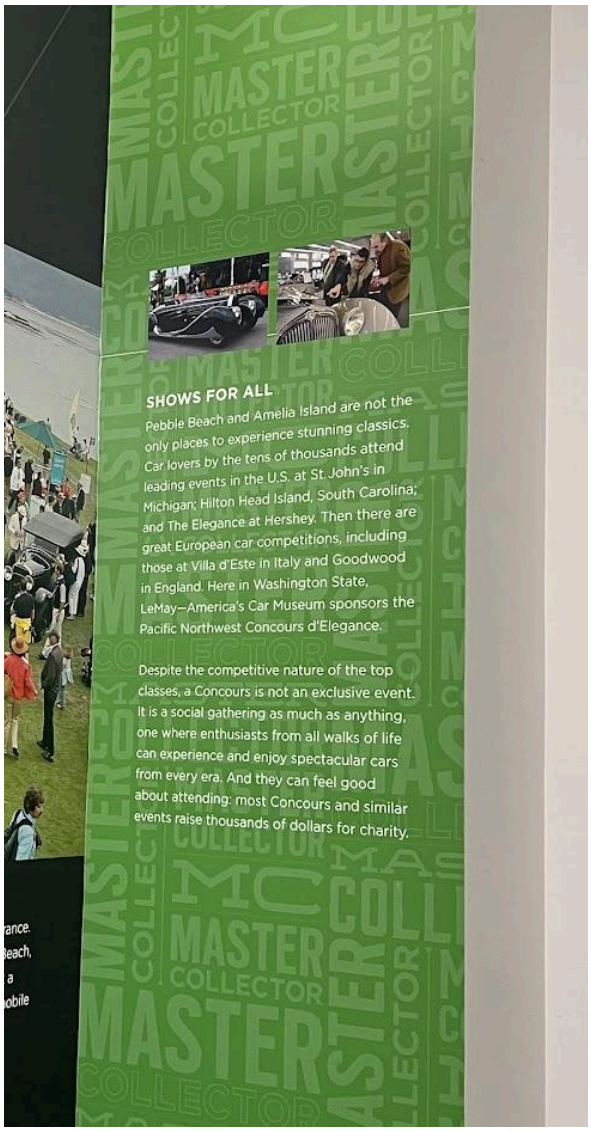

Olds Motor Works
Detroit, Mich.
FACTORIES, DETROIT AND LANSING
In My Merry Oldsmobile
TIMELY WALTZ SONG
POWERING THE PAST
In the late 1800s, inventors created self-powered vehicles. They developed engines and motors powered by steam, alcohol (biofuel), gasoline and electricity. The new motor carriages replaced the workhorse and provided mobility with less mess, lower maintenance, greater safety and lower cost of ownership.
In 1900 most cars were steam, with electric a close second. Steam was an easy transition from locomotives, and electric motors offered a clean, quiet shift from the horse-drawn carriage. The noisy, smoky gasoline combustion engine lagged behind, but it offered power and range—it took the lead into the 20th century.
C. 1885 COLUMBIA EXPERT ORDINARY 50" HIGH WHEEL BICYCLE


SANDRA BUTTON
2024


parade of parts

The following pictures are examples of wall decals with text that is unreadable due to being overlaid on backgrounds that interfere with the visibility of the words or have poor color contrast:

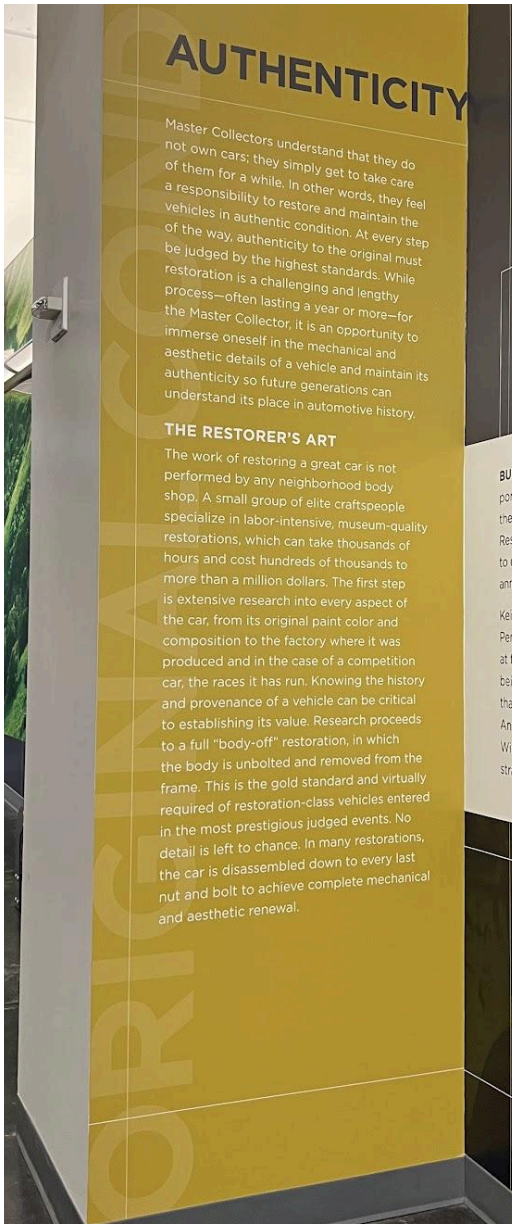




SHOWS FOR ALL

Pebble Beach and Amelia Island are not the only places to experience stunning classics. Car lovers by the tens of thousands attend leading events in the U.S. at St. John's in Michigan; Hilton Head Island, South Carolina; and The Elegance at Hershey. Then there are great European car competitions, including those at Villa d'Este in Italy and Goodwood in England. Here in Washington State, LeMay—America's Car Museum sponsors the Pacific Northwest Concours d'Elegance.

Despite the competitive nature of the top classes, a Concours is not an exclusive event. It is a social gathering as much as anything, one where enthusiasts from all walks of life can experience and enjoy spectacular cars from every era. And they can feel good about attending: most Concours and similar events raise thousands of dollars for charity.

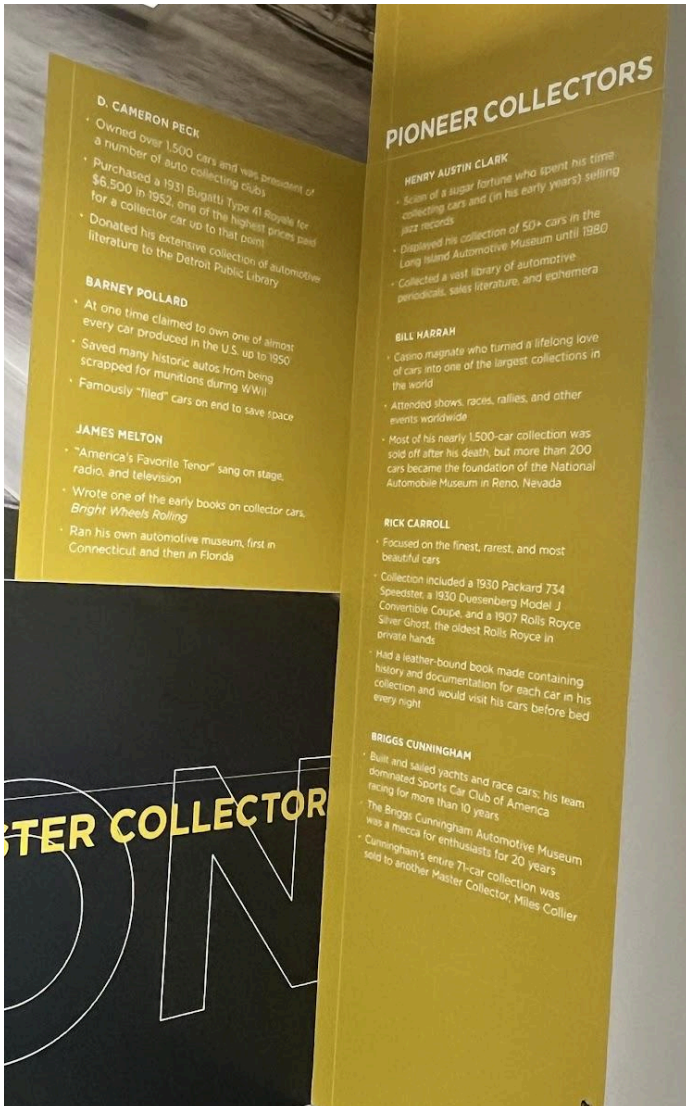


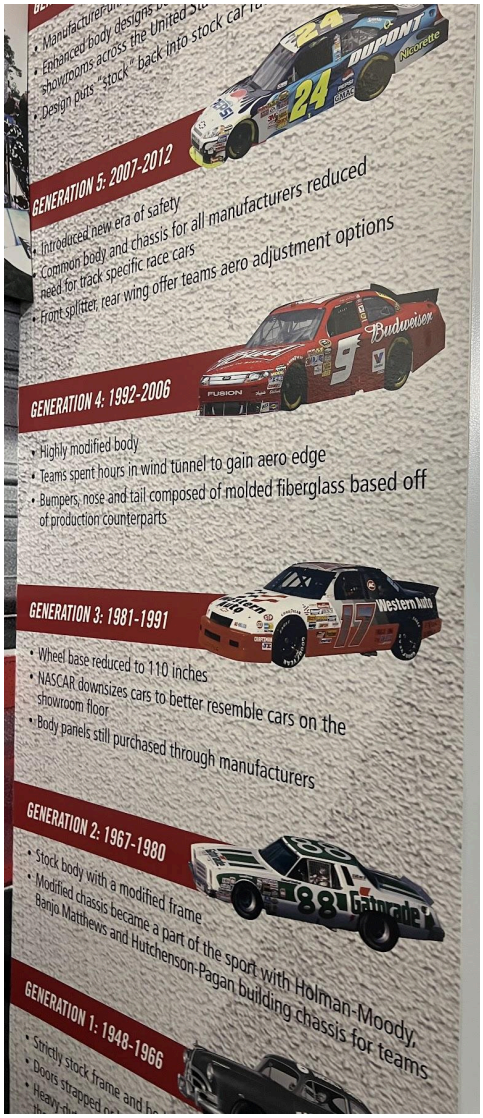
AUTHENTICITY

Master Collectors understand that they do not own cars; they simply get to take care of them for a while. In other words, they feel a responsibility to restore and maintain the vehicles in authentic condition. At every step of the way, authenticity to the original must be judged by the highest standards. While restoration is a challenging and lengthy process—often lasting a year or more—for the Master Collector, it is an opportunity to immerse oneself in the mechanical and aesthetic details of a vehicle and maintain its authenticity so future generations can understand its place in automotive history.

THE RESTORER'S ART

The work of restoring a great car is not performed by any neighborhood body shop. A small group of elite craftspeople specialize in labor-intensive, museum-quality restorations, which can take thousands of hours and cost hundreds of thousands to more than a million dollars. The first step is extensive research into every aspect of the car, from its original paint color and composition to the factory where it was produced and in the case of a competition car, the races it has run. Knowing the history and provenance of a vehicle can be critical to establishing its value. Research proceeds to a full "body-off" restoration, in which the body is unbolted and removed from the frame. This is the gold standard and virtually required of restoration-class vehicles entered in the most prestigious judged events. No detail is left to chance. In many restorations, the car is disassembled down to every last nut and bolt to achieve complete mechanical and aesthetic renewal.


PIONEER COLLECTORS
D. CAMERON PECK
• Owned over 1,500 cars and was president of a number of auto collecting clubs
• Purchased a 1931 Bugatti Type 41 Royale for $6,500 in 1952, one of the highest prices paid for a collector car up to that point
• Donated his extensive collection of automotive literature to the Detroit Public Library
BARNEY POLLARD
• At one time claimed to own one of almost every car produced in the U.S. up to 1950
• Saved many historic autos from being scrapped for munitions during WWII
• Famously "filed" cars on end to save space
JAMES MELTON
• "America's Favorite Tenor" sang on stage, radio, and television
• Wrote one of the early books on collector cars, *Bright Wheels Rolling*
• Ran his own automotive museum, first in Connecticut and then in Florida
HENRY AUSTIN CLARK
• Scion of a sugar fortune who spent his time collecting cars and (in his early years) selling jazz records
• Displayed his collection of 50+ cars in the Long Island Automotive Museum until 1980
• Collected a vast library of automotive periodicals, sales literature, and ephemera
BILL HARRAH
• Casino magnate who turned a lifelong love of cars into one of the largest collections in the world
• Attended shows, races, rallies, and other events worldwide
• Most of his nearly 1,500-car collection was sold off after his death, but more than 200 cars became the foundation of the National Automobile Museum in Reno, Nevada
RICK CARROLL
• Focused on the finest, rarest, and most beautiful cars
• Collection included a 1930 Packard 734 Speedster, a 1930 Duesenberg Model J Convertible Coupe, and a 1907 Rolls Royce Silver Ghost, the oldest Rolls Royce in private hands
• Had a leather-bound book made containing history and documentation for each car in his collection and would visit his cars before bed every night
BRIGGS CUNNINGHAM
• Built and sailed yachts and race cars; his team dominated Sports Car Club of America racing for more than 10 years
• The Briggs Cunningham Automotive Museum was a mecca for enthusiasts for 20 years
• Cunningham's entire 71-car collection was sold to another Master Collector, Miles Collier


GENERATION 5: 2007-2012
• Introduced new era of safety
• Common body and chassis for all manufacturers reduced need for track specific race cars
• Front splitter, rear wing offer teams aero adjustment options
GENERATION 4: 1992-2006
• Highly modified body
• Teams spent hours in wind tunnel to gain aero edge
• Bumpers, nose and tail composed of molded fiberglass based off of production counterparts
GENERATION 3: 1981-1991
• Wheel base reduced to 110 inches
• NASCAR downsizes cars to better resemble cars on the showroom floor
• Body panels still purchased through manufacturers
GENERATION 2: 1967-1980
• Stock body with a modified frame
• Modified chassis became a part of the sport with Holman-Moody, Banjo Matthews and Hutchenson-Pagan building chassis for teams
GENERATION 1: 1948-1966
• Strictly stock frame and


MASTER COLLECTOR
WHAT MAKES A COLLECTO
39
39

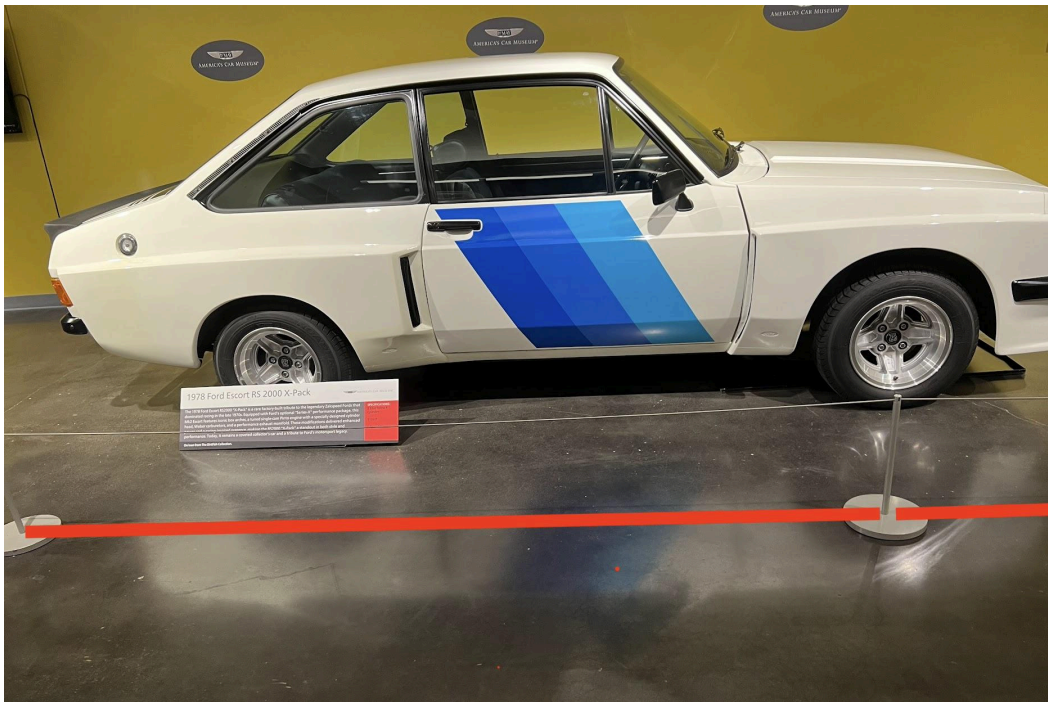
Exhibit spaces

There are several modifications that could be implemented to make the exhibit spaces more accessible. These include putting captions and audio descriptions on the televisions playing sound, installing additional seating, providing tactile reproductions of select cars, and laying raised tape underneath rope barriers.

Raised tape

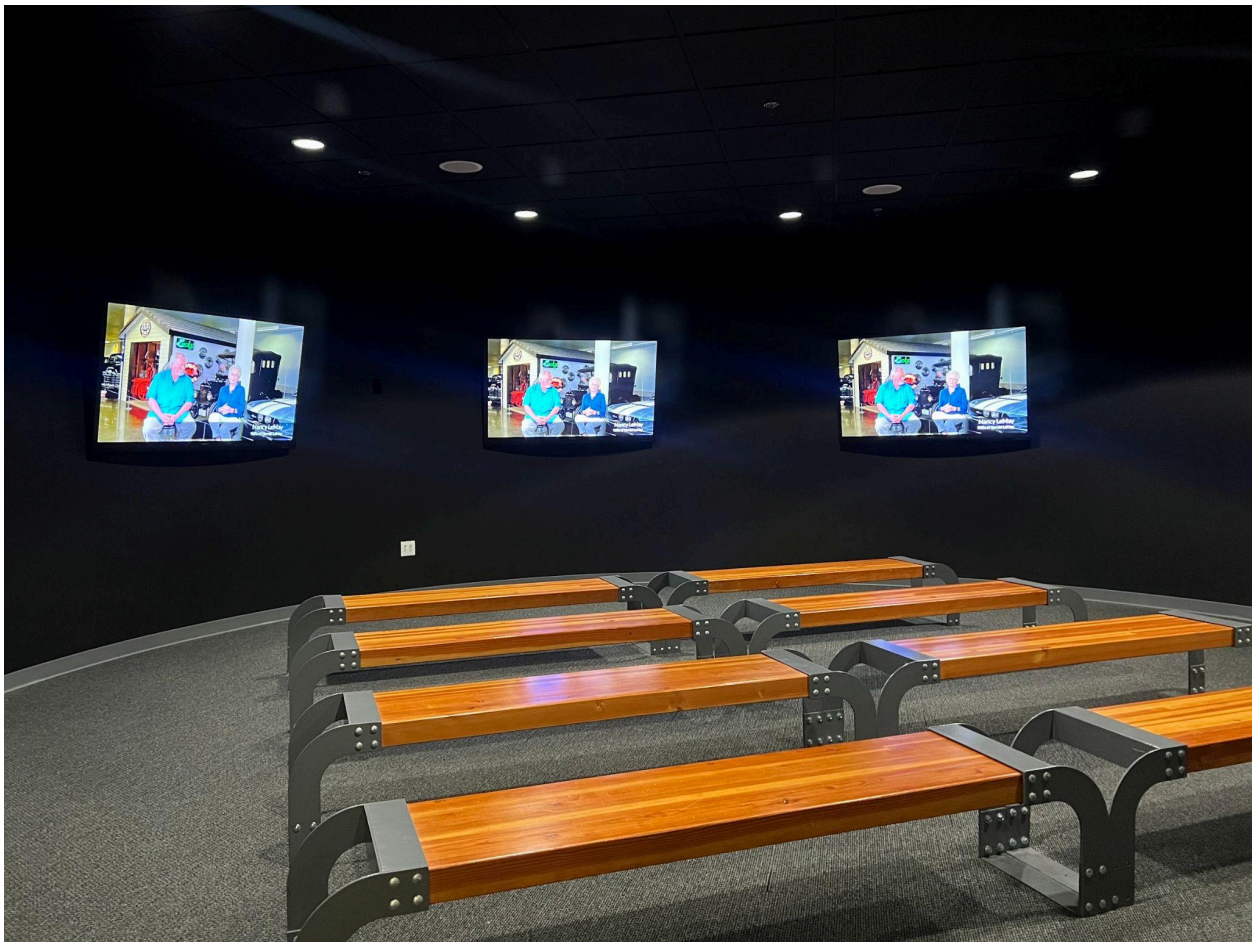
One of the focus group members suggested that raised tape be placed underneath every roped barrier so that white cane users can easily navigate the edges of exhibits. A more expensive version (both in money and time) would be to install short walls instead of ropes; however, focus group research indicated that the raised tape would have the same effect.

Something as simple as this (though color would be preferred over gray) with rope underneath: https://www.amazon.com/dp/B07SDD224K?th=1

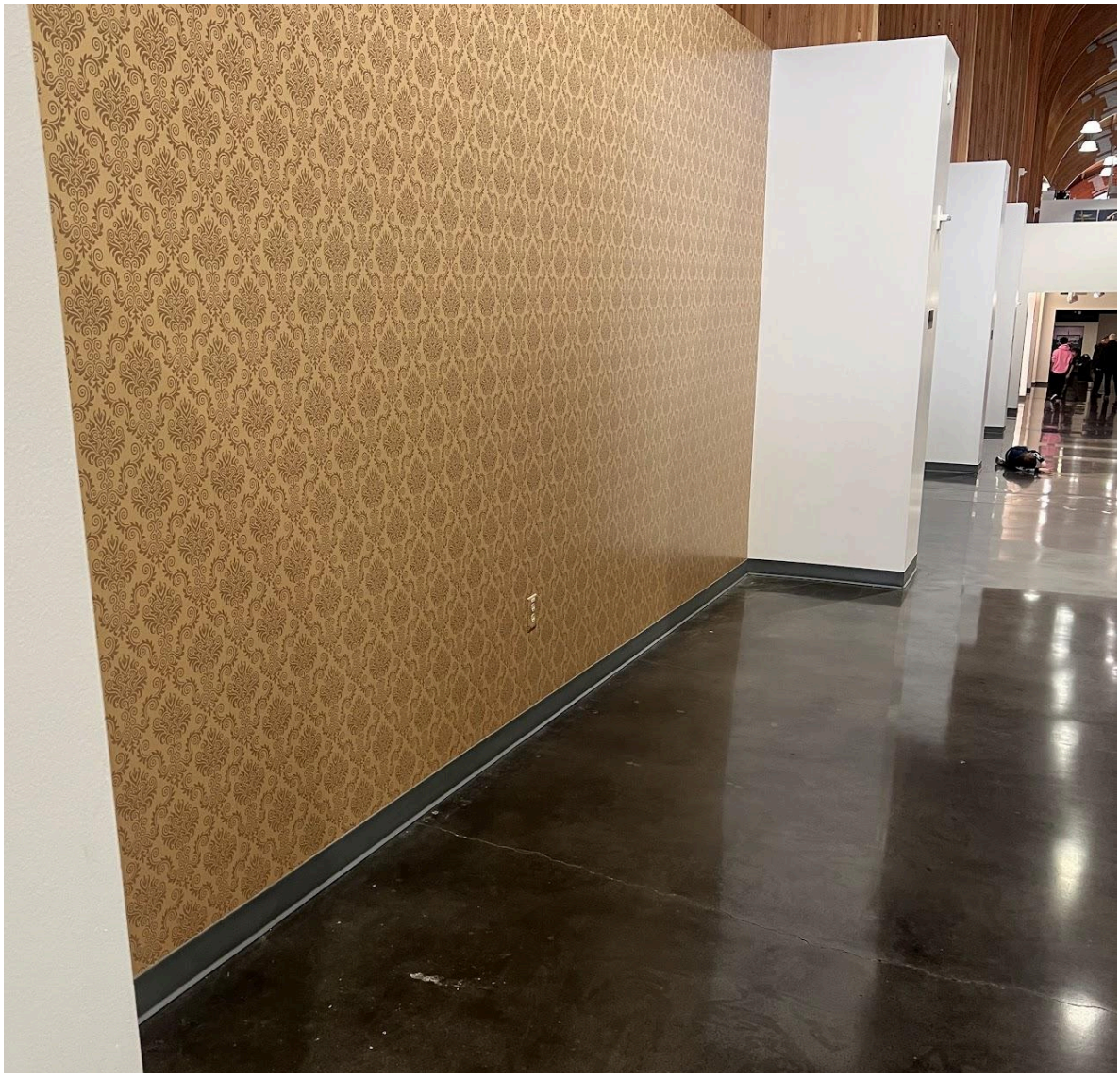


Seating

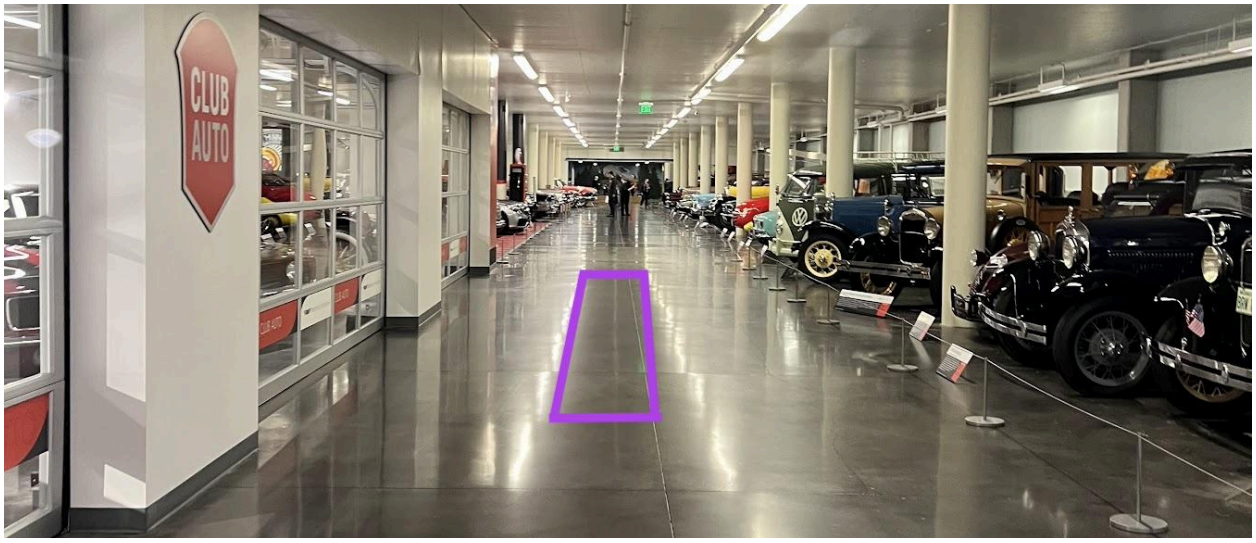
Approximately nine more benches, one more in each hall, are needed throughout the museum to provide adequate seating for visitors as they walk the museum. In some areas the legs of the benches should be height adjustable like the ones currently in use to accommodate the slanting floors. Walking through the long hallways on levels one, two, and three, where there are cars along both walls, there was no seating in those areas (except in front of a TV). The benches in these particular areas will have to be able to be moved to get the cars in and out.



Since some people have difficulty sitting in chairs without a back, it would be ideal to have some chairs with backs in the theater.



There are many alcoves similar to this throughout the museum. Some of them have benches, but some halls have long stretches with no seating. Adding at least one more per exhibit hall would greatly improve this universal museum issue.



Repeat benches for floors two and three

Audio descriptions for theaters

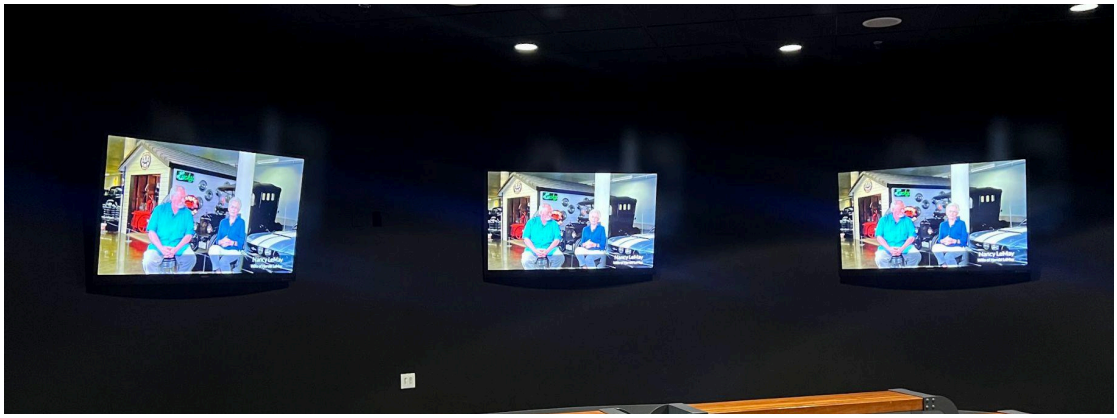
For the State Farm Theater, it is vital for those who are blind/low vision to have access to audio descriptions. Audio descriptions convey what is happening on a screen or an object in a museum by using language rather than sight. This could be researched and then recorded by one of the volunteers or staff members or could be outsourced. In order to make this accessible to those who may find audio descriptions disrupting, an option would be to install headphones in the theater, where it is displayed that what is playing on the headphones is the sound with audio description. If headphones are not an option, playing the video with audio descriptions a set number of times a day and advertising when it is being shown with or without audio descriptions is a suitable alternative.

Here are some resources on creating audio description:

https://youtu.be/DTvhox7ylEU?si=sqaewnRFAJFM2AEJ

https://www.nyc.gov/MOPD-Audio-Description-and-Caption-Guide.pdf

https://www.artbeyondsight.org/handbook/acs-verbal.shtml



Captions for videos

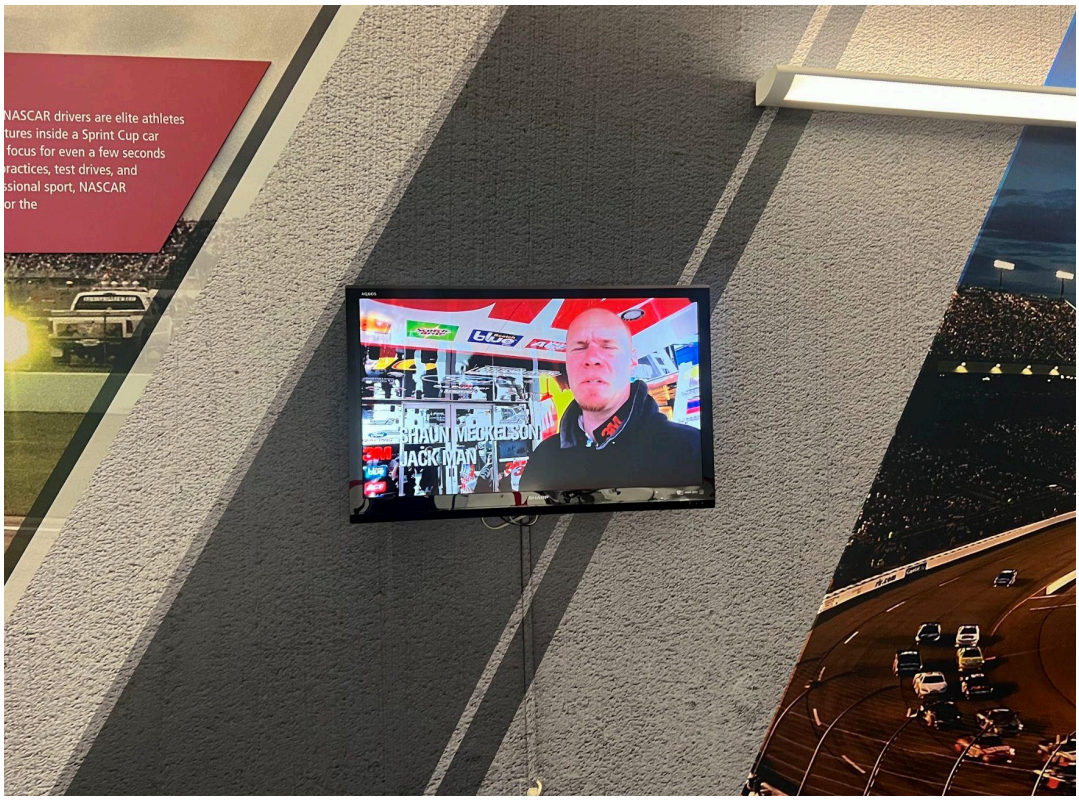
Many people, even those who are not hard of hearing, appreciate captions on their media. I've identified at least three locations that need captions, Preserving the Past, Fueling the Future, the Nascar exhibit, and level three (see pictures below). Putting captions on the TVs would require editing the original video and reuploading it to the TV. Installing captions automatically can be done through Adobe, YouTube, and various other platforms; however, it is important that these be double checked for accuracy before uploading. Creating captions can also be done manually.

This category is considered "phase 2" since, according to Kelsey, the education manager, in order to put captions on the videos on the TVs, the TVs are going to need to be replaced with more modern models.

There are several other TVs throughout the museum, but captions will not be necessary on them since they do not have audio.

https://webaim.org/techniques/captions/realtime


Preserving the past. Fueling the future.
Hagerty
Drivers
Foundation
Follow the Hagerty
Drivers Foundation
YouTube channel for more
in-depth documentaries


NASCAR drivers are elite athletes
tures inside a Sprint Cup car
focus for even a few seconds
ractices, test drives, and
ssional sport, NASCAR
or the
SHAUN MECKELSON
JACK MAN

Large print/braille options

There are a few different options that can be implemented to help people who are blind/low vision access exhibit signs. One option is something that the Seattle Art Museum and the Burke Museum employ which are binders at the entrance of every exhibit that have large print and/or braille versions of each exhibit sign. These are free to pick up and are typically hanging on the wall and are specific to the exhibit hall in which they are located. Another option would be to provide a QR code to scan with a phone which provides large print versions of the signage text.

Large print should be a minimum of 24 points or larger (Design for Accessibility). Here are examples of what different text sizes look like:

This is 12 point Arial

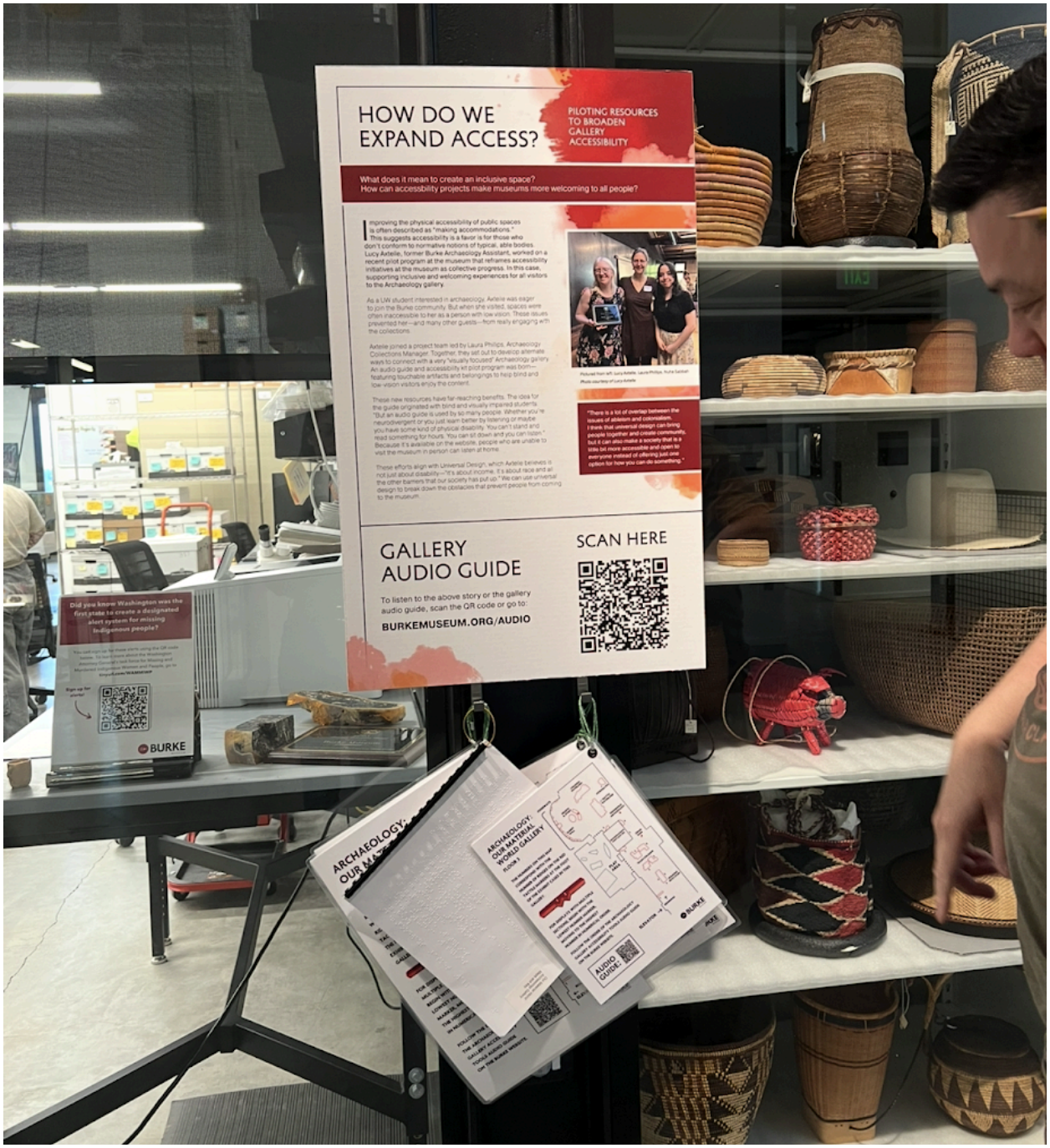
This is 14 point Arial

This is 16 point Arial

This is 18 point Arial

This is 24 point Arial

This is a resource that details the best practices of accessible communication, from text, language and formatting, to website accessibility and captions: https://www.aam-us.org/2021/07/01/accessible-communications-guidelines/

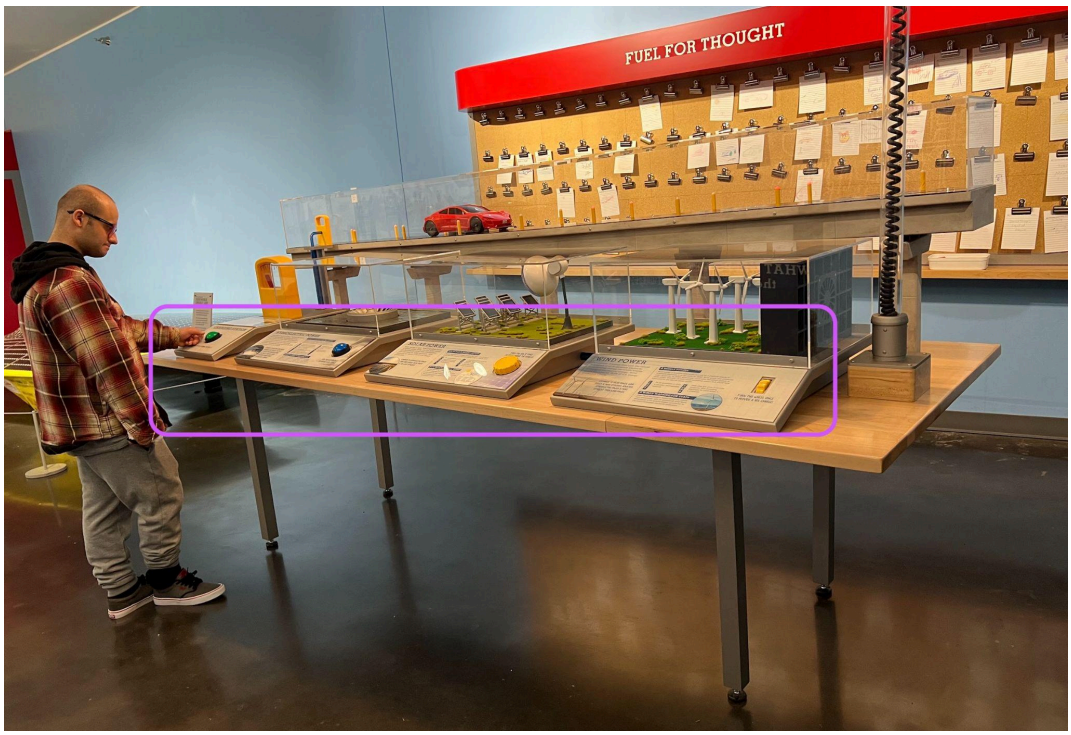


For those who read braille (and not all blind or low vision people do), braille stickers can be a temporary fix for the lack of braille signage and can go on or near the exhibit signs. Permanent braille labels (which is a much larger task that would be considered phase three) can be put on the wall next to an exhibit (see picture below for an example). Braille should also be placed on the bathroom and elevator signs.

Signs must be 48 inches above the floor from the lowest character and the highest character should be no more than 60 inches above the floor (ADA).

In the picture above, Finn is indicating where a braille sign would likely go.

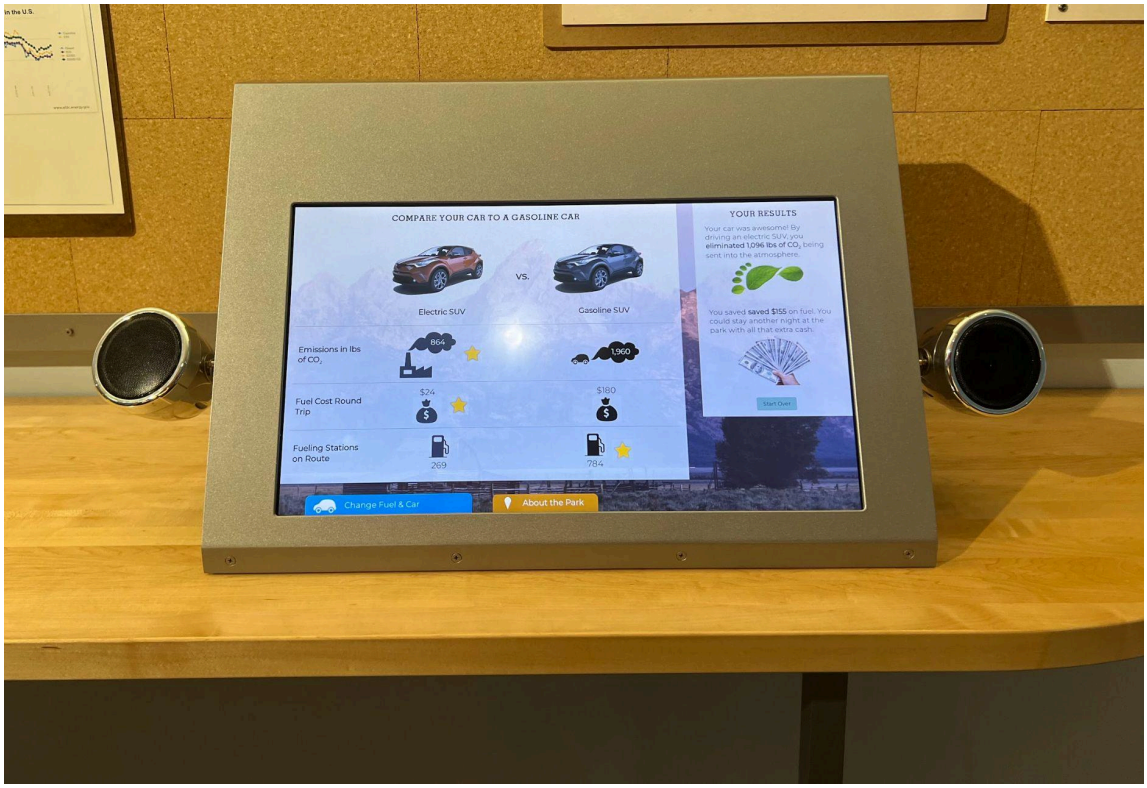
This is an example of a tactile and braille map of a museum from the Smithsonian.



This interactive exhibit is an example of a place where large print and braille are necessary for visitors with low vision to interact.


FOSSIL FUELS
HOW MUCH DO YOU KNOW?
FOSSIL FUELS
Test your knowledge of fossil fuel facts.
Press the fuel you think best answers the question.
START!
GASOLINE
DIESEL
NATURAL GAS
PROPANE


As they died, they sank to the bottom of swamps and oceans and over millions of years started decomposing under layers of sand clay and other minerals.



Some of the interactive computers in powering the future only have writing, so they are not accessible to people with low vision. Headphones with audio descriptions could be a suitable alternative as well as providing braille and large print options.

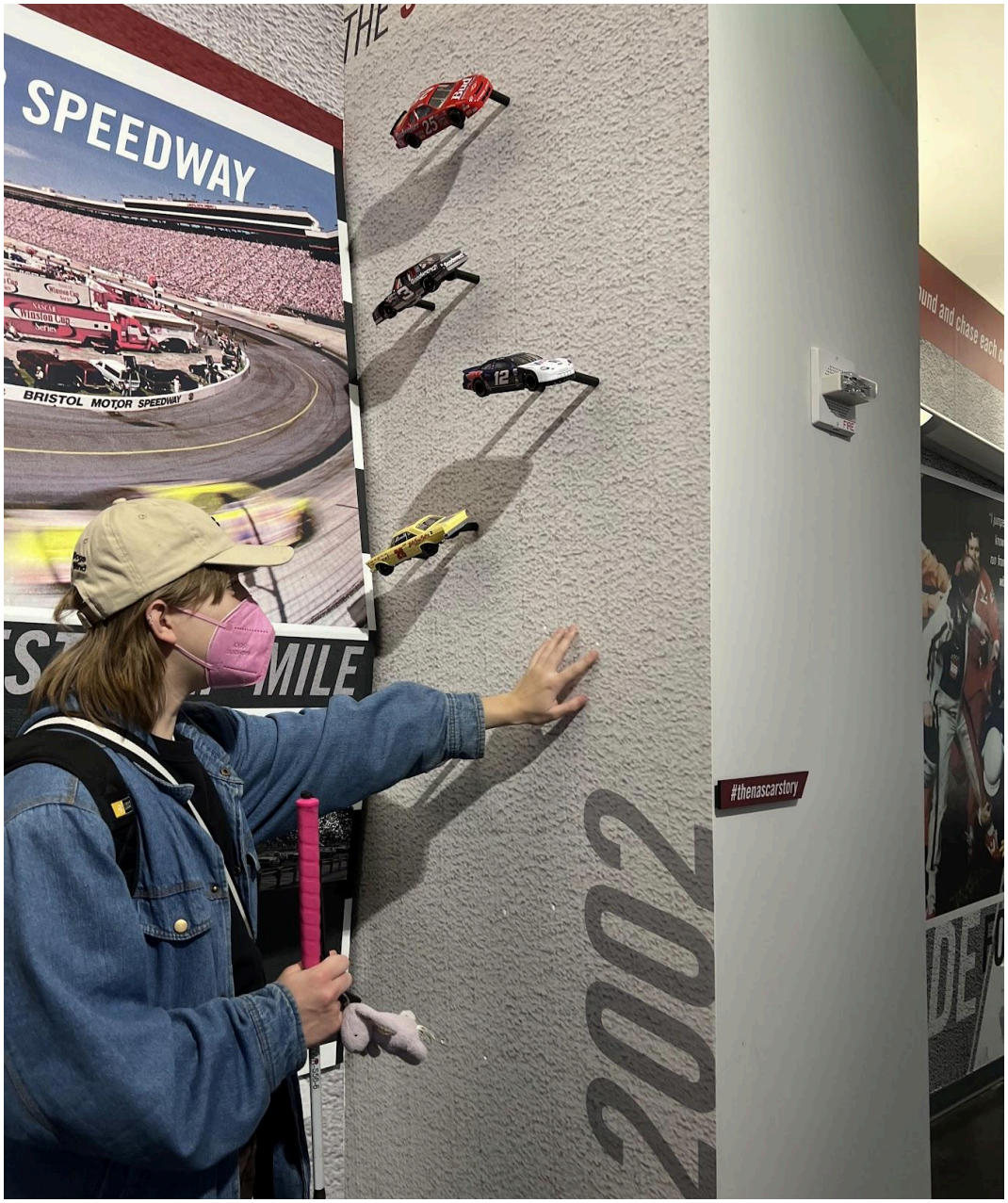
Tactile reproductions

Although not an alternative to touch tours, providing model cars creates a tactile experience that can exist outside of a supervised tour environment. This strategy is used in museums such as The National Museum of American History, The Andy Warhol Museum, and The Art Institute of Chicago.

Premade model cars can run between $15 and $200 whereas custom ones can go between $500 and $2000 (see links included). They could be permanently affixed to a table, or attached with a cord to the car that is attached to the table so people don't walk away with them. It is important that the models be made of the same (if not similar) materials to the original car, rather than plastic, and must be of high enough quality to withstand heavy use.

From the picture below it appears the museum already has tactile examples; however, they seem to have been moved from lower down on the wall, to a high, out of reach place. This gives the impression that they are not meant to be touched and are therefore not tactile reproductions. If they are, they should be moved to the original position lower down, and if this method of affixing model cars has proven effective, it can be duplicated in other areas of the museum.

It will be up to the museum to decide which cars would be most desirable to have a tactile model for and which exhibits they would accompany first.



Examples:

https://fairfieldcollectibles.com/diecast-replicas/

https://www.awesomediecast.com/

https://customdiecastreplicas.com/

Wheelchair accessibility

The ticket counter at the entrance of the museum does not have a lowered section where wheelchair users can access. A lowered counter for accessibility should be a maximum of 36” high and should be at least 36” long (ADA).

Training

Disability Sensitivity Training for All Staff

Training for staff is another very important activity that could be implemented with relative ease. There are plenty of resources for disability sensitivity training for staff; several are linked below. In practice, this may look like beginning by sending out an email, containing tip sheets and scheduling a staff meeting, to all the staff and volunteers. At the staff meeting, material would be presented and everyone would discuss it. However, hiring a professional to come in and talk to the employees and volunteers, whether that be an hour-long presentation or a week-long workshop, would be invaluable. The Burke Museum, Henry Museum, and the Meany Center are currently employing Elizabeth Ralston. (This would cost money and more time, so it could potentially fall into "phase 2.") If adding accessibility discussions to in-house training proves insufficient, bringing in a professional like Elizabeth Ralston is vital. Her presentation, whether it be an hour or a whole day, has proven very effective in helping other organizations like ACM.

Some general tips are: speaking directly to the individual, not to a companion or an interpreter. A person with a disability may take extra time to say or do things. Be patient and treat adults as adults, not children. Use people-first language; this means, for example, saying "person with a disability" rather than "disabled person."

This is a guide for how to train staff and volunteers:
https://www.arts.gov/sites/default/files/Step8.pdf
These are guides for how to engage with people with different disabilities:
https://depts.washington.edu/uwdrs/faculty/faculty-resources/
https://www.artbeyondsight.org/handbook/dat-accessibility-skills.shtml
https://disabilityin.org/resource/disability-etiquette/
This is a fact sheet about ableism:
https://disabilityin.org/resource/brg-ableism-audism-fact-sheet/

Training for pre-existing guided tours

The pre-existing guided tours can be enhanced through training. This training would involve explaining how to talk and gesture and present yourself in a way that will be the most accessible to the most people. This is generally catered towards people that have hearing loss or who are low vision or blind, who range anywhere from people with hearing aids, to total deafness or those with mild sight loss to those who are completely blind, but this sort of training benefits a wide range of individuals.

The Burke Museum, Henry Museum, and the Meany Center are employing Elizabeth Ralston, an accessibility consultant, currently. This would cost money and more time so it could potentially fall into “phase 2.”

Some general tips are: Always face the individual and/or audience. Never carry on a conversation/presentation while standing behind someone or turned away from someone while speaking and don’t cover your mouth (Design for Accessibility). Speak in a clear expressive manner and do not over enunciate or exaggerate words. Do not raise your voice unless asked. Make sure you have people’s attention before speaking. And don’t pretend to understand something that was said if you do not; be honest.

The website below is an wonderful starting point for training staff and volunteers in accessibility best-practices:
https://www.artbeyondsight.org/handbook/dat-accessibility-skills.shtml

Keep staff and volunteers updated

As changes throughout the museum are implemented, staff and volunteers will need to be informed immediately, so that when visitors ask them questions about accessibility, they’ll be able to effectively and accurately answer them.

Tours

It is becoming more and more common for museums to offer tours with different accessible accommodations, such as American Sign Language (ASL), Communication Access Realtime Translation (CART), and even tactile alternatives. Even something as simple as using a microphone and speaker can help make every tour more accessible.

Portable microphones and speakers

The Museum of Flight utilizes portable microphones and speakers for every tour. The model they have been using for several years is obtainable at a relatively low price: one for $35. Reduced prices are offered when bought in a pack of five or more, and it is a good idea to have more than one on hand. When testing these devices, staff or volunteers should be dispersed in the area to help select appropriate volume levels.
https://www.winbridgestore.com/
This video illustrates why it is so important for people to use microphones:
https://youtu.be/sHlDoth5Ngk?si=q0pq3Qv-0S94q8HT

Touch Tours

Touch tours are tactile introductions to material exhibited in a space. These are typically guided and allow for people with low or no vision to experience objects through touch, and the participants are often given tactile access to items that sighted guests usually would not be allowed to touch. The Museum of Flight is a local example of an institution that is already employing this strategy by offering 90 minute tours by specially trained docents.

This would be a wonderful addition to implement, which, once again, could be more expensive if a professional were to be hired to act as the touch tour guide. A good place to start, however, would be to consult the resources below. In phase one, implementing these touch tours can be on a trial basis. However, as staff are more comfortable providing the touch tours, begin by offering them on a quarterly or monthly basis.

This has been placed in “phase one” since the museum has expressed they are already on their way to introducing touch tours in 2026.

From Art Beyond Sight https://www.artbeyondsight.org/handbook/acs-touchtools.shtml:

“TIPS FOR GIVING A GUIDED TOUCH TOUR

1. When welcoming and meeting a group, in addition to your standard introduction you should give a verbal description of the space you are in to help orient people.
2. As you move from one gallery space to another, give brief verbal descriptions of the spaces you pass through, even if they are not on the tour. A few words are enough and will give visitors a sense of the scope of the exhibition or museum.
3. Limit guided touch tours to 3-5 objects.
4. Keep the tour group small, 3-6 people at most. While one or two people are exploring by touch, give background verbally to others waiting.
5. While visitors explore a work, encourage dialogue and responses.
6. When choosing objects for the tour, be aware of the pedestal height and the object scale relative to the viewer. It’s best if visitors can reach all parts of the object. If not provide tactile diagrams.
7. In a guided touch tour, like a verbal-description tour, you must allow additional time for visitors to process tactile experiences.
8. Any interactive program is appropriate for tactile experiences. Docents and lecturers can be trained to include a tactile-friendly work on their public tours. Keep in mind that introducing a tactile element requires more time for your tour or program.
9. Tactile experiences are appropriate for a variety of audiences, not only those who are visually impaired. People with developmental or cognitive disabilities may benefit by the introduction of multi-sensory information. But just about everyone enjoys objects which give a sense of textures, weight, and the feel of objects in art or historical depictions. Applying this tool to a broad audience may help in fundraising.
10. Make sure you include Verbal Description of your tactile objects and experiences. Try to make the verbal description, along with other background information, available before the museum visit, either on your website, in a mailing packet, or at your information desk or gift shop.
11. If possible, get involved with the early stages of planning the exhibition. This makes it easier for your advisors to gather the resources and objects necessary for your touch tour. Your curators may also find objects that are appropriate during their searches (this is particularly relevant for historical, natural history, or science museums.) This participation also brings accessibility issues and awareness to other museum staff.

12. Many of these techniques can be adapted to the classroom for pre or post-museum visit sessions, including: handling sessions and other tactile experiences; replicas, models, facsimiles, and props; and tactile diagrams with verbal guidance of the hands.
13. If you normally charge for tours, consider offering one day of free touch tours. This creates publicity for your accessibility program, and allows for feedback and involvement in your museum from people with disabilities. This type of outreach creates an opportunity for visitors with disabilities to understand what your museum has to offer and encourages support of your efforts."

https://nwadacenter.org/sites/adanw/files/.pdf
https://americanhistory.si.edu/explore/stories/please-touch-objects-tactile-models-and-alternative-approaches-curation

American Sign Language interpretation for pre-existing tours

Unlike some of the previous ideas, ASL interpretation is not something that can be obtained for free. A certified ASL interpreter can be hired for between $75 and $150 an hour. However, they often must be booked for multiple hours at a time. "Several interpreters may be needed for long programs. The average time a person can comfortably interpret is about 45 minutes. Most interpreters in lecture, workshop and meeting situations work in teams of two and trade places every 20 minutes" (Design for Accessibility).

To start off, the museum can market ASL tours to the community, invite ASL users to come and enjoy, and then survey them for feedback. Once the museum is ready to begin offering ASL tours on a more regular basis, it can contract with a professional ASL guide to do the tours monthly or weekly (as determined by demand). https://rid.org/

Communication Access Realtime Translation (CART)

Communication Access Realtime Translation (CART) is not an alternative to ASL. It is another form of access. It is a service where a professional stenographer translates what is being said into text in real time. Some people with hearing loss prefer

CART and some prefer ASL. CART also helps those who are neurodiverse and have cognitive disabilities. It may be necessary to begin by assessing if there is a demand for CART services, due to its price point ($60-200 per hour per person) and being less common than ASL.
https://www.sbctc.edu/about/accessibility/communication-access-services-vendors

Assistive Listening Devices (ALD)

"An assistive listening system (ALS) is a tool designed to improve audibility in certain environments. It delivers sound to the listener without interference or loss of intelligibility by reducing the noise-to-sound ratio" (Assistive Listening Systems for People with Hearing Loss). ALD/ALS can be used in conjunction with microphones and can provide further assistance to visitors with hearing loss participating in tours or events. Below, there is a link to further information on ALD and examples of services being used by museums.
https://www.kennedy-center.org/
Examples of ALD:
https://www.listentech.com/listentalk/
https://www.quietvox.com/

Automatic Speech Recognition for presentations

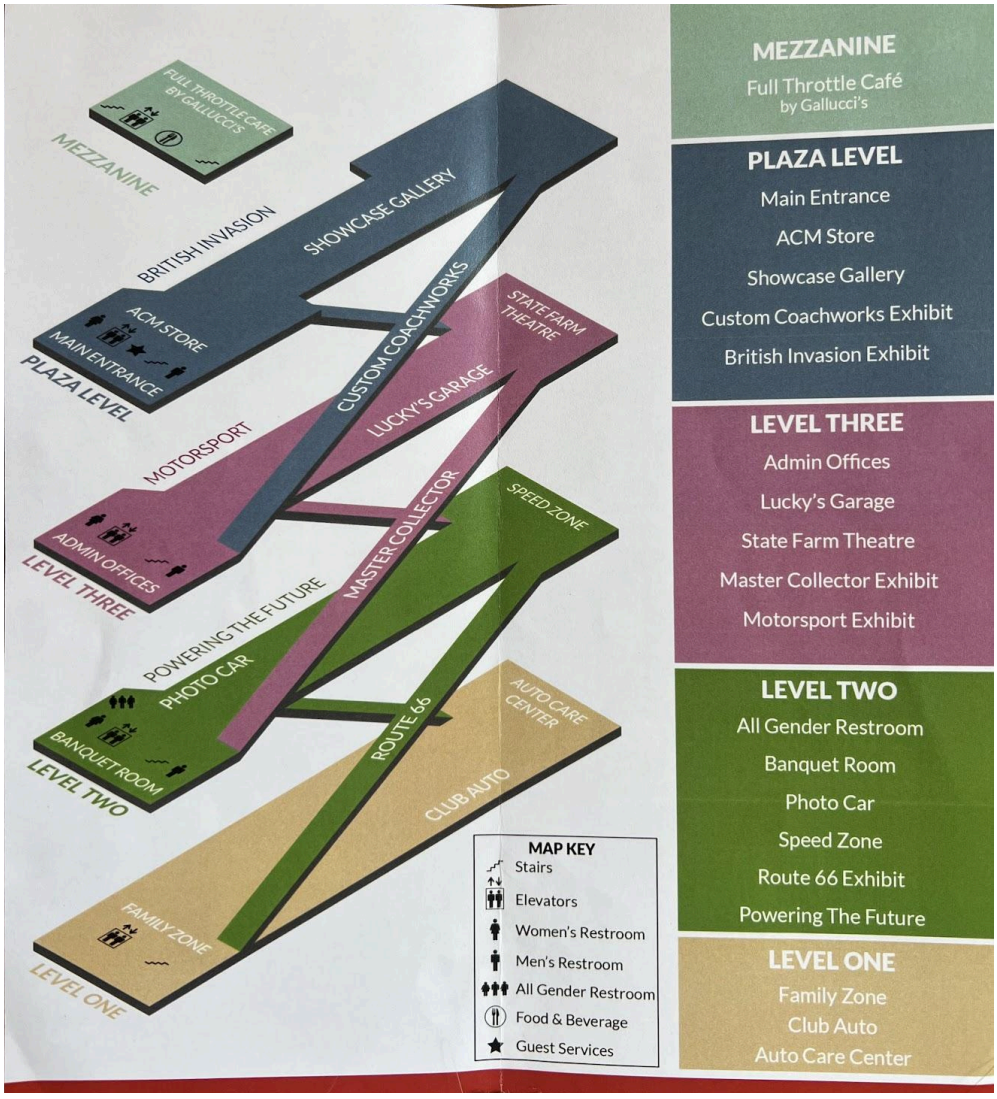
Automatic speech recognition is a technology that converts speech into text, often as a writing aid or to provide real-time captions. One of the easiest ways to enable automatic speech recognition for presentations at the Museum would be to use PowerPoint. PowerPoint has a feature that listens to the presenter speak and creates automatic captions that appear on the presentation slides. The University of Washington uses this for their speech recognition when students from Disability Student Services request captions.

Website

The Museum's website would benefit from having a dedicated accessibility page that is regularly updated and contains a map of the museum.

Map of Museum on Website

The physical map present at the desk and on the walls throughout the museum is not on the website, which should be added. This should include the ramp grades.



An example of a museum accessibility map:
https://www.si.edu/sites/default/files/unit/OVS/si_accessibilitymap.pdf

Accessibility page on website

As changes are made to the museum, these changes should be reflected on the website. Create a page for accessibility which covers the accommodations offered and the obstacles (ex: the ramp grades) and include an accessibility statement. This can look like: “LeMay - America’s Car Museum is dedicated to creating a space where people of all abilities have access to education about the history of cars in America.” Social media can be utilized to advertise all the wonderful things that are being done. That's going to get people excited and bring in people who may not typically go to museums.

An example of accommodation requests from the Museum of Modern Art:

“**Accommodation requests**

Accessibility accommodations are available for all public programs upon request with at least two weeks’ advance notice. Accommodations include, but are not limited to, ASL interpretation, CART, and audio description. MoMA will make every effort to provide accommodation for requests made with less than two weeks’ notice.

Please contact AccessPrograms@moma.org to make a request for these services.” (https://www.moma.org/visit/accessibility/index)

The Seattle Art Museum, Smithsonian’s National Museum of Asian Art, American Museum of Natural History, and Cincinnati Art Museum has a wonderful accessibility page:

https://seattleartmuseum.org/whats-on/programs/accessibility

https://asia-archive.si.edu/visit/accessibility/

https://www.amnh.org/plan-your-visit/accessibility

https://www.cincinnatiartmuseum.org/visit/accessibility-accommodations/

Keep website updated

Once again, as these changes are being implemented, the website should be updated once these changes have been finished. However, as they are being implemented, advertising the work on social media can get potential visitors excited about the efforts being made and what they can look forward to.

Website accessibility

Although the accessibility of the website itself is out of the scope of this document, I've included some resources:

https://abilitynet.org.uk/news-blogs/five-golden-rules-compliant-alt-text

https://www.w3.org/WAI/fundamentals/accessibility-intro/

https://www.aam-us.org/2021/07/01/accessible-communications-guidelines/

https://www.powermapper.com/

Other

Audio Guides

Creating an audio guide can come in many different forms. The museum could provide QR codes at each sign, or at the entrance to each exhibit that can be scanned. This QR code could be linked to a digital version of the exhibit signs that are screen-readable as a temporary solution while an audio guide is being created. If the museum decides it likes the QR code strategy, they could have them linked to an audio recording that reads out the exhibit sign and gives a verbal description of the car.

An alternative to QR codes could be purchasing devices with the recordings installed on it that are invoked through entering a number (see the websites linked below). This number could be put in braille on the existing sign.

Another option would be creating or utilizing a phone app that fulfills the same purpose (some of these apps also aid in the navigation of indoor spaces for people with low or no vision).

In addition to narrating the exhibit signs and providing verbal descriptions, this audio guide could be made more interesting by incorporating the sounds the cars make: the horn or the engine revving. This experience could also be present outside of the audio guide by installing buttons in front of select cars that demonstrate these sounds.

An audio guide could also be used to provide verbal descriptions for videos playing throughout the museum.

“Audio tours can provide visitors with information, but they cannot fully replicate a visual sensory experience” (Weisenberger). This is why opportunities such as touch tours are important.

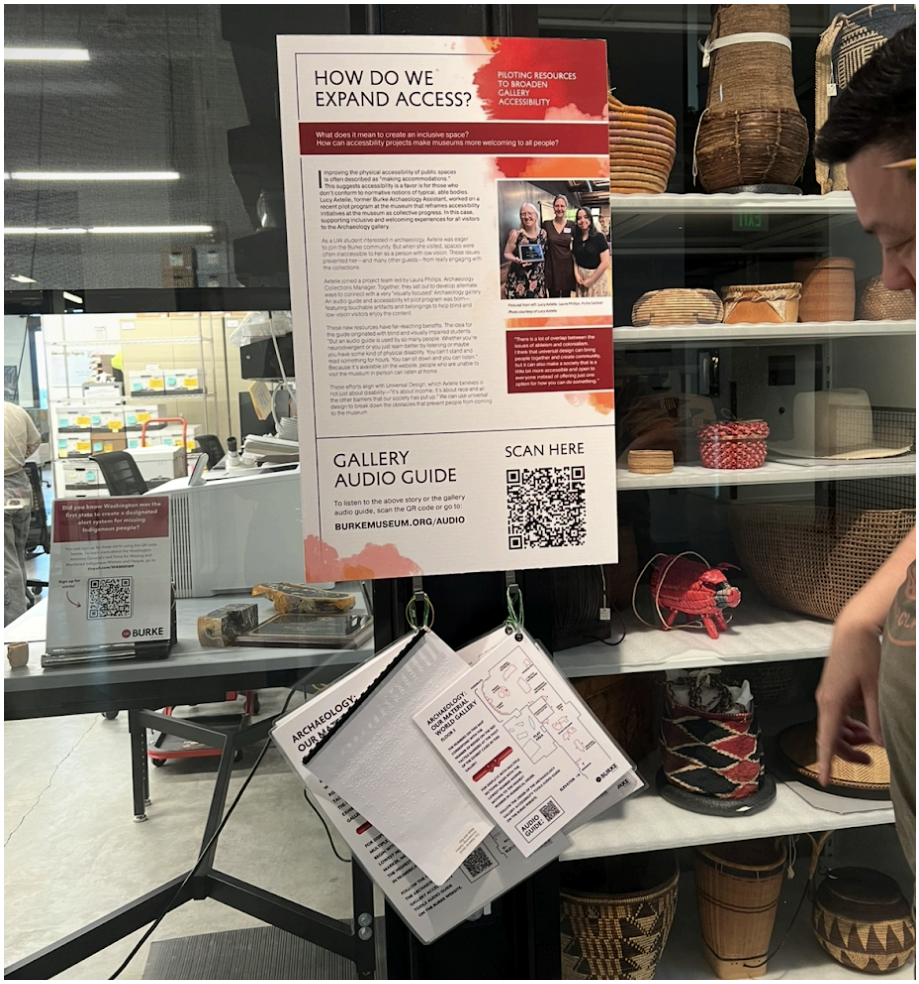
https://stqry.com/

https://acoustiguide.com/

https://www.bloombergconnects.org/

https://goodmaps.com/

https://pac.bz/projects/andy-warhol-tactile-reproductions-and-mobile-application/



This is an example of how the Burke Museum provides accessible materials, including an audio guide and braille.

Access Coordinator/Advisory Committee

An access coordinator is a staff member who leads the museum in its efforts to become more accessible. An advisory committee is a group of people who should include board members, the executive director, program directors, the access coordinator, and people who have or represent different disabilities that will act as consultants. The National Endowment for the Arts has created extensive guides on exactly how to implement this, they have been linked below.

This is considered “phase 3” since having an access coordinator would require hiring a new employee and putting together an advisory committee would require paying people who are not already employees to be on said committee.

https://www.arts.gov/sites/default/files/Step4.pdf

https://www.arts.gov/sites/default/files/Step3.pdf

https://www.arts.gov/sites/default/files/Step5.pdf

Additional comments and tips

The pine box derby race track was made inaccessible and there is no way to modify it without making it inaccessible in a different way (ie: a ramp would create an unsafe obstacle because it would stick out so far).

This is a link to downloadable disability access symbols:
https://graphicartistsguild.org/downloadable-disability-access-symbols/

Conclusions

Creating an accessible environment is important to any museum's mission. A museum's purpose is to educate, spread awareness, and encourage involvement with a subject. ACM has recognized this, and are taking strides to improve their institution for people with disabilities, better aligning with their mission to interpret the history and culture of the automobile to the public. Accessibility is a journey, and tackling all of the necessary changes at once will be overwhelming, but just getting started is the most important step. This guide will aid the museum in implementing changes in a way that encourages starting small, that will make the museum more welcoming and provide an example to museums throughout Tacoma and the greater Seattle Tacoma metropolitan area.

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