Manchester-By-The-Sea
Massachusetts

Website Accessibility and Usability Assessment

July 2020

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Introduction

The Institute for Human Centered Design (IHCD) conducted a review of the Manchester by the Sea website (https://www.manchester.ma.us/). This review consisted of an internal assessment by deep content experts which focused on applicable portions of the World Wide Web/Web Accessibility Initiative (W3C-WAI) Web Content Accessibility Guidelines (WCAG 2.1). IHCD also conducted user testing, in the form of contextual inquiry research, with four user/experts with various functional limitations.

The IHCD team noted that major changes were implemented to the Manchester by the Sea website during the accessibility review process without prior notice to the team. Due to the change in website interface and functionality while the review was underway, the report and analysis that follows are a consolidation of the work that the IHCD team completed prior to the updates and some more recent analysis that reflects the changes on the site. Where updated analysis could not be included in the catalog of issues, a summary of outstanding issues are outlined in this cover page report.

Over time, some users who are blind, have low vision, dexterity impairments, or brain-based functional limitations have had to develop workarounds to obtain information or gain access to web and digital content that is otherwise inaccessible. This is compounded by a mixture of inaccessible elements on the website and complex navigation that makes the user's interaction with the website frustrating and challenging. Many users have come to expect that the website will not work ideally for them, a testament to the current state of web accessibility which doesn't include users across the spectrums of age and ability.

The primary pages and page types that were reviewed were those that users would be most likely to frequent on a municipality website. Attention was paid to pages that can be directly accessed from the site's home page and links within main menu navigation.

All home page content and functionality was reviewed thoroughly; we know from previous experience testing municipality websites with user/experts* who use assistive technology that a common way to orient oneself to a new website is to navigate the home page and understand

the layout and content presented. User/experts often recalled information encountered on the home page as a way to perform other tasks throughout the testing process.

> A user/expert is a person who has developed expertise by means of his or her lived experience in dealing with the challenges of the environment due to a physical, sensory, or brain-based functional limitations.

Overview

While the updates to the website eliminate some of the previous accessibility issues with navigation and access to information, there are still some outstanding issues that need to be addressed in order to ensure an inclusive and usable experience for all users including users navigating with assistive technology. When navigating with screen readers on the website, many elements are often read with inaccurate or unclear accessible names. Furthermore, in most cases, there isn't a notification of state change for the elements to let users know whether the elements are expanded or collapsed, adding to the barriers in accessing specific content for users who

are blind or have low vision. For example, the main menu is a primary way for users to access main content on the website. However, screen readers do not identify and alert users that the menu items expand to show a set of links. In addition, once a user navigates into the submenu for any given main menu item, there is no easy way to return to the main menu item – the "escape" key does not work as expected to return users to the main menu item associated with the submenu.

The 'Notify Me' page is unintuitive and difficult to navigate and use with assistive technology. Users are forced to navigate through a table of information to sign up for alerts – tables are often difficult or inaccessible to navigate with screen readers. Where possible, they should be avoided in favor of simpler formats in which to present information. In the case of the alerts, a more straightforward form might be favorable with accessible combo boxes or list boxes replacing the table layout.

The downloadable documents on the site also have inconsistent accessibility. Some documents open in a new tab without notification which could be disorienting. Especially for non-native technology users,
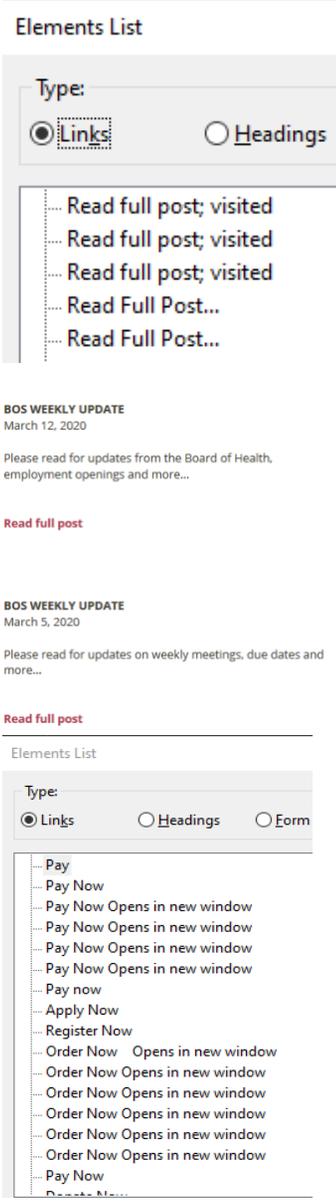
this is often problematic. Additionally, not all of the PDF documents on the site are accessible. Some of the documents are easily navigable with both JAWS and NVDA. However, others have inconsistencies in their reading order which make navigating them with screen readers difficult.
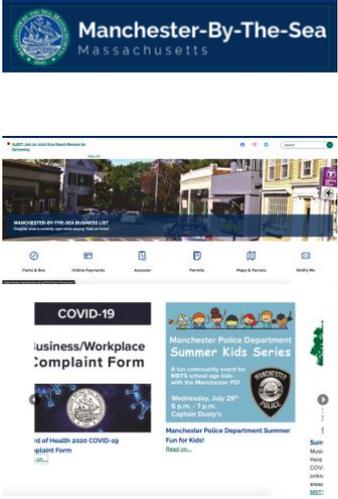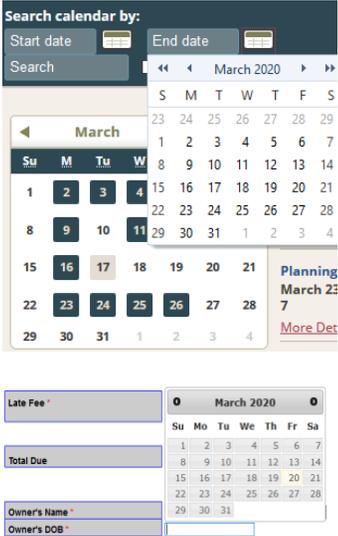
Some miscellaneous issues on the website include social media links with missing or incorrect ARIA labels – this is confusing for users navigating with screen readers to whom it can be confusing whether these are opportunities to share content on their own social media pages or links to Manchester by the Sea's social media pages. Clear labeling of links/providing ARIA labels for screen reader users is often an easy remedy. Other miscellaneous issues include distorted content presentation in the footer: the first two columns of text lack adequate spacing, making them appear to be overlapping – for many users with learning disabilities or other brain-based disabilities, this can be difficult to navigate especially given that the contact information in the footer is important information that users often look to.
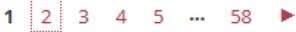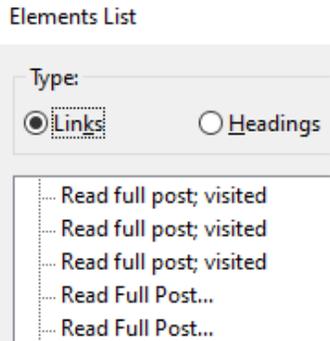
All third-party widgets, portals and websites that manchester.ma.us relies on and directs users to also need to comply with WCAG 2.1 AA. All third-party software should be properly vetted for compliance, and future RFPs and contracts should ensure that finished products are accessible and inclusively designed by specifying appropriate accessibility guidelines and conducting web accessibility reviews, with special consideration given to involving real users with a wide range of functional limitations at multiple stages throughout design and development. Web authoring staff should undergo training covering best practices for posting accessible web content and creating accessible documents.

The combination of the factors outlined makes navigation through the website challenging for all users and especially disorienting for the screen reader users.

To address some of the major issues, the CSS and JavaScript theming will need to be redesigned to address all occurrences of the issues presented in the catalog. In many cases, issues are recurring throughout the website but only a limited number of examples are documented in the report.

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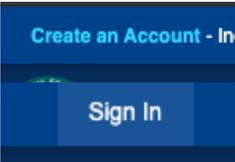|	Image	Section	Issue Name	Issue Details	Issue Tags
1		Weekly Updates Tab | Home page Payments page	Undescriptive Link Text	**Background** Users navigating a web page with a screen reader rely on descriptive link text to understand the purpose and function of a link. Many screen reader users navigate a website efficiently by using a shortcut to display a list of elements (also called an elements list; which includes links, headings, form fields, buttons, and landmarks on the page.) so descriptive links are very important especially in this case. When link titles are unspecific, users cannot identify which link to select in order to find the information they are searching for. This often leads to a confusing and a frustrating user experience. **Current** While navigating through several areas throughout the website, undescriptive link text is encountered. For example, in the list containing 'weekly updates' on the 'home' page, each post has an option to 'read full post" underneath. Within the context of navigating with an elements list, the link titles are indistinguishable when read by a screen reader and therefore cannot make enough sense to a user trying to figure out which link is the correct one to select in order to find the specific information that they might be looking for. The first image is an example of each "read full post" link when displayed on an elements list, and the second image is an example of how each one correlates with its post, which can only be distinguished with visual cues. The third image displays more links which correspond to options on the payment page, which creates the same problem if navigating the page with an elements list. **Recommendation** Provide descriptive link text for all links wherever possible, or provide context for links with non-descriptive text. For example, change link text that says "read full post" to "read more about xxx" This is only one possible solution to remedy this issue; others including converting the heading of the section to a link so that "read full post" appears after the title in the elements list, making the link text compliant in context. Use of ARIA labels/attributes should be reserved for instances where simpler, more straightforward solutions don't work.	

| 2 | | General Content | Poor or No Visual Focus | **Background**
Visual focus is critical to let keyboard users know which element on the screen has keyboard focus. Failure to provide any or adequate visual focus creates a significant barrier for various user groups. This includes, among others, users with low-vision, and users with dexterity impairments who rely on the use of a keyboard to navigate. It is also an important feature with great benefit for users with some brain-based functional limitations including keyboard users with attention limitations, short term memory limitations, or limitations in executive processes.

Current
In most cases, the visual focus, if present, is very faint with a thin line weight, making it hard to see. This makes navigating especially difficult for keyboard depended sighted users or low-vision users. Some examples of areas where this occurs are the anchor link, the MBTS News section on the home page, and the banner carousel of images on the home page.

Recommendation
Highlight elements that have keyboard focus with visually salient CSS so users know which element has focus. Ensure that visual focus indicators are always apparent where applicable, and that their behavior is consistent across elements**.** | |
| 3 | | Calendar | Inaccessible Calendar Functionality | **Background**
The meaning derived from the content formatting i.e. presenting dates in a calendar, must be preserved when the content is rendered through different sensory modalities.

Current
While using a screen reader, start & end date form buttons do not describe which format to type date in for manual selection. Adjacent to each field, the screen reader reads "calendar graphic link" which is not a descriptive of its function. Interacting with that element reveals a date picker which is not accessible with a screen reader or with keyboard navigation. This creates a user experience that excludes screen reader users and keyboard users, because when attempting to navigate this pop-up calendar with either the tab or arrow keys instead of a mouse/trackpad, navigation skips ahead without allowing a selection and without any indication that it's doing so. There is also no way to dismiss the date picker once it appears.

Recommendation | |

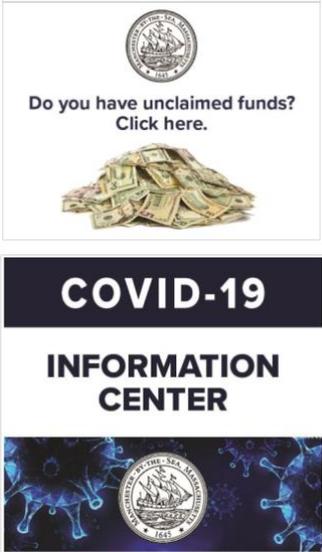|					
				Ensure that all calendar functionality is accessible with a keyboard and with other assistive technology including screen readers. Provide clear instructions for what format information should be entered in if some fields only accept specific formats. Ensure that the date picker can be dismissed with the "esc" key, the typical way that users expect to dismiss content. Alternatively provide another clear and direct way to access the same information presented within this widget.	
4	1 2 3 4 5 ... 58 ▶	Weekly Updates | Blog page	Missing ARIA Label	**Background** All elements must have discernable link text, label, or ARIA label associated with them so that assistive technology users can identify and understand the purpose of the links. **Current** When user navigates on the weekly updates blog page with a screen reader, the numbered links at the bottom of the page currently read as "link 1, link 2", etc, because of its link text shown below. These numbered links do have a purpose by indicating page search results, however the only way for users to know this is by visually making that correlation. For example, without the information about how many results there are and how many pages of them, it would be easy to be under the impression that there was only 1 page of blog post results and were looking for a specific one, they would miss out on all the other results pages. **Recommendation** To keep the current visual presentation of the information but make it accessible to accessible technology users, add ARIA labels to the links. We recommend providing context such as "page x of y" rather than just "page x".	
5	**Elements List** Type: ◉ Links ○ Headings --- Read full post; visited --- Read full post; visited --- Read full post; visited --- Read Full Post... --- Read Full Post...	Weekly Updates Tab | Home page Payments page	Undescriptive Link Text	**Background** Users navigating a web page with a screen reader rely on descriptive link text to understand the purpose and function of a link. Many screen reader users navigate a website efficiently by using a shortcut to display a list of elements (also called an elements list; which includes links, headings, form fields, buttons, and landmarks on the page.) so descriptive links are very important especially in this case. When link titles are unspecific, users cannot identify which link to select in order to find the information they are searching for. This often leads to a confusing and a frustrating user experience.	

				Current While navigating through several areas throughout the website, undescriptive link text is encountered. For example, in the list containing 'weekly updates' on the 'home' page, each post has an option to 'read full post" underneath. Within the context of navigating with an elements list, the link titles are indistinguishable when read by a screen reader and therefore cannot make enough sense to a user trying to figure out which link is the correct one to select in order to find the specific information that they might be looking for. The first image is an example of each "read full post" link when displayed on an elements list, and the second image is an example of how each one correlates with its post, which can only be distinguished with visual cues. The third image displays more links which correspond to options on the payment page, which creates the same problem if navigating the page with an elements list. **Recommendation** Provide descriptive link text for all links wherever possible, or provide context for links with non-descriptive text. For example, change link text that says "read full post" to "read more about xxx" This is only one possible solution to remedy this issue; others including converting the heading of the section to a link so that "read full post" appears after the title in the elements list, making the link text compliant in context. Use of ARIA labels/attributes should be reserved for instances where simpler, more straightforward solutions don't work.	
6		General Content	Overprinting Text on Image Backgrounds	**Background** All text elements must have sufficient color contrast. A low contrast between text and background can be difficult to see for users with low vision. **Current** The rotating images on the home page banner have text labels overprinted on images. Some of those items satisfy the minimum color contrast requirement but others contain lighter image backgrounds so the white text on those backgrounds is harder to read and may not be compliant especially as content is updated. **Recommendation**	

			Whenever possible, present all text on solid backgrounds. Additionally, make sure that the color contrast ratio for all regular sized text is at least 4.5:1. For large text elements, make sure the color contrast ratio is at least 3:1.	
7		General Content	Inappropriate HTML Semantic Markup	**Background** Headings are extremely important for a variety of users navigating webpage content. For screen reader users, headers provide an important hierarchy which helps them make sense of a website and find what they are looking for with relative ease. Descriptive headers allow users to understand how content is grouped and what to expect under each heading level. Good and consistent header hierarchy provides organization to a page that can aid visual focus and reduce anxiety or stress for users with some brain-based conditions. In addition, it can also increase the ease with which non-native tech users can interact with content. All headings should be visible or have associated visible content **Current** When navigating through the 'Payment' page with a screen reader, two level 1 headings are announced. For example, as the 1st picture displays, it announces the 'Manchester-By-The-Sea' click to home link as "heading level 1." However, as it moves on it also announces the 'Online Payments' title as "heading level 1". This is the same thing that occurs on multiple pages throughout the website, including all navigation landmark menu pages and submenu pages. There are several other examples throughout the website where heading tags and heading levels are used inappropriately or are skipped, a few of which are also included in the images to the left. Amongst all, the most unusual example is the 3rd image to the left, where the 'share' and 'side tools' icons are announced by the screen reader as "heading level 3". **Recommendation** Only 1 heading level 1 should exist on each page. Heading levels should not be skipped. Headings levels should be used for hierarchical organization and structure instead of for styling purposes.	

8	CLICK HERE Order Your Cape Ann License Plate Today	General Content	Empty or Outdated Links	**Background** When a feature or link is provided, it should function and work as it was intended. Following links with a dead end is time consuming and can cause pain or frustration from repeated keystrokes. It is especially frustrating for users who are blind, low vision, or have dexterity impairments. Also, unexpected new tabs or windows are very disorientating for assistive tech users and often confusing for non-native tech users. It should be clear when users are directed out of the site. **Current** When user interacts with this link, it is directed to a "404 NOT FOUND" error page. **Recommendation** If the link still exists but is directed to an error page, it needs to be fixed so that it functions properly or needs to be announced that it is not a live working page. If the page doesn't exist anymore, then the link should be removed altogether.	
9	NOTIFY ME® TO TOP		Inconsistent Main Menu Content	**Background** Improperly labeled UI elements may cause screen reader users to not interact with the element as intended and/or miss content, causing frustration and/or disorientation. Information should be presented consistently across the site to aid user navigation. **Current** When user navigates to the navigation landmark link menu and is in hover/focus on the "How Do I…" link menu item, there are no items displayed in its collapsible submenu. All the other menu link items have visible submenu items. "Notify Me" and "To Top" icons are missing on multiple pages throughout the website. **Recommendation** If you are providing information in a specific format, it needs to be consistent and accessible to all users to prevent confusion, frustration, and an incomplete user experience. The same links provided on the "How Do I…" page should be available in its submenu to increase navigation efficiency.	

| 10 | | General Content | Keyboard Trap | **Background**
The keyboard focus should never be locked on a page element. There must always be a way to navigate between elements of a page when only using the keyboard.

Current
When using keyboard only navigation to navigate the home page, the keyboard focus gets trapped within the Facebook widget. Pressing escape does not let users exit the widget, and the only way to continue viewing the main page is to navigate all the way to the bottom of the loaded content within the Facebook widget.

Recommendation
Do not shift focus programmatically to the posts in the widget without explicit user interaction. Provide an option for users to navigate past it to the next element on the page. In addition, provide the ability for users to use the "Esc" or other designated key to return to the header of the widget should they change their mind or want to move ahead without going through all the tweets. | |
| 1 1 | | General Content | Improper HTML Semantics | **Background**
HTML markup may not change the graphical user interface, however screen reader users rely on this semantic information to make sense of the web and interact with elements. Improper HTML markup can cause confusion for screen reader users.

Current
"Create an Account" and "Sign In" are given the role of button. Buttons should be reserved for actions such as submitting a form. Here, "Create an Account" and "Sign In" function as links.

Recommendation
Always use the most semantic and appropriate HTML roles and tags. Since "Sign In" has an <a> tag it already functions as a link so removing the "role=button" attributed to it should ensure it functions as a link. | |

| 12 | Council On Aging | Council on Aging Page | Automatically Changing Content | **Background**
For any moving information that starts automatically, lasts more than five seconds, and is presented in parallel with other content, there must be a mechanism for the user to pause, stop, or hide it unless the movement is essential. This is an important function that helps users with brain-based disabilities not be distracted by moving elements while they consume the other content on the page. All functionality of the content should be operable through a keyboard interface without automatically shifting focus away from the content user is interacting with or requiring specific timings for individual keystrokes.

All images must have alternative text to convey their purpose and meaning to screen reader users. Providing concise and accurate alternative text is essential to making images accessible to users with visual or certain brain-based disabilities.

Current
The carousel of images on the page does not provide controls for user to pause stop or navigate through them. The images also have inaccurate or non-descriptive alt text. There is also no context provided for a user before interacting with them.
<img src="/ImageRepository/Path?filePath=%2fdocuments%5cIntranet%5c52%2fGerda.jpg" alt="Gerda" title="Gerda" data-delayed-image="" style="height: auto;">

Recommendation
Provide controls for a user to manually switch between the image in the carousel as well as for someone to pause or stop viewing the content should they choose to do so. Images should also have accurate and descriptive alt text so that users navigating with a screen reader have equal access to the content being presented in the images. As a short-term recommendation, it would be helpful to provide some context even if just in the form of one or two sentences of text prior to the images to inform users of the content being displayed. | |

| 13 | | General Content | Improper Use of Images as Links; Images of Text | **Background**
Screen reader users rely on descriptive and accurate accessible names for web elements to navigate independently and access information. Where possible, images should not be used to convey information that can be conveyed in text or other simpler, more accessible formats.

Current
There are links on the home page that are presented in the form of images with non-descriptive or inadequate alt text. When screen reader users encounter these links only the alt text is announced which does not provide any or enough context for what the links are. The image that says "Do you have unclaimed funds? Click here" is read as "unclaimed funds" and "COVID-19 information center" as "COVID 19 website icon (1)." These are unintuitive and unclear descriptions of the content presented in the images.

Recommendation
There are a number of ways to remedy this issue: provide the information and relevant links in text alongside the images (this is recommended if the alt text for the images is then updated to be null so as to avoid redundant information and a frustrating user experience for screen reader users); provide accurate ARIA labels for these links in addition to alt text. | |