**MSU Beal Garden Website Recommendations**  
**For Compliance With MSU & ADA Accessibility Standards**

25 March 2010

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**Introduction**

The W.J. Beal Botanical Gardens are an important and long-lasting tradition on the Michigan State University Campus. They are both enjoyable and educational, and add greatly to the campus’ diversity and beauty. This makes them an ideal candidate for their own webspace, as patrons of any business, nonprofit, or service expect a functional website, which can be a valuable asset in many ways. However, a website can also be a problem if it excludes certain people from seeing its contents in full. This issue of accessibility has been championed by the American Disabilities Association (ADA) and the Federal Government, and guidelines have been developed to help individuals in making their websites user-friendly to those with impairments. Recently, Michigan State established a requirement that all university websites meet minimum accessibility guidelines, which are listed on their website. Clearly, this is an important goal, and is one that should be considered as the Beal Gardens website is being redesigned.

Our team has developed recommendations for making the Beal Gardens website usable and friendly to those with disabilities. With past experience in making websites accessible and a desire as Michigan State students to promote the features of our campus, we are excited to aid in this process. In the sections that follow, we will discuss the guidelines and recommendations for making the website comply with both Michigan State University and ADA accessibility guidelines. Additionally, we will discuss ways to include content that is especially relevant to those with disabilities as they consider visiting the Beal Gardens.

**Recommendations**

ADA and MSU web standards require all non-text elements to be labeled. This includes images, spacers and blocks, and other such elements. The reason for this rule lies in the use of screen readers – devices that read the elements of a webpage aloud for visually impaired persons. Any non-labeled element will be skipped over, potentially interfering with the purpose of the webpage. For example, an image could be used as a link to another page. If this image were to be unlabeled, a visually impaired reader would be unaware of the link's presence.

Web standards also require all site content to make sense if presented in black and white. Many people have difficulty seeing a full spectrum of colors. For example, some people have trouble differentiating between green and red. Green text over a red background could prevent them from using the webpage. However, if the page makes sense in black and white, it will be legible for everyone.
Many websites currently make use of a CSS-language style sheet to present their content. These style sheets can assign fonts colors, positions, and more to HTML content. While this is a useful tool, there can be errors in presentation: the style sheet might not link to the site, site visitors could have Internet browsers set it ignore CSS, etc. To alleviate such concerns, ADA has specified that websites be readable without a style sheet. That means all text, links, images, etc. be included in the HTML code, which will show up on Internet browsers with or without a CSS style sheet. A page without a style sheet might not be pretty, but it would still be useful.

Another MSU requirement that helps site visitors compensate for non-working CSS style sheets is a continuously updated text-only alternative for webpages. This is the best way for visitors who are unable to view the CSS-enhanced site to see the page. While it is the same idea as an HTML-only page, this goes a step further by eliminating the webcode visible in pure HTML. This extra data could confuse anyone not familiar with HTML code, and possibly make the page unintelligible.

Frames can be used as alternatives to CSS style sheets, and are currently used on the Beal Gardens webspace. They break up each page into sections, with each section containing unique information. While current web standards discourage the use of frames, their practice is still widespread. ADA allows for the use of frames under the condition that each individual frame is labeled, which allows for the use of screen readers.

Script languages, such as Javascript, can be used to enhance the experience for site visitors. However, these languages can be confusing for screen readers, which could end up reading the script code instead of content. To avoid this, ADA specifies that all script languages be labeled. This way, screen readers will be able to tell if the language is compatible or not, and possibly decide to skip over the section instead of resorting to reading code.

An MSU specific requirement is the avoidance of flickering images on the site. The most popular type of flickering image is an animated .gif image. While .gif extensions can be used online to link images, the animated types can be distracting to the viewer while slowing or stopping the web browser’s loading process. In this case, it would be best to use video content instead.

For pages that have quite a bit of content like the main page for the Beal Gardens, a link at the top should be provided that links directly to the main content of the page rather than having to wade through the navigation and other sections. This is very important for people who use screen readers, and currently with how the web page is composed, all of the content is linked in different frames with links that are not informative to what they link to. Having links on the same page makes it easier for people with screen readers to navigate a site. Smaller links at the bottom of the page allow for easier movement not only for those using screen readers, but the average person as well.

Currently, the image map on the site is the only image that has the alternative text offered and the content in it is sufficient as well as having meaningful link names. The execution of this is correct and should be done like this again in the redesign of the site. It is important to have these labels so that persons using screen readers, slower Internet connections, or out-dated browsers can still view a text only version of the map and understand it.

The only video content on the page is the web-cam that lets the user view the garden in real time. Usually video content has accompanying audio content with synchronized captions, but in the case of this web-cam, the best one could offer is a brief explanation of what the user is seeing in each of the selected cams. This could cause problems though with the way that the cam is implemented currently and how users have to struggle between each other in order to view the different areas. A suggestion about this is to implement a queue system that allows each user control over the cam for a particular amount of time, say 30 to 45 seconds, or just long enough to give a description of what is being viewed.
If tables must be used a proper heading must be given to the proper columns and rows in order to offer better understanding of the data contained within. The tables themselves should also be given proper heading; even though that entire current site is based upon tables each table and sub-table should be given a heading such as "Main Content" or "Plant of the Week Archive". This would allow people using a screen reader to know exactly what they are about to read or hear and allow the user to choose to skip that content if they are not interested.

Not only should the Beal Gardens website itself be accessible to those with disabilities, but it should also convey information about how these populations can best access the gardens. As it is currently constructed, the gardens do present some difficulties to those with disabilities. Some of the entrances cannot be used by those with wheelchairs, and those with lesser mobility issues may be challenged by the staircase entrances. Additionally, those with mobility problems may have to park in different lots and approach the gardens in a different manner to avoid any staircases. All of this information is important and relevant to individuals who are planning on visiting the gardens, and should be placed on the website for reference.

An ideal solution to this problem would be to embed this information within the "Directions" section of the website. Currently, there are links to pages containing directions via Mapquest, from Trowbridge-Harrison, a campus map, and a Beal gardens website. Another link could be added to this page entitled "Accessibility Information." The destination page should include the following content:

- Wheelchair-accessible entrances
- Handicapped parking places and paths to the gardens
- Entrances for people with limited mobility (e.g., that have handrails)
- Possible impairments to wheelchair movement (e.g., no paths in certain areas)

The Beal Gardens website could also benefit from considering those individuals who cannot visit the gardens at all. This may be due to mobility issues, but also could be because of distance or time. MSU’s mission as a land-grant university is to disseminate knowledge beyond the borders of the campus, and this should be a goal of the gardens, as well. With this in mind, the gardens could be a platform to bring the gardens to those who could not see them otherwise. This could be accomplished in a variety of ways, and is already attempted on the website through the live video feed and the collections descriptions. However, this could be greatly improved upon.

Perhaps the richest method of portraying the gardens online would be through posted videos. This would require some individuals to create this media, taking the viewers on a tour of the gardens. One method would be to create a video series with a video for each collection, including narration that describes the images for those with visual impairment, as well as supplementary information. In order to comply with accessibility guidelines, these videos would also need to have captions for those with hearing impairments. Not only would this be great media for the public, but it would also be an ideal historical record of the garden’s contents.

If creating videos is not feasible, a more low-tech option would be to create a photo gallery. These are easily implemented within any website and, if photos are in the right format (JPEG), do not have to take up much bandwidth. A separate gallery could be created for each collection, with photos of highlighted plants. These photos should each have descriptive captions, including the names, appearance, and maybe even tactile information for each plant so those using screenreaders can grasp the content of the images. Those already working with the Beal Gardens would be the ideal candidates to create these captions, as they have in-depth understanding of the plants and could provide rich descriptions. Additionally, in order to comply with accessibility guidelines, these images should all have descriptive alternate titles.

Overall, the videos and/or photos could be a valuable tool in publicizing the gardens, and would show those outside of the university the resources our campus has. More importantly,
however, they would bring the experience of visiting the gardens to those who could not have it any other way.

Conclusion

Our team has concluded that a renovation of the current Beal Garden site is direly needed. Currently it is not in compliance with either the ADA’s or MSU’s web accessibility guidelines and in order for the site to function properly and do the work that it should be doing. With the current tools available to a reliable and knowledgeable web developer, following and implementing the suggestions made are easy and relatively quick. Ideally the site is used as a gateway for not only those who are disabled, but able bodied individuals who could not otherwise visit the gardens. Correctly implementing still photographs, video footage, and audio recording as well as following the guidelines put forth not only speaks well for the Gardens, but for the University as well. We are aware that the site currently is undergoing a renovation, but we cannot stress the point enough that if done incorrectly not only could it tarnish the reputation of the Gardens, but as stated before, the University as well.