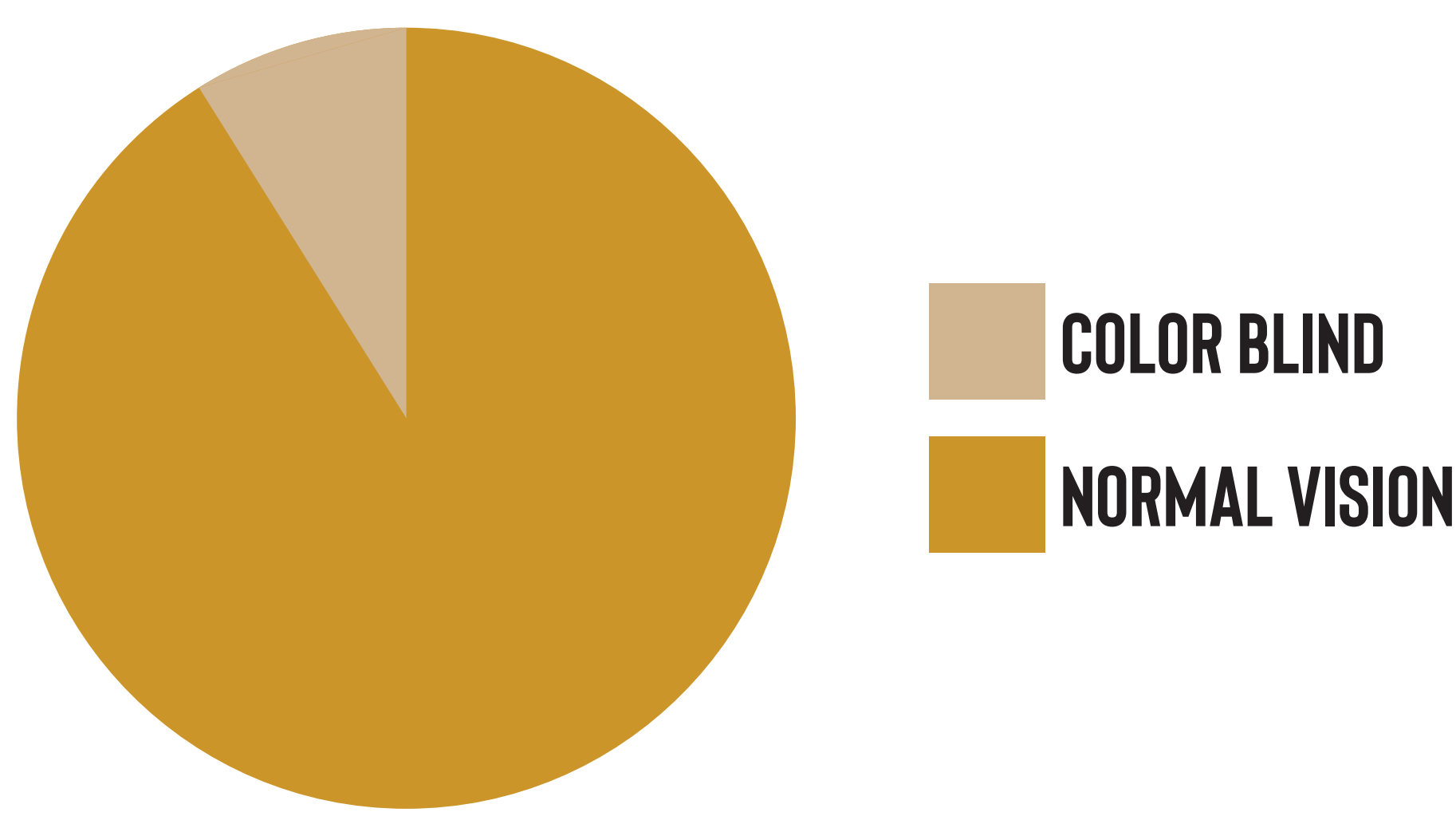


COLOR BLINDNESS AND THE BUILT ENVIRONMENT

32,000,000 AMERICANS HAVE SOME DEGREE OF COLOR BLINDNESS



8% OF MEN 0.5% OF WOMEN



RED-GREEN COLOR BLINDNESS

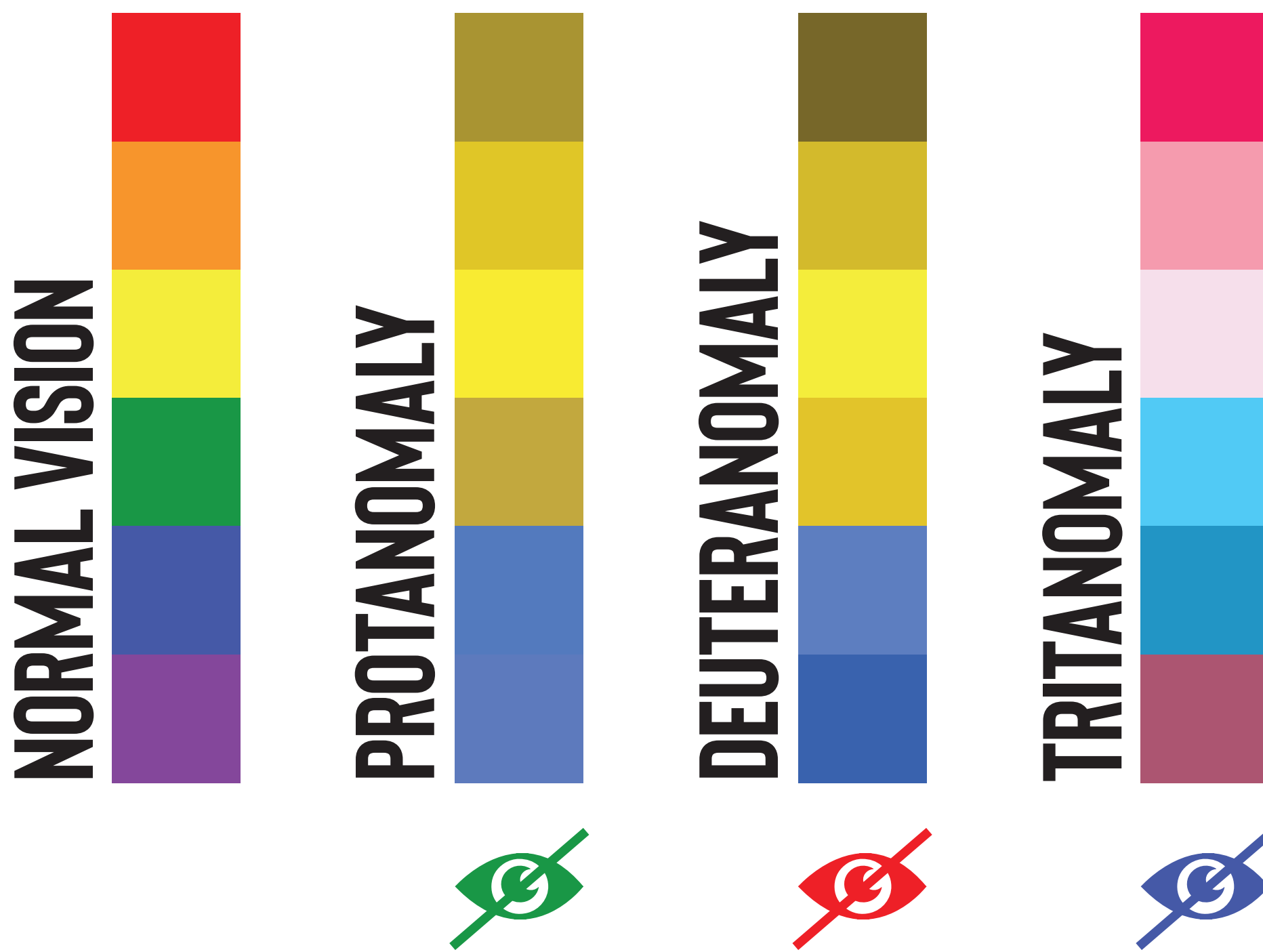
The most common type of color blindness. This includes:
Deuteranomaly the most common of red-green color blindness, makes green look more red.
Protanomaly makes red look more green and less bright.

BLUE-YELLOW COLOR BLINDNESS

Less-common and makes it hard to tell the difference between blue and green, and between yellow and red.
Tritanomaly makes it hard to tell the difference between blue and green, purple and red, and yellow and pink. It also makes colors look less bright.

COMPLETE COLOR BLINDNESS

If you have complete color blindness, you can't see colors at all. This is also called monochromacy, and it's quite uncommon. Depending on the type, you may also have trouble seeing clearly and you may be more sensitive to light.



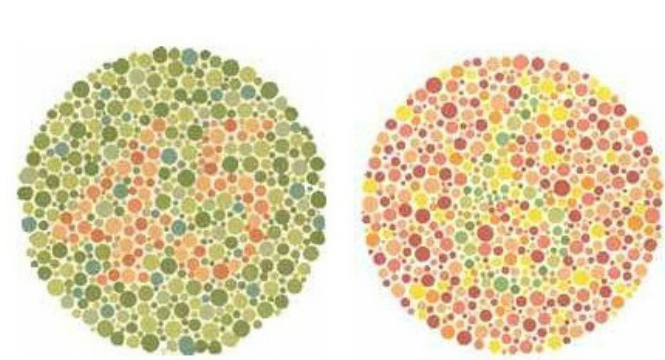
ABSTRACT

Color blindness is very common in our society, affecting approximately 1 in 12 men and 1 in 200 women. Although, not technically considered a disability according to the ADA (Americans with Disabilities Act), there are many challenges related to color blindness. ADA aims to remove barriers by creating accessibility, largely impacting our built environments. Color blindness can impair some very basic life activities, so why does it seem to be overlooked in the built environment? Web and graphic designers have already begun working towards designing in a way that is accessible to all users. Using an existing building, plans were created for a center that houses both a museum and clinic. This center is an attempt to inform the general public of existing challenges due to color blindness and our built environment. The museum allows visitors to experience everyday challenges encountered by those who are color blind. Challenges deal with transportation, food selection and preparation, card games, and wayfinding. Testing for color blindness and treatment options will be available through the clinic. We have created these issues for people who experience color blindness that can easily be avoided with better design. There are many tools and resources to help designers make informed decisions that create better accessibility for a large portion of our population.

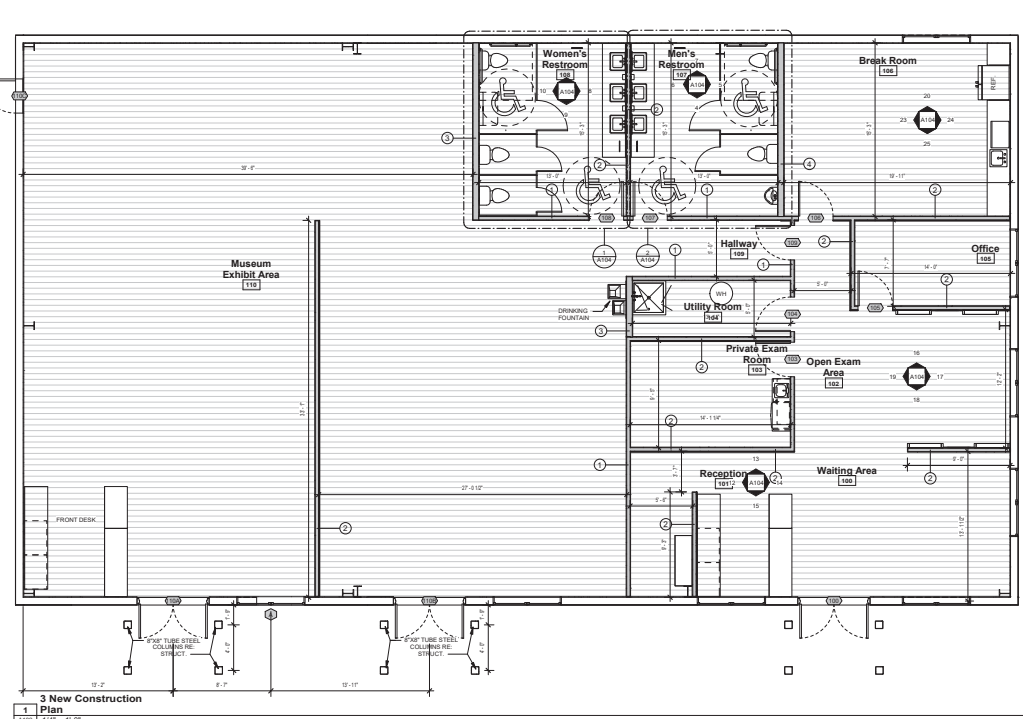
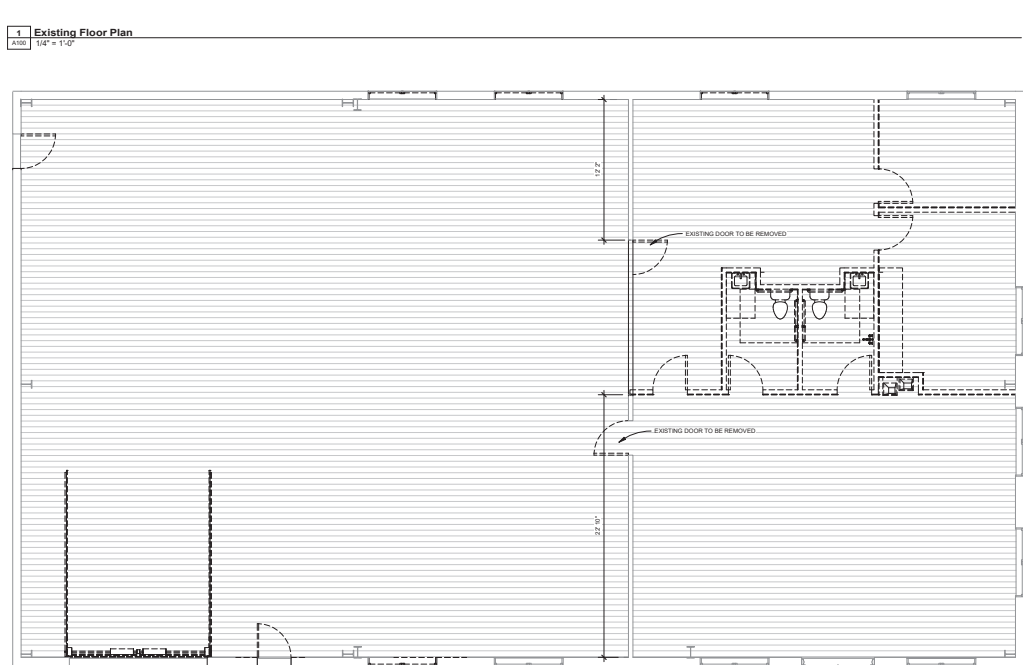
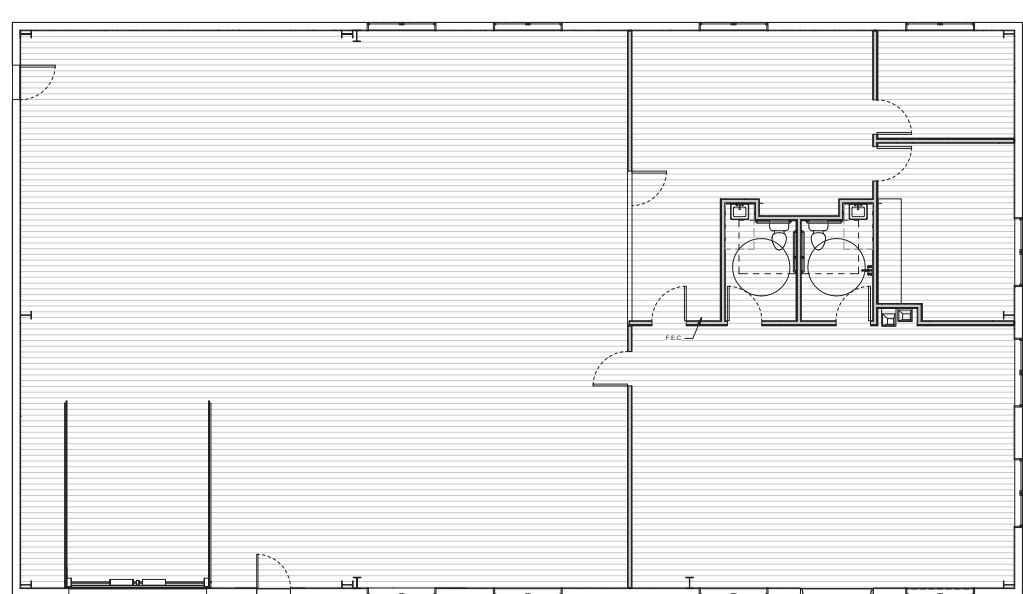
LOGO



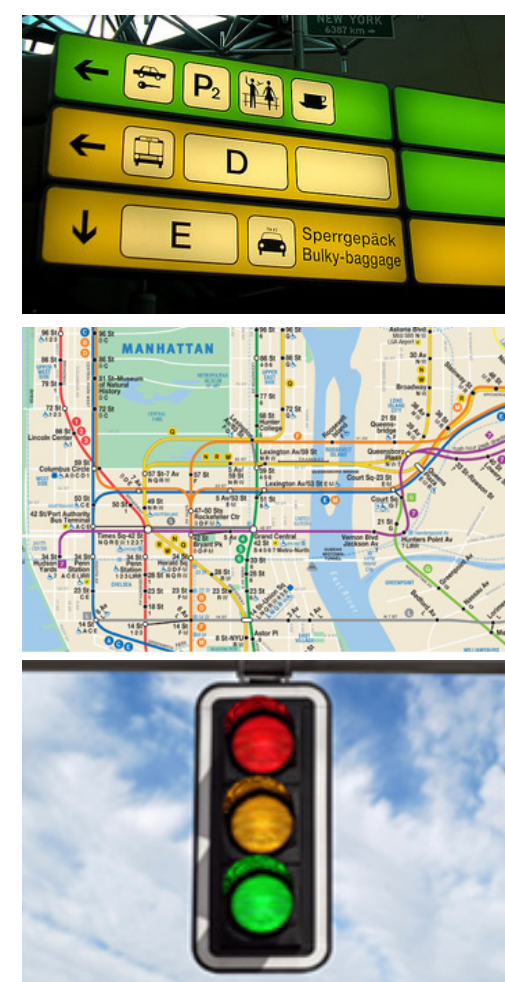
ISHIHARA TEST



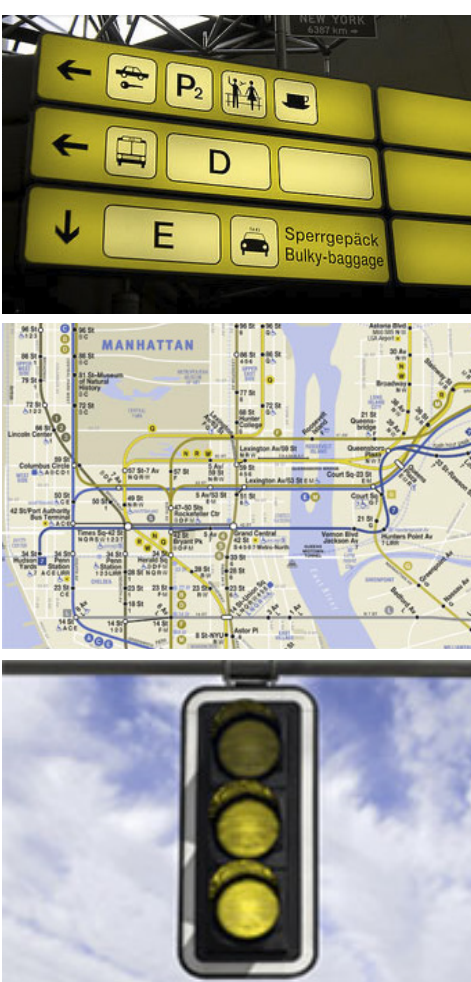
FLOOR PLANS



NORMAL VISION



PROTANOMALY



INTRODUCTION

After interacting with several people who are color blind, I began noticing several issues in the built environment they face on a daily basis.

OBJECTIVES

My goal for this project was to learn more about the role of ADA in addressing color blindness in the built environment. Additionally, I wanted to create a space that could help bring awareness to these daily struggles.

METHODS

Through research I found answers to some of my questions. Using computer software, I modified an existing building to create a center for color blindness. Using simulators I was able to recreate images as potentially seen through the eyes of someone with color blindness to find some of the biggest areas of concern. A custom logo was designed inspired by the Ishihara test, which is commonly used to test for red-green color deficiencies.

CONCLUSION

ADA does not specifically cover color blindness. JAN, the Job Accessibility Network, does address color blindness and offer some solutions to issues that may occur in the work place. Shapes, textures, and other elements can help a person make up for what may be lacking in color. Graphic design and related fields have made steps toward designing for accessibility. Problem areas include stoplights, food preparation and selection, signage and wayfinding, and any other flat graphics such as distinguishing between a red and green Uno card.

SIGNIFICANCE

There are real challenges for people with color blindness in the built environment that need to be addressed.

NEXT STEPS

A start would be to create a standardization in way-finding, such as incorporating national or universal symbols that can easily be understood. Next, generating awareness. The intent of the Center of Colorblindness is not only to provide treatment options, but to help people understand how difficult some of these issues can be. With greater awareness, we can bring about more solutions, including the way we design our built environments.



CENTER FOR COLOR BLINDNESS MUSEUM



CENTER FOR COLOR BLINDNESS CLINIC



CENTER FOR COLOR BLINDNESS CLINIC

REFERENCES:
According to the ada is color-blindness a disability? (2019, December 23). Retrieved March 11, 2021, from <https://www.paymeovetime.com/2019/12/23/according-to-1-he-ada-is-color-blindness-a-disability-2/>
Bigman, A. (2018, January 23). Why all designers need to understand color blindness. Retrieved March 11, 2021, from <https://99designs.com/blog/tips/designers-need-to-understand-color-blindness/>
Bodony, R., & Staffaroni, S. (2018, September 13). How to design for color blindness. Retrieved March 11, 2021, from <https://usabilla.com/blog/how-to-design-for-color-blindness/>
Cohen, R. (2017, December 07). Shocking! justice is not blind-it just cant tell red from green! Retrieved March 11, 2021, from <https://abovethelaw.com/2017/12/shocking-justice-is-not-blind-it-just-cant-tell-red-from-green/>
Color blindness limitations. (n.d.). Retrieved March 11, 2021, from <https://www.colour-blindness.com/general/dangers/>
Colorblind/Color vision deficiency. (n.d.). Retrieved March 11, 2021, from <https://askjan.org/disabilities/Colorblind-Color-Vision-Deficiency.cfm>
How to use color blind friendly palettes to make your charts accessible. (2021, February 23). Retrieved March 11, 2021, from <https://venngage.com/blog/color-blind-friendly-palette/>
Tuchkov, I. (2019, March 07). Color blindness: How to design an accessible user interface. Retrieved March 11, 2021, from <https://uxdesign.cc/color-blindness-in-user-interfaces-66c2733b858>
Types of color blindness. (n.d.). Retrieved March 11, 2021, from <https://www.nei.nih.gov/learn-about-eye-health/eye-conditions-and-diseases/color-blindness/types-color-blindness>
Webster, M. (2015). Environmental influences on color vision. Encyclopedia of Color Science and Technology, 1-6. doi:10.1007/978-3-642-27851-8_76-3