

Color And Healing

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COLOR AND HEALING

by

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A thesis submitted in partial fulfillment of the requirements for the degree

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in

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April 2010

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Abstract

Post Traumatic Stress Disorder (PTSD) affects approximately 20-30% of Veterans. It can be very mild with little effect on the person to debilitating depression and suicide. Some of the symptoms Veterans with PTSD may experience are: depression, flashbacks, inability to sleep, re-experiencing the event, recurring dreams of the event, and many others.

In the United States we have an opportunity to give back those who have served the US with honor. We have the ability to create spaces and environments to help heal our returning Veterans who are afflicted with PTSD. By utilizing individual colors and interaction of colors we can create healing spaces to help Veterans reintegrate into society. Vet Centers' primary mission is the treatment of Veterans with PTSD and sexual trauma. Currently there is not a Vet Center located in the Gallatin Valley area for treatment of Veterans living here.

Color is performative. Color will react to the environment in which it is placed. The ways in which color will react are many; including how natural light interacts with color, how color interacts with artificial light, how color reacts with reflectivity of materials of the built environment, the placement of the colors in a built environment as well as the attributes of the colors themselves.

Thesis Statement

Returning Veterans to the Gallatin Valley area have no dedicated place to go seek help for emotional trauma. The goal of this project is to provide returning veterans to the Gallatin Valley area with a place to seek emotional healing and to assist them with reintegrating into society. Through the use of color and architectural design I will provide the Vet Centers of America with a place in the Gallatin Valley.

Post Traumatic Stress Disorder

Post Traumatic Stress Disorder (hereafter referred to as PTSD) always emerges in a person after an event of intense fear or helplessness in an individual. Usually symptoms emerge shortly after the event; however, they may take years to emerge. The symptoms must last for at least one month for the disorder to be diagnosed.⁷

- A. The person has been exposed to a traumatic event in which at least both of the following were present:⁷
 - 1. The person experienced, witnessed or was confronted with an event or events that involved actual, or threatened death or serious injury, or a threat to the physical integrity of self or others.⁷
 - 2. The person's response involved intense fear, helplessness, or horror.⁷
- B. The traumatic events persistently reexperienced in at least one of the following ways:⁷
 - 1. Recurring and distressing recollections of the event.⁷
 - i. Images, thoughts or perceptions
 - 2. Recurring dreams of the event.⁷
 - 3. Acting or feeling as if the event is

recurring over and over.⁷

- i. Sense of reliving the event, illusions, hallucinations, and dissociative flashback episodes⁷
 - 4. Intense psychological distress after perceiving or experiencing an internal or external trigger.⁷
 - 5. Physiological reactivity on exposure to internal or external trigger.⁷
- C. Persistent avoidance of stimuli associated with the trauma numbering of general responsiveness (that was not existent before the trauma), with at least three of the following symptoms;⁷
 - 1. Efforts to avoid thoughts, feelings, or conversations associated with the trauma.⁷
 - 2. Efforts to avoid activities, places, or people that arouse recollections of the trauma.⁷
 - 3. Inability to recall an important aspect of the trauma.⁷
 - 4. Noticeably diminished interest or contribution in activities.⁷
 - 5. Feelings of detachment from others.⁷
 - 6. Impaired range of Affect (e.g., inability to have loving feelings).⁷

7. Sense of a foreshortened future (e.g., does not expect to live a normal life span, marriage or career).₇
- D. Recurring symptoms of increased arousal as indicated by two or more of the following:₇
 1. Difficulty falling or staying asleep.₇
 2. Irritability or outbursts of anger.₇
 3. Difficulty concentrating.₇
 4. Hypervigilance.₇
 5. Exaggerated or startled response.₇
 - E. Duration of disturbance is more than one month, symptoms of criteria B, C, and D.₇
 - F. The disturbance causes clinically significant distress or impairment in social, occupational, or other important areas of function.₇

PTSD is usually found in Veterans but is also found in rape victims, abused children, law enforcement personnel, natural disaster survivors and any other personal event that causes the individual experience the above symptoms.₇

Color Physics

1676, Sir Isaac Newton used a prism to analyze white sunlight. What he found was that seven different colors of visible light were produced. Starting with red then orange followed by yellow next was green then blue then dark blue and lastly violet. We now know that the infrared is above the reds and that the ultraviolet are below violet. He also found that if he placed another prism into the light white sunlight would be reproduced.¹⁰

“Each spectral hue is the complement of the mixture of all the other spectral hues. We cannot see the components hues in a mixed color. The eye is not like the musical ear, which can single out any of the individual tones in a mixture.”¹¹

Colors come from light waves, a certain kind of electromagnetic energy. Humans can see and understand light wavelengths between 400 and 700 millimicrons only.^{10,15}

Red 800-650 millimicrons

Orange 640-590 millimicrons

Yellow 580-550 millimicrons

Green 530-440 millimicrons

Blue 480-460 millimicrons

Dark Blue 450-440 millimicrons

Violet 440-390 millimicrons



COLOR DEFINITIONS

Intensity: The brightness or dullness of a hue. Intensity maybe lowered by adding black and sometimes by adding the complement hue.₉

Saturation: The degree of purity of a hue₉

Hue: Hue refers to the color for example blue, red, yellow, etc. The Primary, secondary and tertiary colors, or hues, are these colors at their full saturation or brightness; this means there has been no white, black, or grey added.₉

Value: The lightness or darkness of a color, or the percentage of white or black in a hue.₉

Lightness: A measure of the amount of light reflected from a hue. Those hues with a high content of white thus have a higher lightness or value.₉

Tints: White when added in incremental amounts to any color results in a lighter value of that color, called a tint. For example white when added to blue becomes light blue a tint of blue. Sometimes referred to as tone.₉

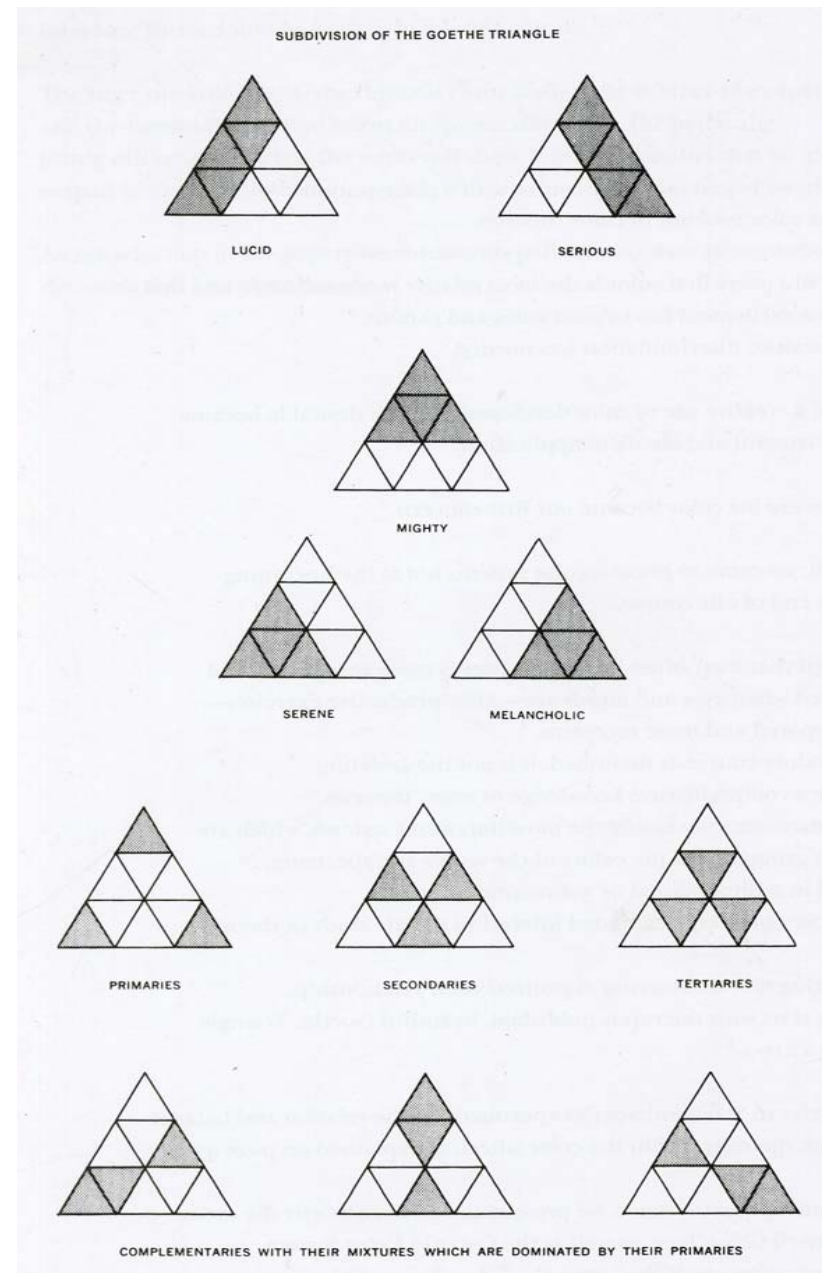
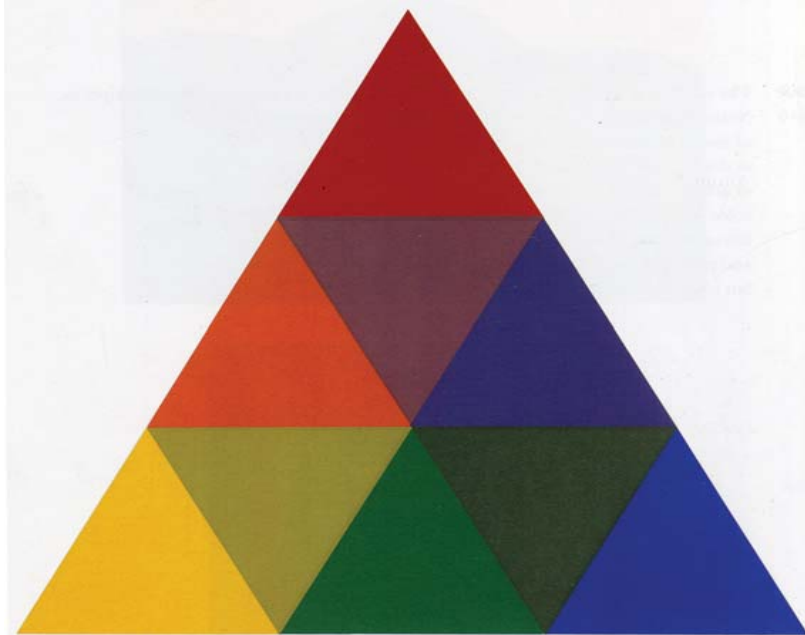
Shades: black or grey when added in increments to any color results in a shade of that color that color will then appear darker and is referred to as a shade. For example black when added to blue makes a dark blue a shade of blue.₉

INDIVIDUAL COLORS

THE GOETHE TRIANGLE

According to Albers "It is probably the most condensed and clear system of presentation of an essential order in the vast world of color. Within the two dimensions of an equilateral triangle- subdivided in nine similar triangles- are three primaries, three secondaries and three tertiaries, all placed very sensibly."¹

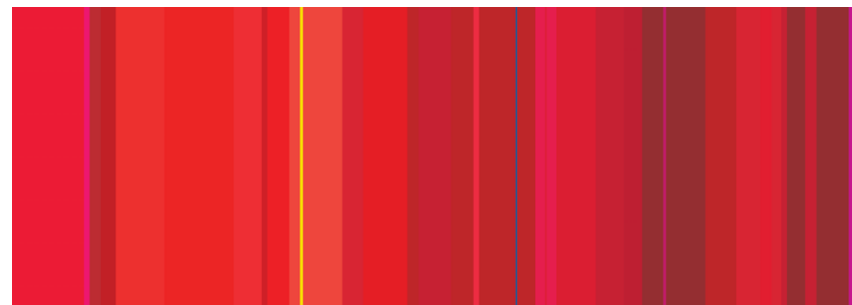
The first three have the strongest color contrasts, appearing the most separated, at the extreme ends of the triangle.



Red, a dominant color, both in psychology and in the color spectrum.¹⁶ Red is considered the color of fire and blood.¹³ Red invokes several psychological effects, in a positive light red invokes the fight or flight syndrome, warmth and strength.¹⁵ On the negative side it causes defiance, aggression and strain.⁶ The association with fire leads to a relationship with warnings and peril. Red also causes elevated heart rates and make us think time is passing faster than time really is. Furthermore the amount of red used makes a difference in how it appears to us, for example small amounts of red may cause us to stay awake and become more alert. This was the case in a college library that experimented with colors in study areas small amounts of red were used in conjunction with blues which relaxed the students and the red helped them to stay more alert and focused.

Due to association with blood it should not be used in a project such as a VET Center. These associations with blood, danger, causing elevated psychological states, and its ability to impact us physically through elevated heart rates make it a poor choice. Images of blood or danger may cause psychological distress in some Veterans,

which could lead to an emotional breakdowns, outbursts, or simply refusing to return for treatment. While having psychological effects and physical ones would be undesirable in this case because it may cause the Veteran to refuse to talk about their issues or avoid their issues accomplishing very little during a visit.



Yellow is an emotionally invocative color that is stimulating. This makes yellow the most psychologically stimulating color. One yellow can lift our spirits while another yellow in relation to adjacent colors can send us into a state of despair. Some yellows invoke fear, emotional fragility, depression, anxiety and suicide.¹⁷ Other yellows can make people feel high self-esteem creativity and confidence.¹³

Yellow has a western stigma of cowardice attached to it, thus the term “yellowed belly.”¹⁹ For this reason it is not to be used in a center for treating Veterans with PTSD. The risk of offending returning Veterans, who have a difficult time generally seeking help for their problems, far outweighs any potential gain.

Green is the color of balance. On the Positive side affects us through a feeling of harmony, refreshment, restoration, peace and reassurance. On the negative side green can invoke feelings of boredom, stagnation and blandness.^{6,13,15} At the center of the spectrum, green is considered a balancing color used in conjunction with other colors often used to bring a room into harmony.¹³ It is a restful color that causes us to feel that we are in little danger of famine.

In the military Green has significant meanings from camouflage to uniforms. It is included in several medals and service ribbons. To soldiers green can easily represent blending in with surroundings and a feeling of safety. For this group of people green, for the above reasons specifically the feeling of safety, would be a good color to use in treatment rooms. People could argue that green represents war for these very reasons, however the effects on Veterans would calm them and perhaps help them to open up and talk to the counselors, helping ease the transition back into civilian life.



Blue is basically is a color that affects us mentally unlike red which affects us physically.¹⁶ Positively blue invokes feelings of serenity, calmness and trust. Negatively blue can cause feelings of unfriendliness, coldness and lack of emotion. In essence, blues are a soothing color. Strong moves with blue stimulate clear thought while softer tones of blue calm the mind and assist with concentration. As a result blues affect us psychologically by mentally calming us with it's serenity.

In the US Army, Air Force and Marine Corp the service dress uniform is blue, often referred to as dress blues. Often times the wearing of dress blues is a good thing associated with formal dinners, weddings and celebrations. Also of note is that several medals contain blue in them, The Army and Air Force Achievement Medals, the Army Commendation Medal, and the Congressional Medal of Honor to name a few. As to the reasons that I feel that so many ribbons use blue are that they reflect the blue field in the US flag, The peaceful feelings that blue invoke, and the celebratory means that the blues represent in the army uniforms.



Violet, the color of royalty is often referred to as purple. Positive effects of violet are; spiritual awareness, authenticity, truth and quality. Some of the negative effect that this color can cause the perception of decadence, introversion and inferiority.⁷ Throughout European history violet was reserved for nobility to wear.^{6,8} This color is considered to act as a healing assistant due to its perceived severity. Of note is where Violet falls in a gothic color triangle between, red and blue, invoking feelings of warm and cool.¹³ In the color spectrum it falls at the opposite end from red not between its primary's like orange and green do.¹³ It is considered a very disturbing color by many people and is recommended that it should not be used in a Mental health facility at all.¹³

Being one of the three colors that is specifically recommended that is not used in mental health facilities make it a color that shouldn't be used at all.¹² To Veterans the shade of purple often invokes feelings of being wounded due to its association with the Purple Heart. For these two reasons it should not be utilized at all.



Black while not technically a color because it is all colors totally absorbed has several different meanings. Black represents sophistication, glamour, security, emotional safety, and efficiency. Conversely black negatively with feelings of coldness, menace and oppression. In Asia black is a color of celebration while in European country's it is the color of mourning.^{6,13,15,16}

Black has other negative issues with it for veterans such as it was the color of the uniform worn the following enemies of the United States, by SS troopers in World War 2, it was the color of choice for the Viet Cong in the Vietnam War, most recently it brings forth images of the Fedayeen from the Second Iraq War. These conflicts cover all of the generations and affect some people in all of the age ranges. Veterans in particular are affected by PTSD and one of the symptoms is hyper vigilance. This could cause veterans to be very uncomfortable and increase depression in the veterans that are being treated if exposed to dark spaces. Also wearing all black and moving quickly could cause some veterans to do a "double take" as to who they just saw move past them.

Black is traditionally worn to funerals in the United States and Europe bringing forth images of sadness and mourning. The gothic and vampire subcultures view black as a good color.

"Goths Dress the way they do to protest a miserable and dying postmodern society full of evils people would rather ignore and then use pathetic devices such as religion to direct blame off of the people who deserve blame. The clothes also represent breaking free from repression of physical appearances or to protest traditional ideas of beauty such as how advertising represses people by making them feel guilty for being overweight, ugly, too skinny, socially awkward, and shy."²⁰

This color will not be used in this project as it has too many negative connotations. The book, Color in Interior Design states "Black is not to be used."¹³

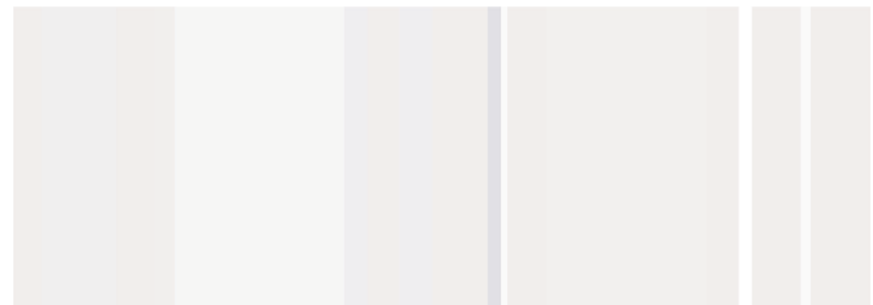


White is a combination of all colors absorbed.¹³ White falls in to a controversial place among color tones. It has a lot of uses with respect to the other tones and may be used very well as a pallet for other colors. In Asia white is the color of mourning.¹⁶ On the positive side, white affects us in the following ways: purity, cleanness, simplicity, efficiency and clarity. On the negative side, white takes on the following meanings: coldness, barriers, elitism and unfriendliness. “The extensive use of white in design of the modern movement has made it something of a symbol of modernism to be favored or attacked in accordance with opinion of the value of modernism’s state principles.”

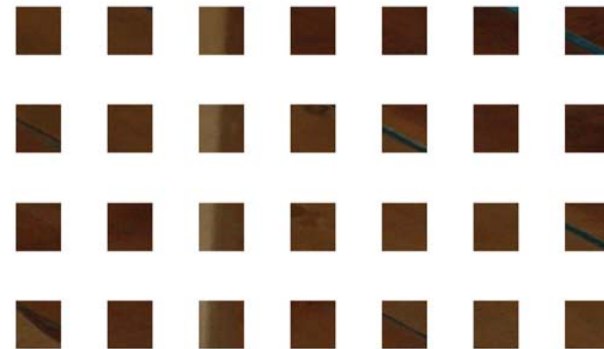
White may not be the best choice to use in large quantities but its use should be used as a foil with other chromatic colors. The purity and simplicity that white represents could well bring a sense of ease to Veterans, assisting them in opening themselves up for help.

Gray is a mixture of black and white. It can range from light to dark. Grays in the lighter range do not impart strong associations with anything. Gray the only truly neutral color, meaning that it has no direct psychological effect on people when in its truest form without any other colors present.¹⁵ Though it can be very suppressive.⁶ The absence of color can be quite depressing, because when the world turns gray people and animals naturally want to hibernate. Some negative effects of gray are: lack of confidence, oppression, depression, and a lacking of energy. Light grays can set off other chromatic colors.¹³

Grays would be specifically useful in setting off other chromatic colors. This color could easily be used in transitional spaces and group therapy areas. With no specific negative associations with Veterans it makes an ideal color to utilize throughout the project provided that the tone used are light, so as not to depress.



Brown is made up of red yellow and a large portion of black; causing brown to have some of the same characteristics of black, red and yellow. Brown brings forth feelings of the natural world. Positively brown affects us with a feeling of warmth, earthiness, reliability, support and a sense of nature. Negatively, brown affects us with its lack of humor, heaviness and lack of sophistication.^{6,15,16}

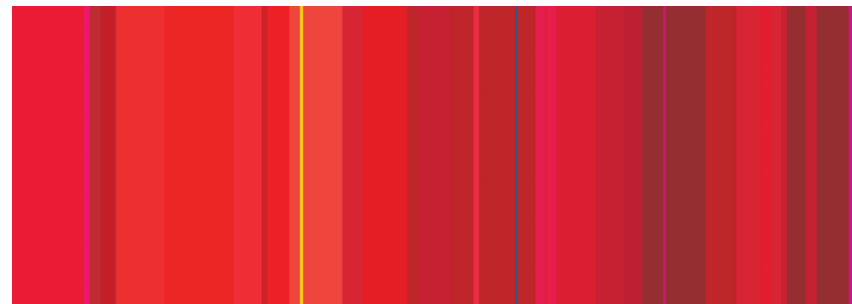


Often brown is associated with the earth, a womb like embrace and nature.¹³ For this reason it should be used in the lighter tones as it can help Veterans feel like they are in a residential setting, a desirable effect in a mental health facility as people are more prone to be comfortable and open up. However it must be used with other chromatic colors as it tends to have a depressing feeling and drab atmosphere by its self.¹³

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which could lead to an emotional breakdowns, outbursts, or simply refusing to return for treatment. While having psychological effects and physical ones would be undesirable in this case because it may cause the Veteran to refuse to talk about their issues or avoid their issues accomplishing very little during a visit.



Color Effects

SPATIAL EFFECTS OF COLOR

Color Sight & Comprehension

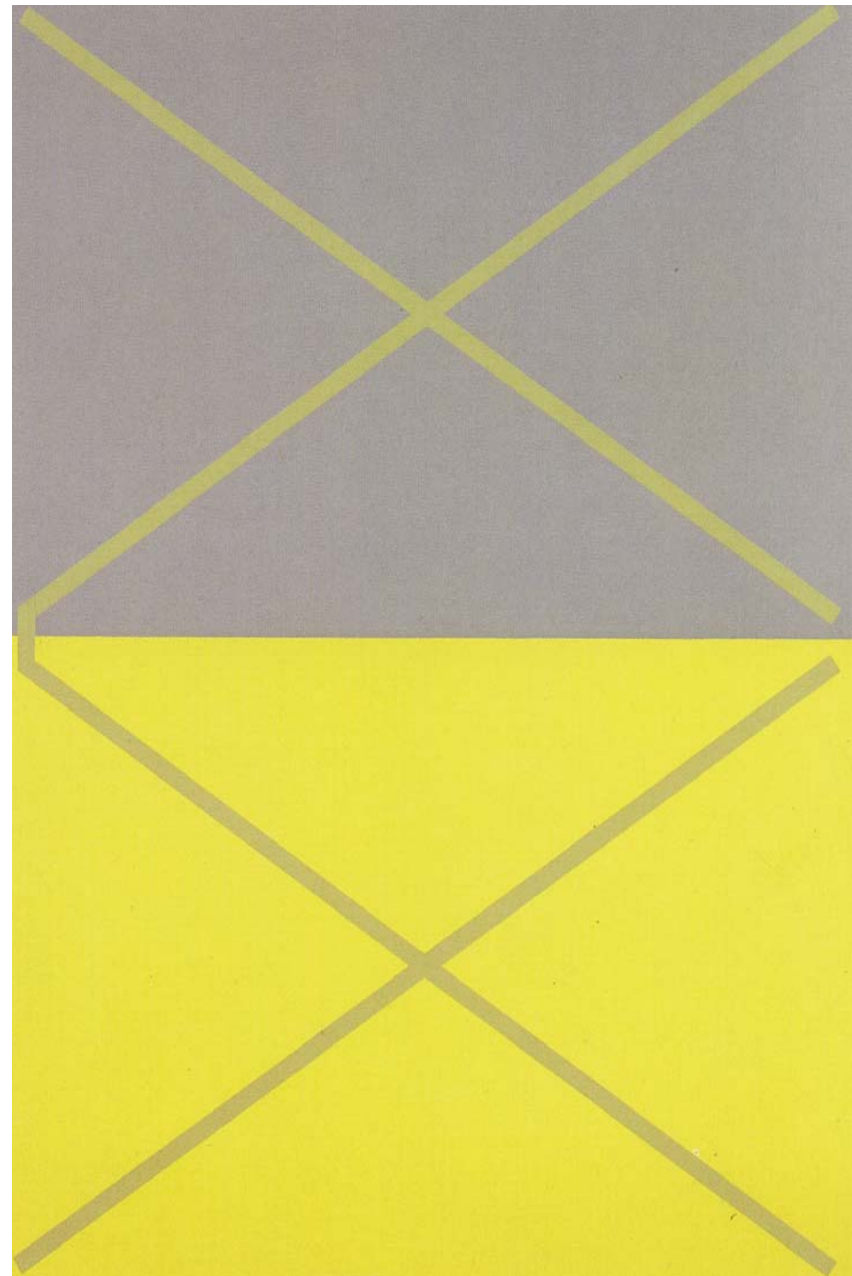
Humans possess the innate ability to hear a solitary tone; however, humans each have individually unique eye sight. By this Albers states “But we almost never see a single color unconnected and unrelated to other colors.” Colors show themselves as always in flux, changed by their surroundings and local conditions.¹

Some colors are hard to change while others are relatively easy to change.⁹ Albers work and exercises exemplify this in his book *Interaction of Color*. Albers goes on to show in his book how colors can create illusions. Colors can cause objects within a space to appear larger or smaller and applied to walls to make a space seem smaller, larger, impersonal or more intimate.¹⁶

REVERSED GROUND

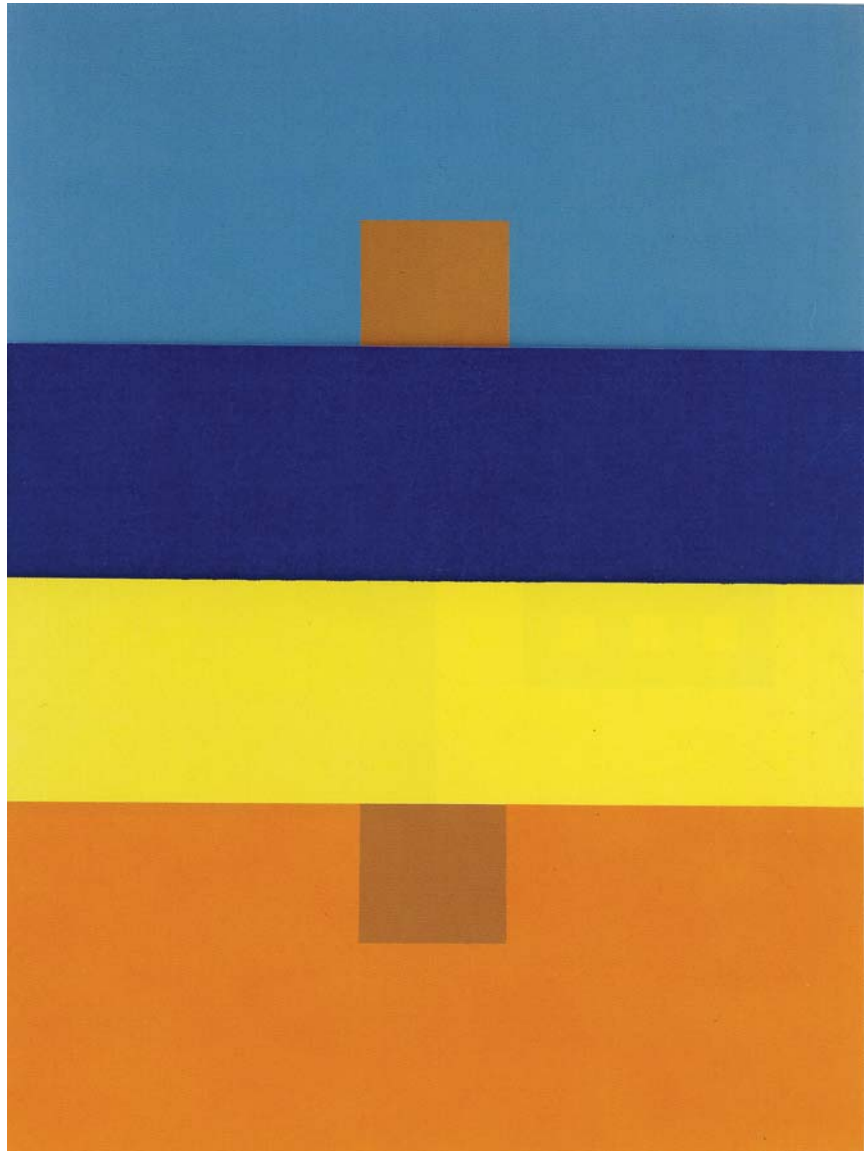
This effect happens when a single color appears as two separate colors or gives the appearance of reversed grounds. The issue here is to determine which color will play simultaneously the roles of the colors of the two color fields. The color that appears at the boarder of the two background colors is typically the color that the X is in fact. The X appears as a yellow X in the grey field and as a grey X in the yellow field. The X's are in fact the same color as can be shown by the connecting strip between the two colors.₁

With the reverse ground one can take a single color and make it appear to be two colors. This could be applied with regard to trim or accent areas. The way this could be helpful to this project is in the effect that the accent color can add to a room making it more serene or relaxing. This could also be used to cause a tension which is used sometimes in therapy. It is known as exposure therapy, it is used by placing a person in an uncomfortable position or area allowing them to become more used to it by developing coping skills.



INTERACTION OF COLORS

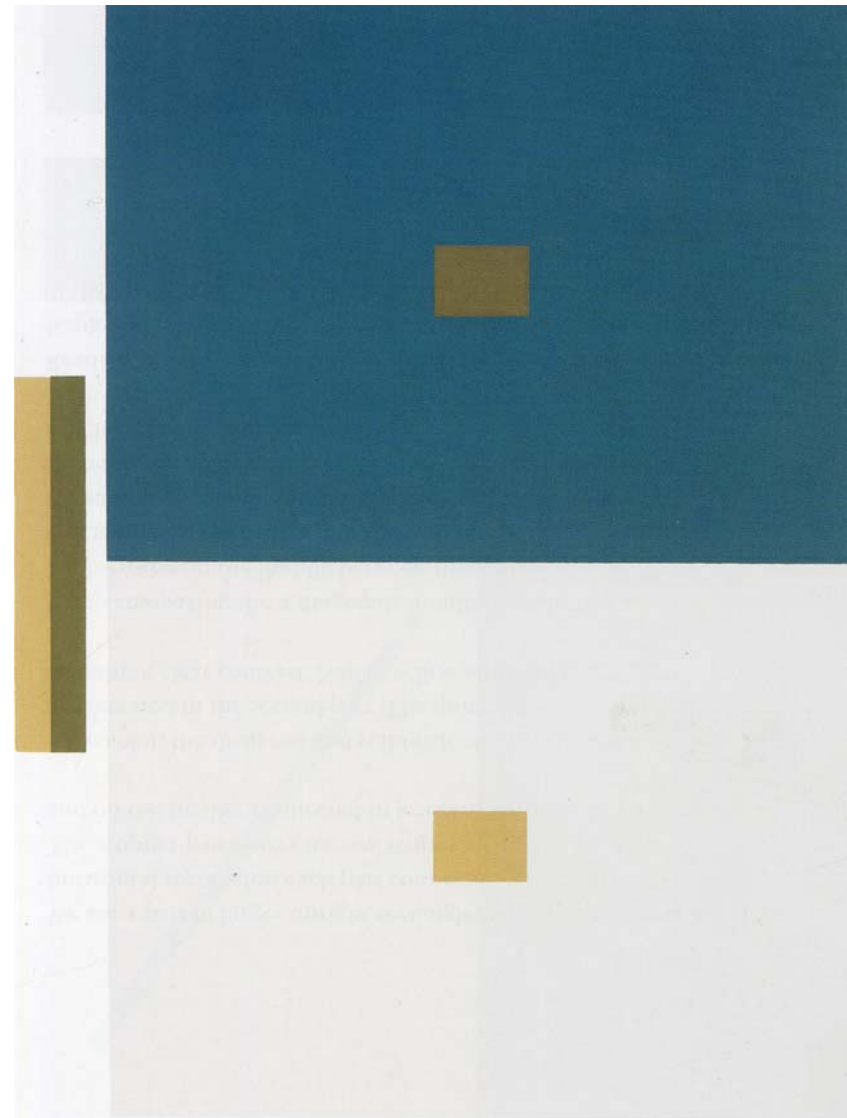
A color in the foreground can appear to change by the color in the background. That same color can appear to be two different colors based on the influence of another color. The more difference in the background the stronger the change will appear. In Albers example below the two brown squares appear to look like different colors; however, they are in fact the same color. The blue and orange as well as the blue and yellow, the background colors, influence the brown squares.¹



COLOR SUBTRACTION

This is the process of making two separate colors appear the same. To achieve making two separate colors the same is based on the subtraction of color or how to mitigate too much dark or light in a color, hue can also play part of this influence and may need to be gotten rid of or added to as well. Any field subtracts its own hue from colors which it has and thus influences it. Color differences are caused by two factors: hue and light. Using this information we can take contrasts in light and hue to make opposite traits, in this example by subtracting the opposite light and hue. When viewing a point in the middle of the light grey and green fields the small rectangles appear to be the same color but when looking at the actual browns below we see that they are in fact different.¹

Color subtraction will help in many ways. Retaining the tone of a room the same while using different colors. Using two separate colors in different room schemes while keeping the same mood though out the sequence of spaces. This would be important I feel in setting a constant and peaceful tone throughout the building for people that are experiencing high emotions or depressed state of being after returning from conflict.

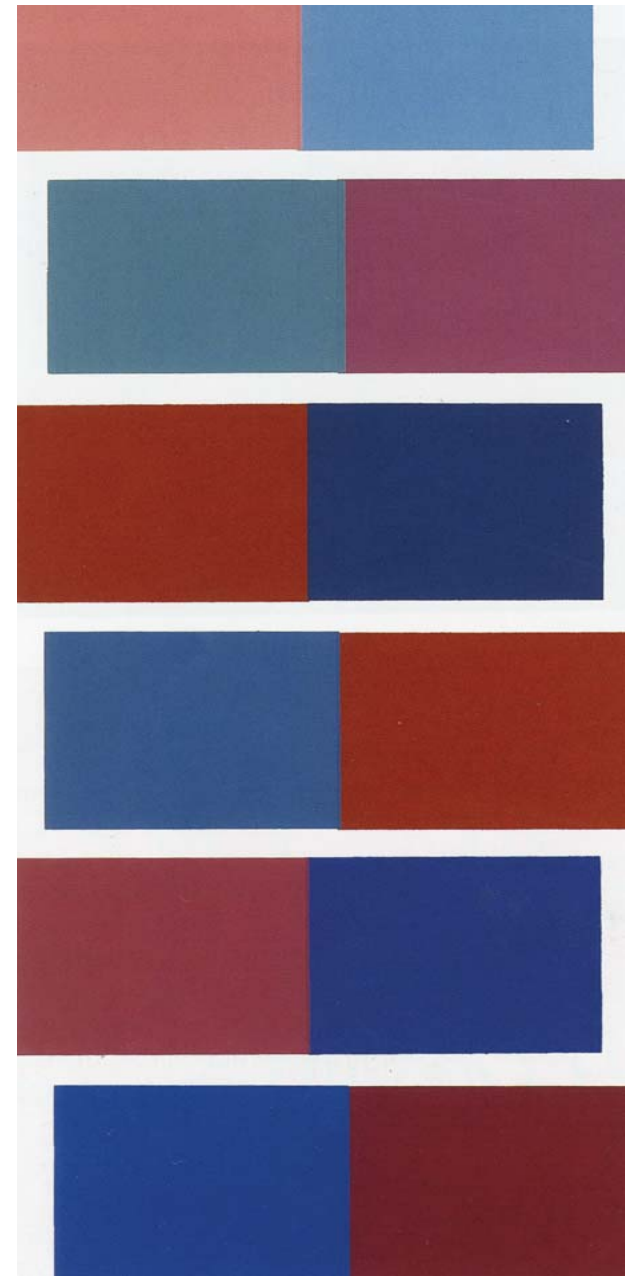


1

WARM-COOL

Red and blue are usually used to represent warm and cool. They are placed next to one another alternating between left and right, as shown in the illustration to the left, to show that both colors can look warm as well as cool in temperature. These can provoke a disagreement; however, a reading of all of the left halves can generally be seen as warmer than the right halves for the purposes of this example.¹

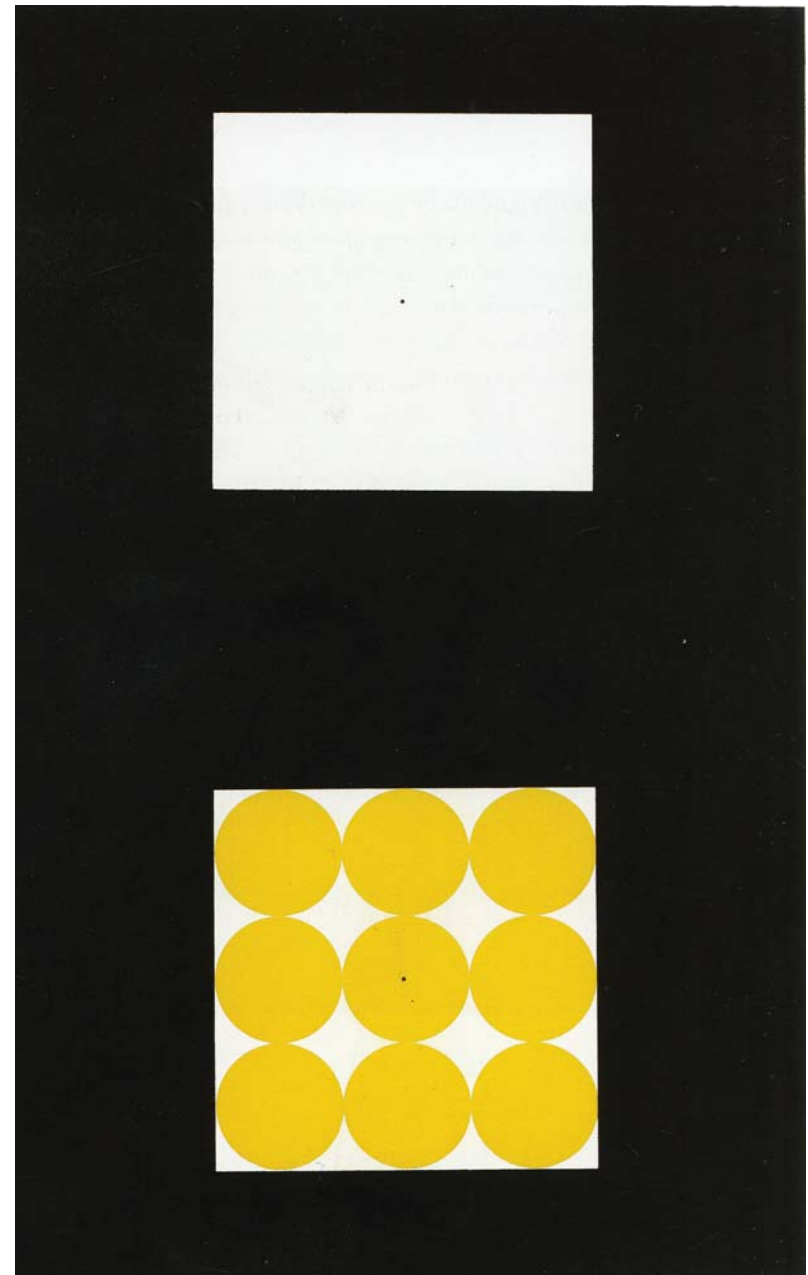
Warm tones are suggested for mental health facilities as they tend to help people open themselves to counseling. Knowing that warm tones are suggested will exclude cooler tones in this building.¹²



AFTER-IMAGE

To obtain a clear comprehension of interaction of color caused by interdependence of color “after-image” needs to be experienced. Looking at the image horizontally the left hand side has nine yellow circles within the black field; the center of each image is marked with a black dot. Gaze at the yellow circles for about half a minute. At this time switch suddenly to the white field. One should not see the complement of the yellow circles, blue; we see diamond shapes in yellow. This effect is known as contrast reversal.₁

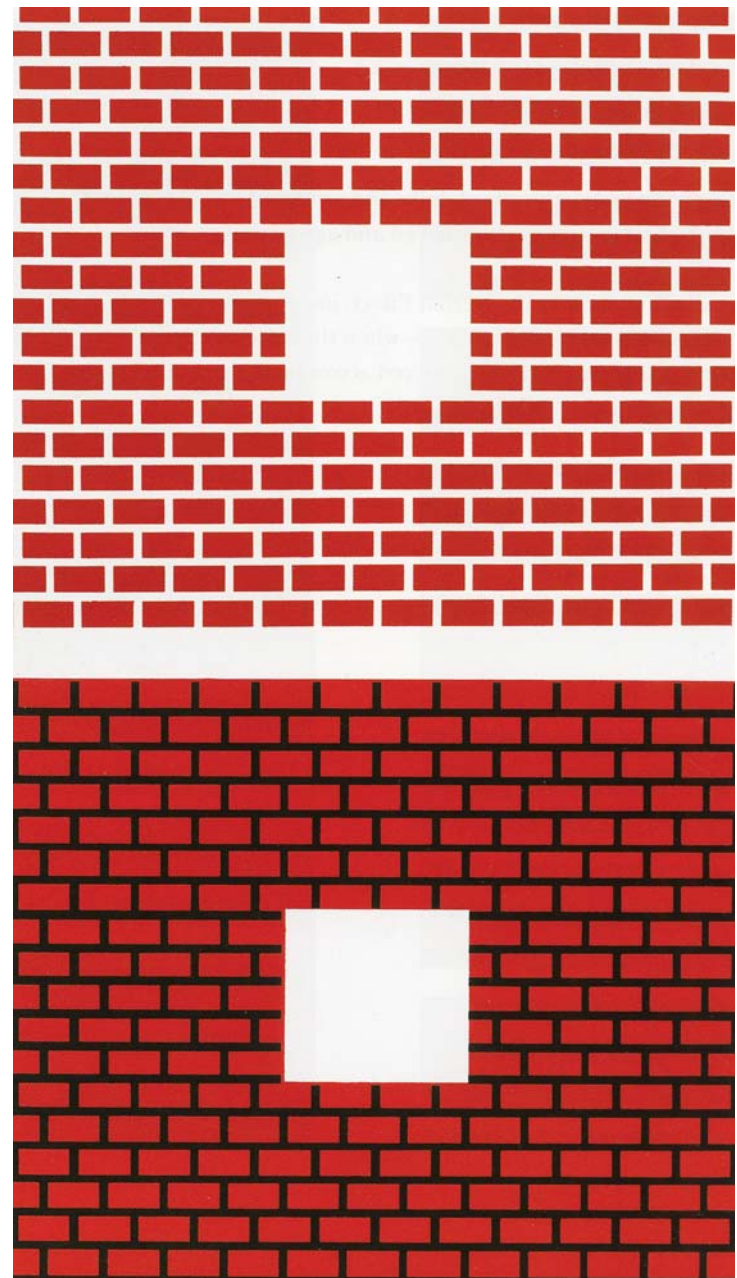
Interesting effect, though not an effect that would be of positive use in a mental health clinic. It could inadvertently cause flashbacks or an unease.



OPTICAL MIXTURE - THE BEZOLD EFFECT

French impressionists around 1870 started to apply small dots of colors so that the colors mixed on their canvas instead of the more traditional method of mixing colors on their palettes. A similar effect is named after William Bezold who found that certain colors when distributed evenly changed the effect of his rug designs. One of Albers students found that red bricks, when shown with white mortar and black mortar, that the reds with the white appeared much lighter than the bricks with the black especially at a distance.

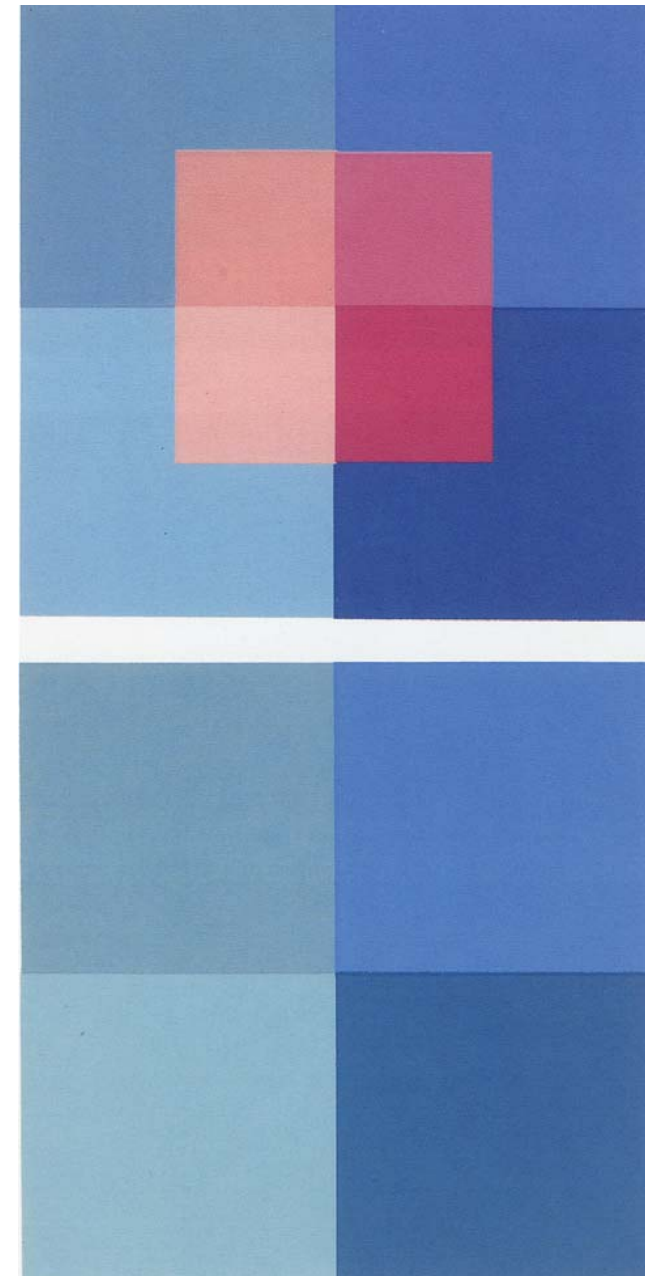
This effect could potentially lighten the exterior of the building.



COLOR INTERVALS AND TRANSFORMATION

This example more so than most of the others brings the similarities of music and color to the forefront. Music tones and color tones are both measured in wavelength. To the left we show how wavelength intervals are transformed within differing hues. Note that the hardest boundaries are on the bottom right of both images and that the one with the red squares shares the same hard boundaries in the same quadrants. Also note that the colors transform along those boundaries.

Color transformation will be used to aid in transitioning spaces.



CASE STUDIES

Work on the Tlalpan Chapel started in 1953CE and was finished in 1960CE. The Tlalpan Chapel is located in Mexico City, Mexico. The Tlalpan Chapel is mostly for the use of the adjacent convent. Through a use of tactile sensory people can gain a spiritual place that will never be the same anywhere else. The walls of the interior are painted a rich white that glows with the sense of warmth from reflected and diffused light through screen walls. The large wooden cross is hung from the side in the transept and projects its shadow onto the altar from direct sunlight. Filtered natural light moves through a wooden lattice that is hung from the ceiling.³

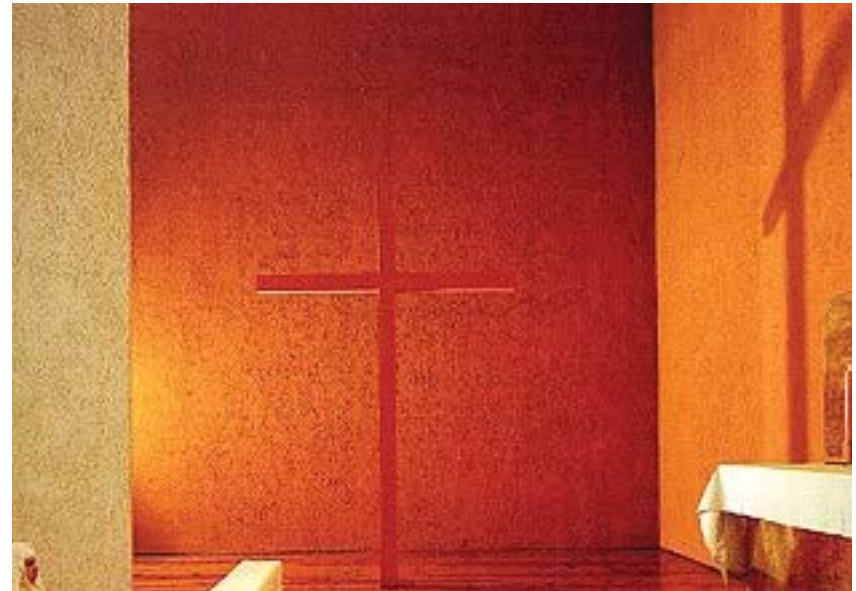
This is a special spiritual place in large part due to the natural lighting that is screened and bounced or diffused throughout the chapel. Two walls painted the same appear much different when light touches them both differently or is bounced from one wall to another. This interaction of color provides time and places of spiritual contemplation and uplifting that emotionally move us. The way that the traditional placement of the cross is achieved is much different than in any other chapel or church, placement of the

cross on to the altar, by way of a shadow, suggests that an ethereal connection exists. The white walls take on a yellow glow from the yellow screen wall is another example of Barragan's refined use of color. This place gives off a warm glow for the clergy to study read or relax with. In this building, Luis Barragan has created a unique place for clergy to meditate and attend church services with the use of shadow, color and forms.¹²

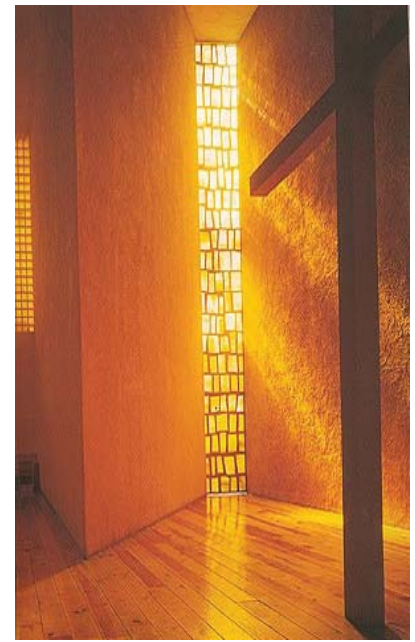
Taking a way Barragan's use of daylight and shadow and repeating it in a mental health facility will be challenging. His color pallet is a good choice other than the yellow as this chapel creates a home like feeling, which is desirable in a mental health clinic.



2



2



2

Perhaps Barragan's most well known project is the San Cristobel Stables. The stables were built between 1966CE and 1968CE. It is said that Barragan achieved the perfect balance between the local landscape and his use of water and spatial relationships of built elements.² It is clear that his early childhood influences from being raised on a ranch and with horses played an important role in his design and connection to site. The San Cristobel stables were constructed for Folke Egerstrom as well as an adjacent house.³ The use of water throughout the equestrian area is certainly unique; for what was asked by the client, the project was to include: living quarters, grazing meadows, watering area for the horses, stables, and training area. The water features were made to have the horses able to walk through them, this allowed for the horses to be cooled down much easier than just troughs. The water flows in to the area from an elevated trough like feature that is more reminiscent of a Roman aqueduct.

The use of colors throughout this project shows a complex understanding of both color and how it interacts with the natural landscape. The way

that Barragan makes one color do multiple things with shadow, light and form is really very interesting. Having the geometric shapes in this project, add to the control of color and light. Possibly different for Barragan during the time this project was built is that he didn't use a screening system to adjust the quality of light. Several of his projects during this time used screening walls to throw light and make walls glow. Often taking a white wall and making it glow a separate color. Yellow was a favorite of Barragan's to throw light in this manner, such as in the Tlalpan Chapel.

Specifically at San Cristobel, Barragan has achieved a truly unique place, that ties directly with the land and the environment to create a special harmonic balance. He achieves this through the use of geometric forms, and ties it together with the water features, both the pools and water from the aqueduct feature as shown in the figure below. The way that the shadows interact with color in the San Cristobel Stables is very interesting. Note that the shadows form long datums that further add eloquence to the compositional aspects of the project. Also the way that the foliage gently wraps shadows around walls shows a true appreciation for both

the landscape and the composition. Curiously little is ever mentioned about the living quarters, which in their own are truly unique place. There are few pictures and illustrations showing the eloquence of the private area, there is a private pool as well as a comfortable geometry that is expressed in the private portion of the project plan and screening the stable area is the aqueduct feature.

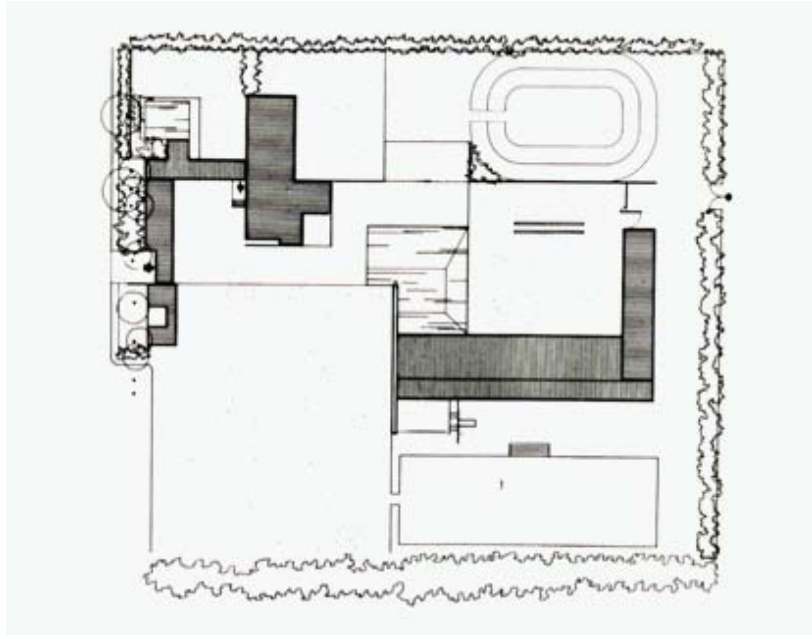
The simplistic forms that Barragan used throughout the San Cristobel Stables speaks of a poetics that is difficult to achieve. It is very easy to comprehend what is going on in the project that makes one want to visit and experience this project firsthand. His fearless use of color and three-dimensional space is refreshing. Views are framed and marked with color, for example the stables are marked with a vibrant violet color for grooms and stable workers.³

While the colors used in this project, such as violet, shouldn't be used in a mental health facility the use of shadows and datums should be taken into account. The simple form making is relaxing and not overly complex and should be repeated

in a mental health clinic as to not over excite the people. The use of the yellows may prove that yellows can be relaxing however the issue with yellow to veterans makes it a poor choice due to its connections with cowardice.



3



2

The Gilardi House was built in 1975.³ This project called for the following: swimming pools for daily use the preservation of the large jacaranda tree seem well suited for Barragan's design and style. In the end the use of color creates a very tranquil place for swimming and a well-shaded patio area as well as living areas. This projected moves from the interaction of colors this is quite possibly due to his friendship with the Albers. Joseph Albers literally wrote the book on the interaction of colors and how they relate and shape one another.

The jacaranda tree serves as a focal point of the structure and shading devise for the courtyard. The primary exterior colors are violet and white. The way that the shadows and shade change these two colors is very intriguing the way that the violet fades and changes color and the white become shades of grey shows a true understanding of color interaction and how in no place, regardless that they are the same color do the two colors appear the same. The primary colors shown in the poolroom become softer with the addition of water. The red, blue, yellow and whites found in the pool room offer focal points

with the red center piece of the pool acting as the anchor; the blue of the water and red contrast nicely providing an active visual backdrop for an area that is to be used daily. The interior wood finishes add a warm glow to the built environment. The yellow screen wall, while a typical for him as it is not a rigid square small screen, is regimented thick solid masses that still serve his usual purpose; add a softening of the white interior walls giving them a warm yellow glow. The fact that he uses yellow a difficult color to effectively use due to its powerful ability to affect mood is interesting, if yellow is used incorrectly it can cause a depressing feeling, using the white walls to soften the yellow and using the yellow by itself mitigates this effect and provides a warm homey feel.

Barragan described the heart of the Gilardi House as follows "The corridor prepares the journey through the house to reach an important space: the dining room with a covered pool. Without warning, from the pool there emerges a pink wall that curtains the water and almost reaches the ceiling. That wall gives meaning to the space, makes it magical, and creates a surrounding tension. From the ceiling a small skylight bathes the wall in light and empha-

sizes its role.”₁₂

This project was a culmination of Barragan’s processes and his methodologies. The Gilardi House was a synthesis of Barragan’s previous works showing the bare white light coming from above playing with vertical colored walls in this project. Shadows used throughout this project stress an interaction and understanding of color.

This project shows that not only must one take into consideration color but daylight as well when designing spaces. The colors morph and change in these spaces transitioning from one color to another. The way that color is reflected on walls and ceilings using white proves that white is a color that should be taken seriously and utilized to transition colors as white acts a foil for chromatic colors.



3



2

APPLICATION OF RESEARCH

By taking what was learned from the effects of individual colors and Alber's research into how color interacts within its environment, I have learned several things that I believe will help in the application of color towards creating a Vets Center that will further help veterans reintroduce themselves into society.

Of the colors in the spectrum I have learned that the use of red would most likely be used sparingly if at all, this is due to the ability of red to cause excited and uncomfortable emotions. While blues should be used in a much higher quantities along with greens due to their ability to calm and help with healing processes. Soft browns will play a role as well as they tend to relax people and comfort them.

From Alber's work I learned a lot mostly focusing on how colors interact with each other and their environments. Learning how colors interact with each other is valuable because of the colors abilities to add to a room and healing environment for the psyche. This will be useful in transitioning rooms and spaces; such as the transition from public to private. It will also be useful in deciding trim and accent colors to help add a sense of peace for the veterans.

Synthesizing the effects of the individual colors with Alber's work will be fundamental in choosing the color schemes for the individual rooms; especially the therapy rooms and meditation rooms to create a synthesis of relaxing colors and spaces. Particularly using the transitional aspects of color, the reverse ground and subtraction applications of color interaction. The research into individual colors leads me to believe

that soft grays and off whites coupled with browns greens and blues will be the primary color pallet for this Vet Center.

PROGRAM

After two separate interviews with the Vet Centers in Missoula and Billings, they informed me that for each employee there is a requirement of 700 square feet per person working at each Vet Center. There are a total of seven employees per Vet Center giving a total square footage of (700×7) 4900 square feet. Broken down accordingly.

Vet Center Interior Quantitive Spaces

- 1 meditation room 200 sq ft
- 1 office per councilor total of 5 @ 250 sq ft totaling 1250 sq ft
- 1 office manager office 250 sq ft
- 1 reception area/waiting area 350 sq ft
- 1 reception desk 200 sq ft
- 1 group therapy room 360 sq ft
- 1 conf room 400 sq ft
- 1 break room 100 sq ft
- 1 storage area 200 sq ft
- 1 IT closet 10 sq ft
- 1 mechanical room 100 sq ft
- 1 ea. male and female restroom 250 sq ft
- circulation (30% of overall sq ft) 1470sf
- Total square feet 5040 sq ft

Vet Center Exterior Quantitive Spaces

- 1 exterior component for counseling/meditation
- 2000 sq ft

Vet Center Interior Qualitative Spaces

Meditation room

The room will be a relaxing environment. It will have a soft finished floor and warm wall coatings to help with relaxation. It will be well have low sound transfer walls.

Counseling offices

These rooms will be furnished with relaxing couches and chairs. They will have a desk for the therapists work at. It will have a file system either incorporated into the desk space or separately. They should be furnished in carpet and warm paint tones on the walls. There will be adequate daylight to keep the mood of the room from being depressing. These rooms will have low sound transmittance.

Office Manager's Office

This room will be furnished with adequate space for the office manager to run the office and have small meetings with the staff. It will contain a

filing system and desk. Will have good daylighting and will be furnished in carpet. It will have access to the reception area.

Reception Area/Waiting Area

This area will have several sitting areas some arranged to be private and some as gathering. It will function as a area to pass time while waiting for an appointment. The floors and walls will act as transitional elements from exterior to interior. This room will remain open and well daylit.

Reception Desk

This area will be for the receptionist to check clients in for appointments. It will have a soft floor coating and will be adjacent to the reception and waiting area. The wall and floor coatings will be the transitional markers for the reception area and the reception desk.

Group Therapy Room

This room will be a place to gather a group of clients to help each other with guided therapy in a group environment. It will be furnished in warm tones and soft floor coverings. The room will have good daylighting and artificial lighting for periods when daylight is minimal.

Conference Room

Primary function for this room will be as a meeting area for all of the staff. A large table will be the center piece for this room where the staff may discuss treatment options. It will be well daylit and with a business like wall coatings. This room may also serve as a secondary group counseling area.

Break Room

Break room for staff will contain a sink, refrigerator, tables and chairs as well as storage for dishware. It will serve as informal gathering area for the staff and a place for the staff to relax. Wall coatings should be done with care and may

contain a bit a red, red would help the staff here as it would keep them in a semi aroused state if used sparingly. Wall coatings should be done in a cool tone and the floor should be of a hard surface treatment.

Storage Area

The storage will be comprised of two parts: a general office supply area and a secure storage area for patient records. The room will have a hard floor finish for ease of equipment movement. The wall coatings will be neutral and cool. This general storage area will also house the area for the janitor sink and equipment.

IT Closet

This room will serve as the mechanical for data and voice lines. It will have a cooling system to keep the servers cool. The wall coatings will be cool. It will have a hard floor for ease of equipment movement.

Mechanical Room

This room will house the heating and cooling system for the building. It will have neutral wall coatings. The floor surface will be of hard finish. It will be built to house a forced air mechanical system.

Restrooms

Restrooms will be finished in a cool tone. They will be daylit in some manner. The floor surface will be water resistant. They will be vented.

Circulation

Circulation will be the primary agent in transitioning spaces. The wall coatings will generally be warm. The Circulation will be designed in such a manner as to allow for both entry and egress and have adequate space for travel in all directions.

Vet Center Exterior Qualitative Spaces

Meditation and Counseling Garden

This will be an area that is located in a manner that is secluded from public vision. It will contain grassy areas for sitting as well as benches. There will be trees and bushes surrounding the perimeter as well as some plantings within the space. There will be at least one circuit path throughout the garden.

Code Analysis

Building Construction type:	3-B	
Building Occupancy:	B	
Allowable building height:	32'	Building height: 26'-7"
Allowable number of stories:	2	Number of stories: 1
Allowable sq ft:	13,000	Total Gross sq ft: 4583
Distance to property lines:		

Project Data

Site Area:	
Zoning:	CBD
Number of buildings:	1
Building area:	6505 sq ft
Maximum height of building:	32'
Proposed use:	out-patient mental health clinic
Building occupancy:	
Required parking:	No off street parking required for Central Business District

Tenant space:

Occupancy load (1004.1.2): Business area 100 sq ft gross
4583sqft/100sqft = 46 occupants

Exit requirements (1019.1): 2 exits per story

proposed exits:
Max travel distance (1016.2): B w/o sprinkler 200 ft
proposed travel distance:

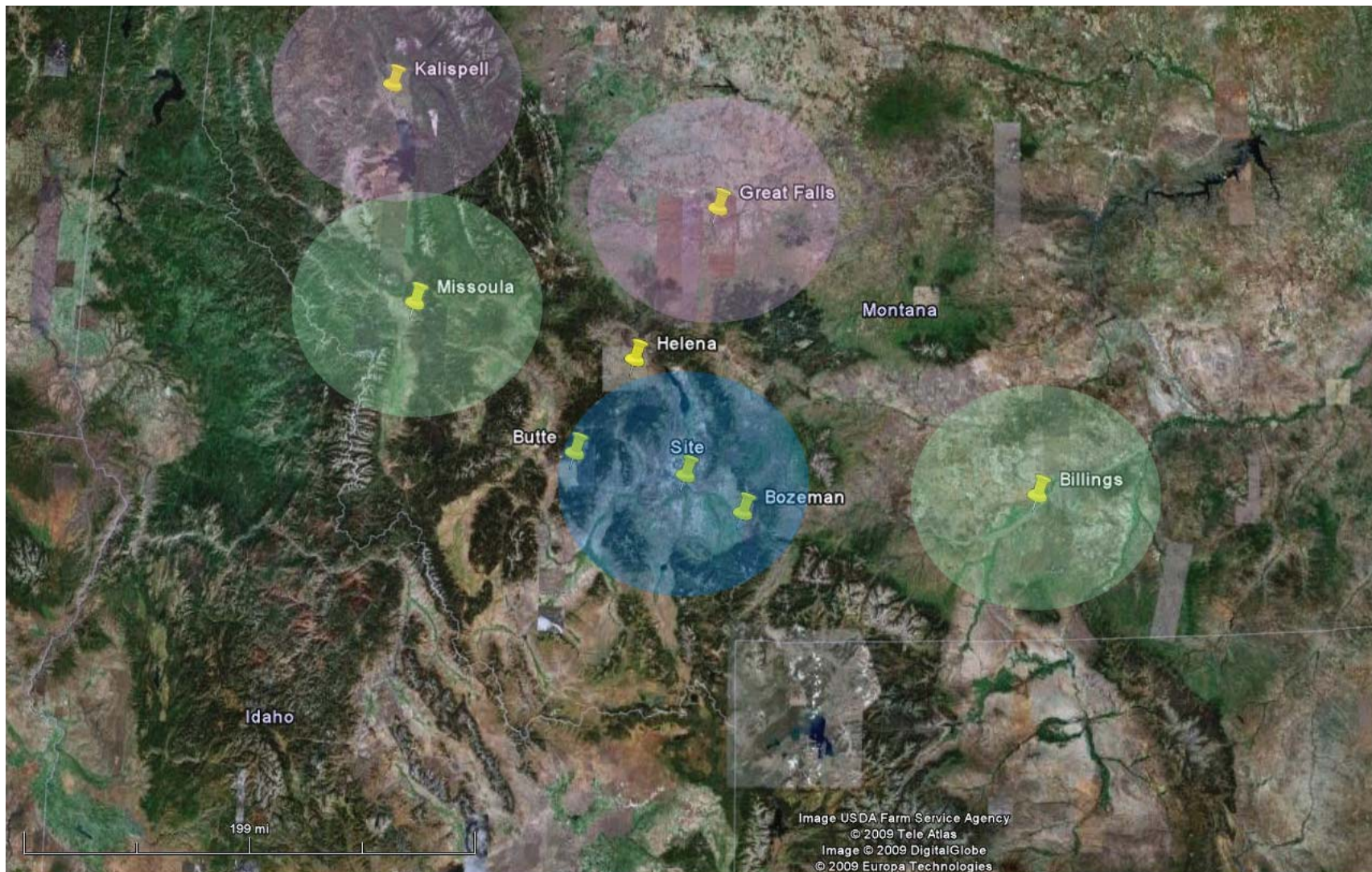
Egress width required(1005.1): stairways .2inches per occupant
46 occ. *.2=9.2 total inches
doors .15 per occupant
46 occ. * .15= 6.9 total inches

proposed egress width: 48"

Rest rooms required (2902.1): occupancy per each
Lav 23/25=1 per each
WC 23/40 = 1 per each
Drinking fountains 1 per 100
Service sink required 1

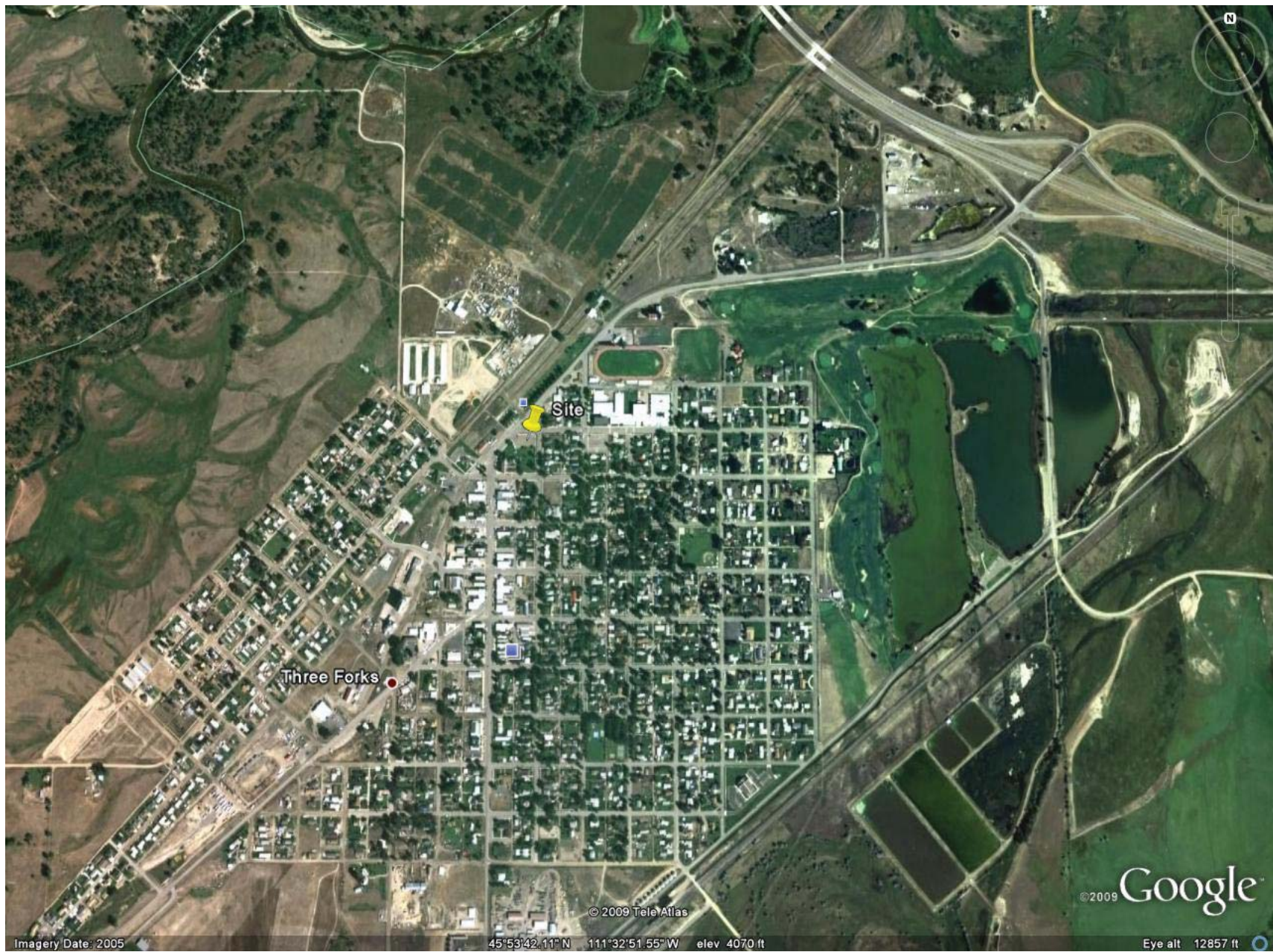
SITE

Potential site located in Three Forks Montana. Located across from the veterans' park tying the VET Center emotionally to the site. Centrally located for Butte, Bozeman, and Helena. Currently a vacant lot. Center would bring seven jobs to Three Forks. For such a small community this directly impacts the economy of the city. Also located just to the south and west is the Lewis and Clark Hotel which could be utilized by Clients of the center visiting from out of the area or attending seminars at the center or intensive group therapy.

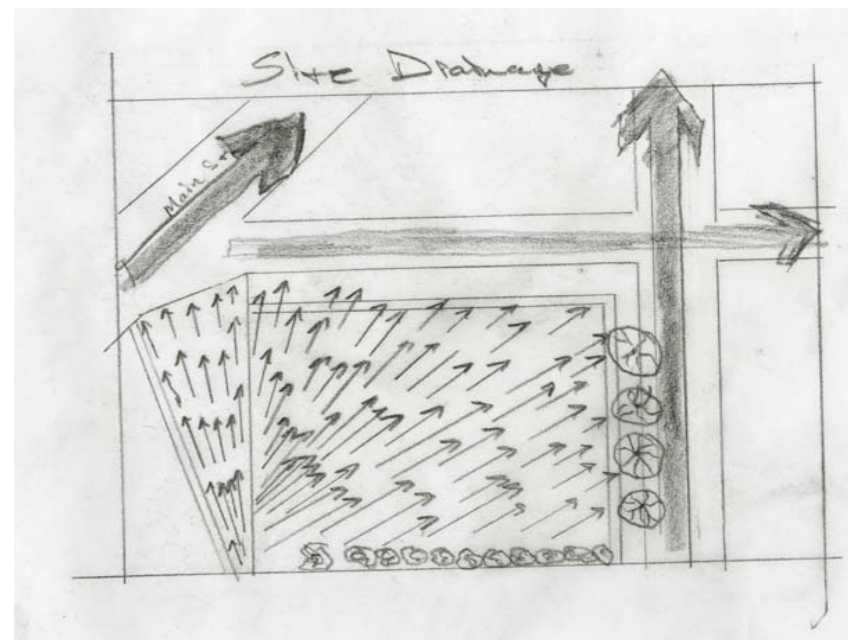
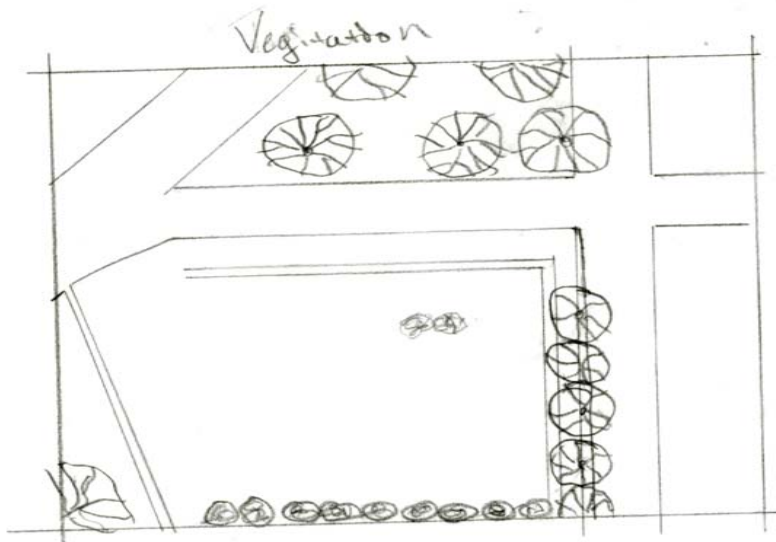
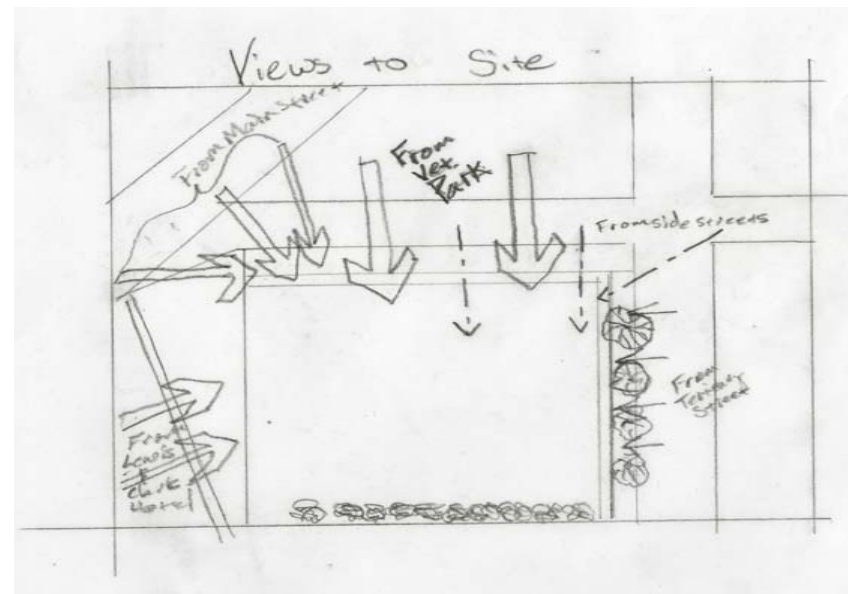
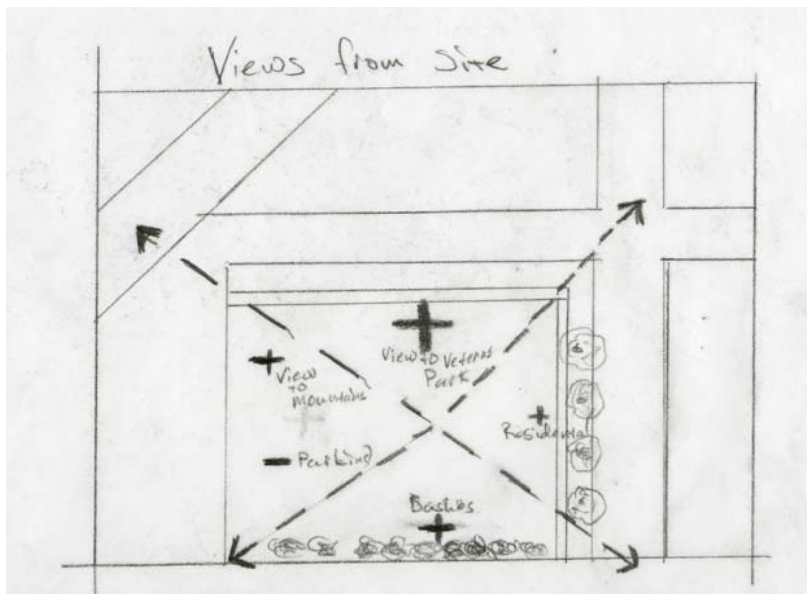


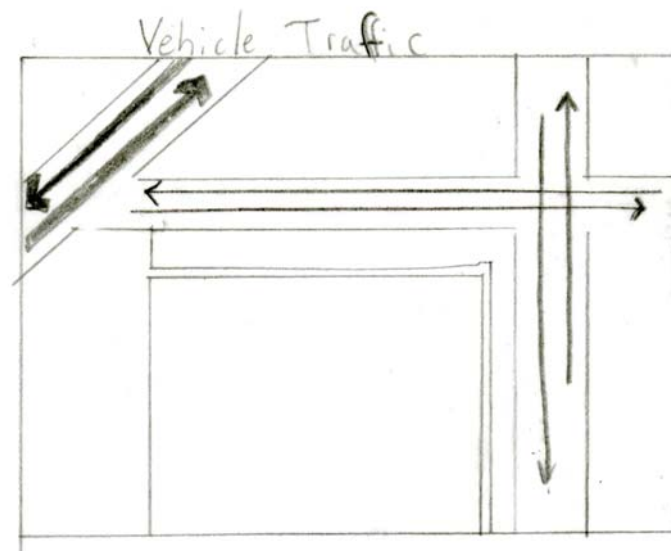
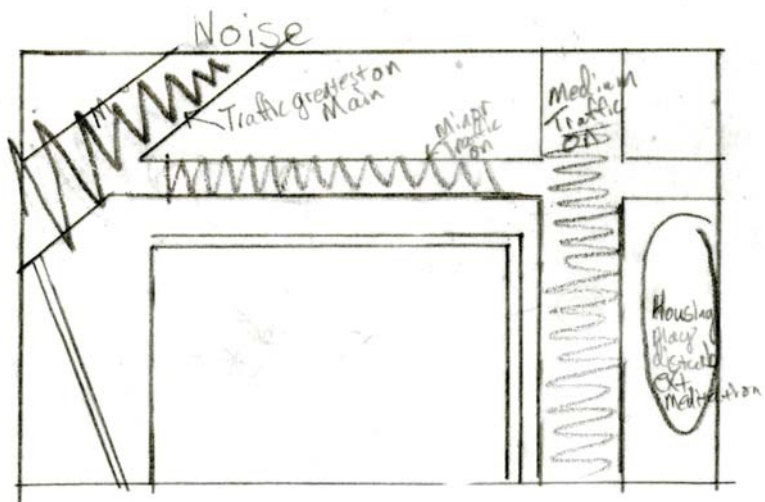
- Existing Facilities
- Future Facilities
- Proposed Facility

The image of the state of Montana shows how this proposed center would be placed in a position to help the veterans of both the Gal-laten Valley as well as Butte and portions of Helena.





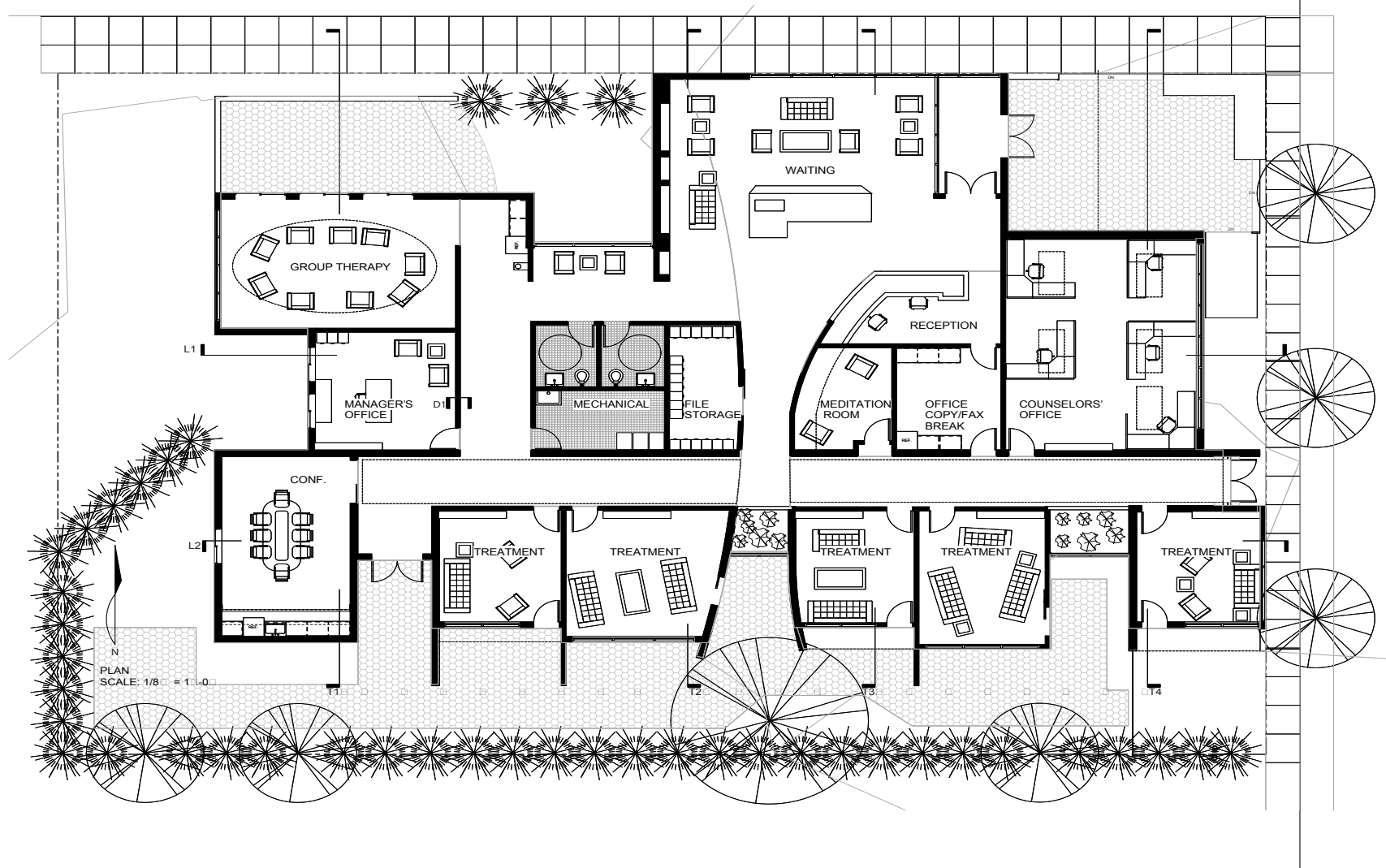


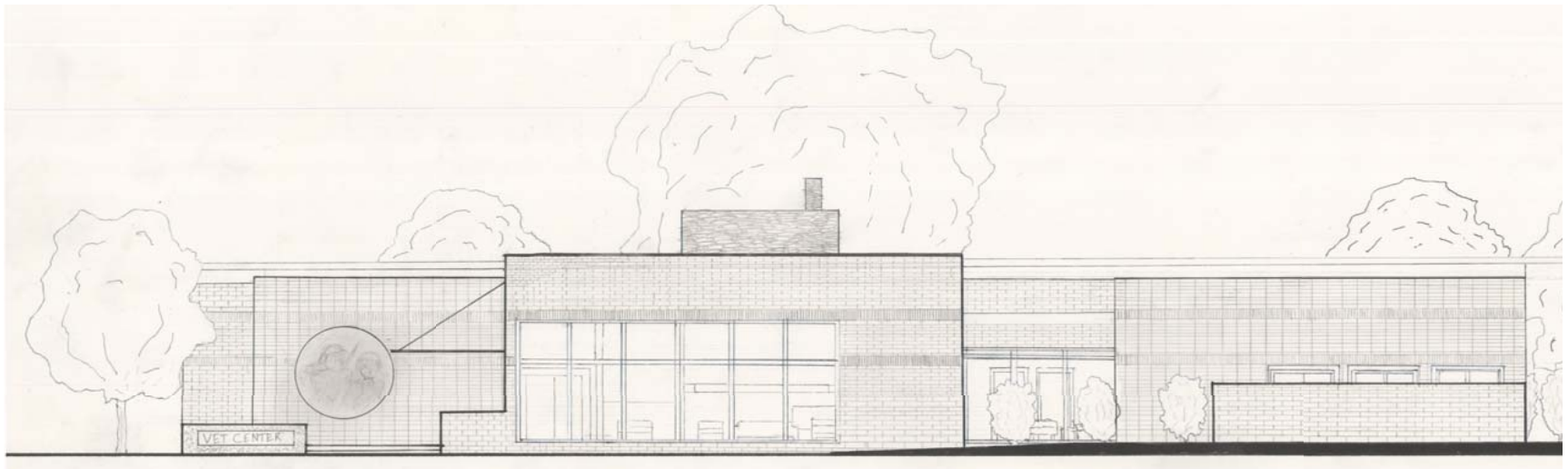
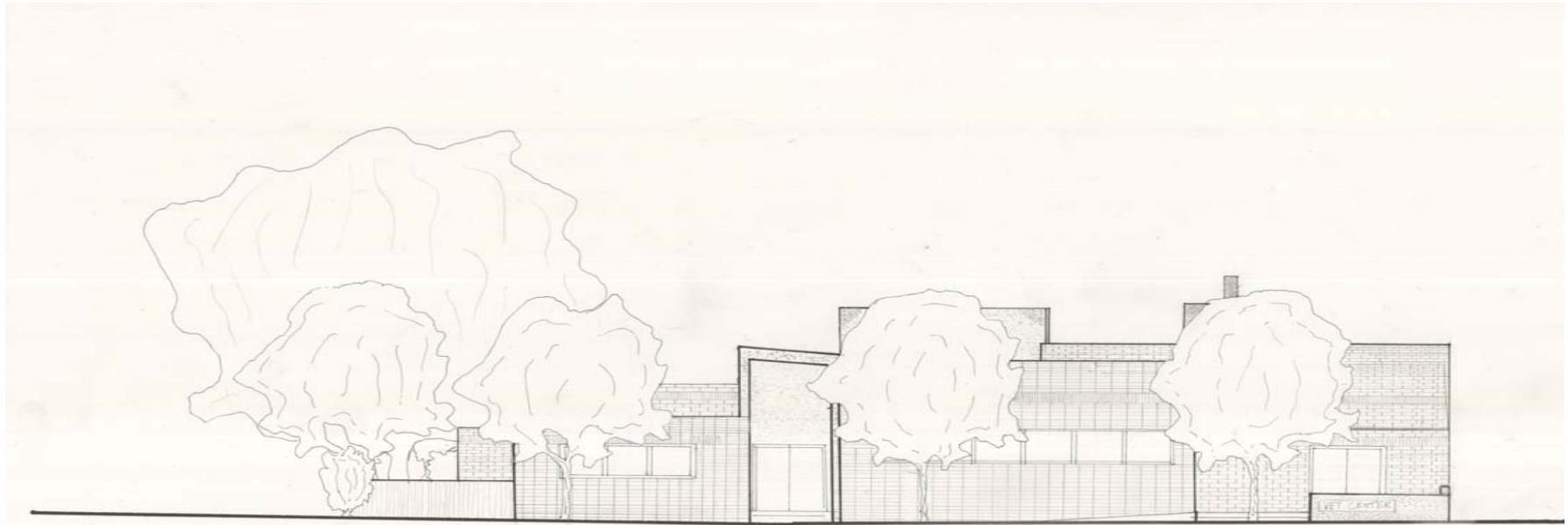


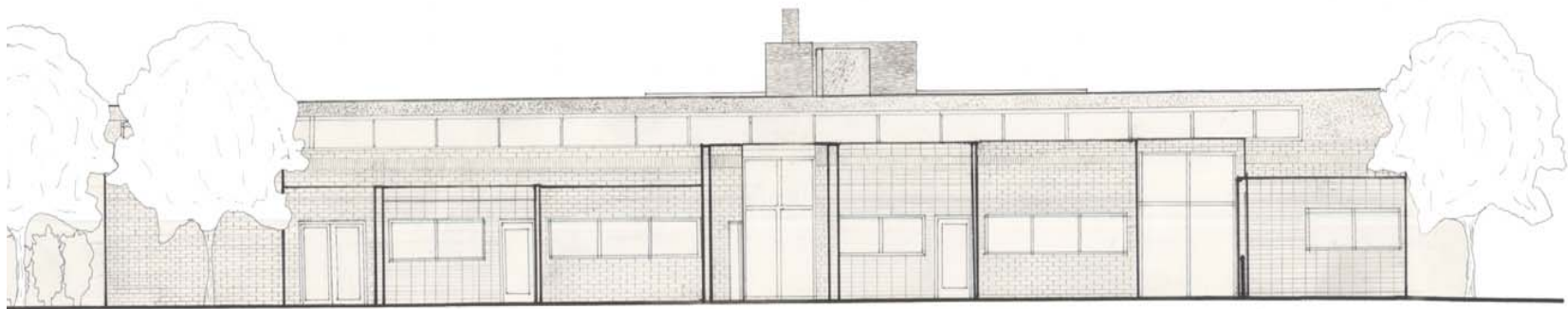
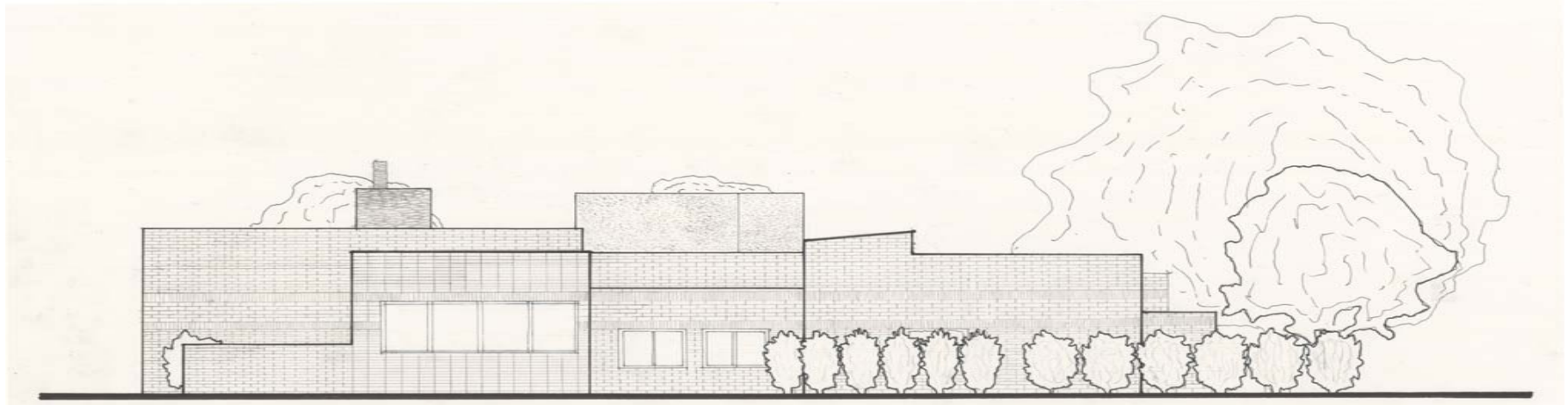
Space Adjacency Matrix

	Meditation room	Counselors' offices	Manager's office	Waiting area	Reception	Group therapy	Conference room	Break room	Rest rooms	Storage	IT closet	Mechanical room	Exterior counseling area
Meditation room		x	n	x	n	x	n	n	z	n	n	z	n
Counselors' offices	x		y	x	x	y	y	y	z	y	n	z	x
Managers office	n	y		n	n	n	x	y	n	x	n	n	n
Waiting area	x	x	n		x	n	n	n	n	n	n	z	n
Reception	n	x	n	x		y	n	n	n	n	n	z	n
Group therapy	x	y	n	y	y		n	n	z	n	n	z	y
Conference room	n	y	x	n	n	n		n	n	n	n	z	n
Break room	n	y	y	n	n	n	n		x	n	n	n	n
Rest rooms	z	z	n	n	n	z	n	x		n	n	n	n
Storage	n	y	x	n	n	n	n	n	n		y	y	n
IT closet	n	n	n	n	n	n	n	n	n	y		x	n
Mechanical room	z	z	n	z	z	z	z	n	n	y	x		n
Exterior counseling area	n	x	n	n	n	y	n	n	n	n	n	n	
	x	required											
	y	desireable											
	n	neutral											
	z	undesirable											

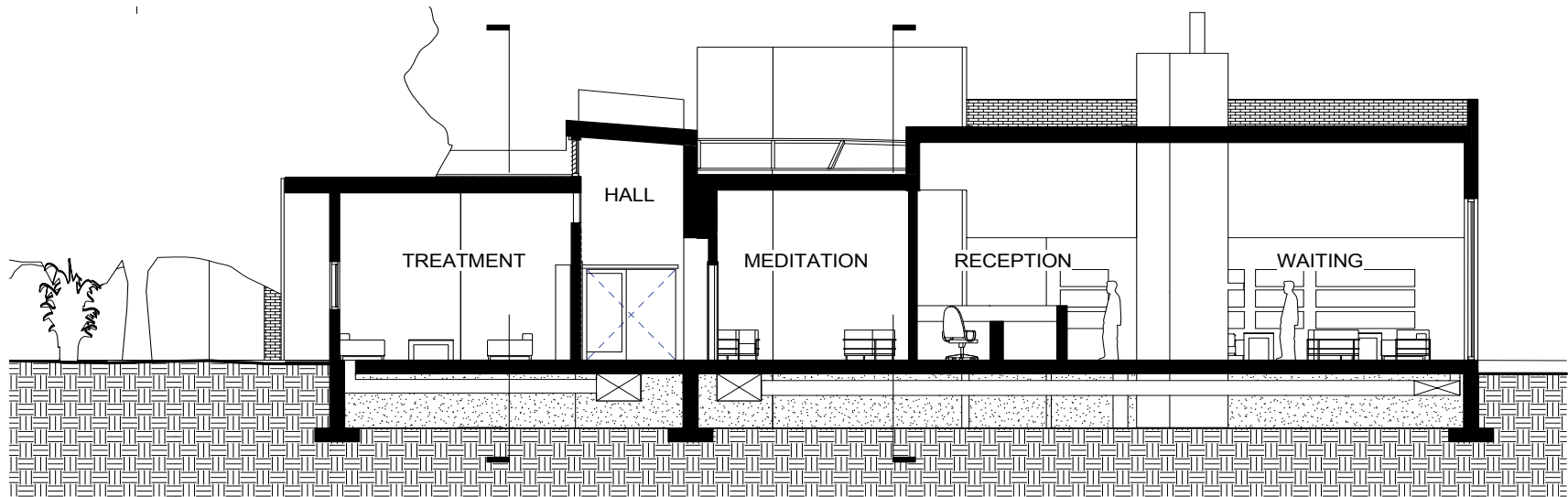
The Project



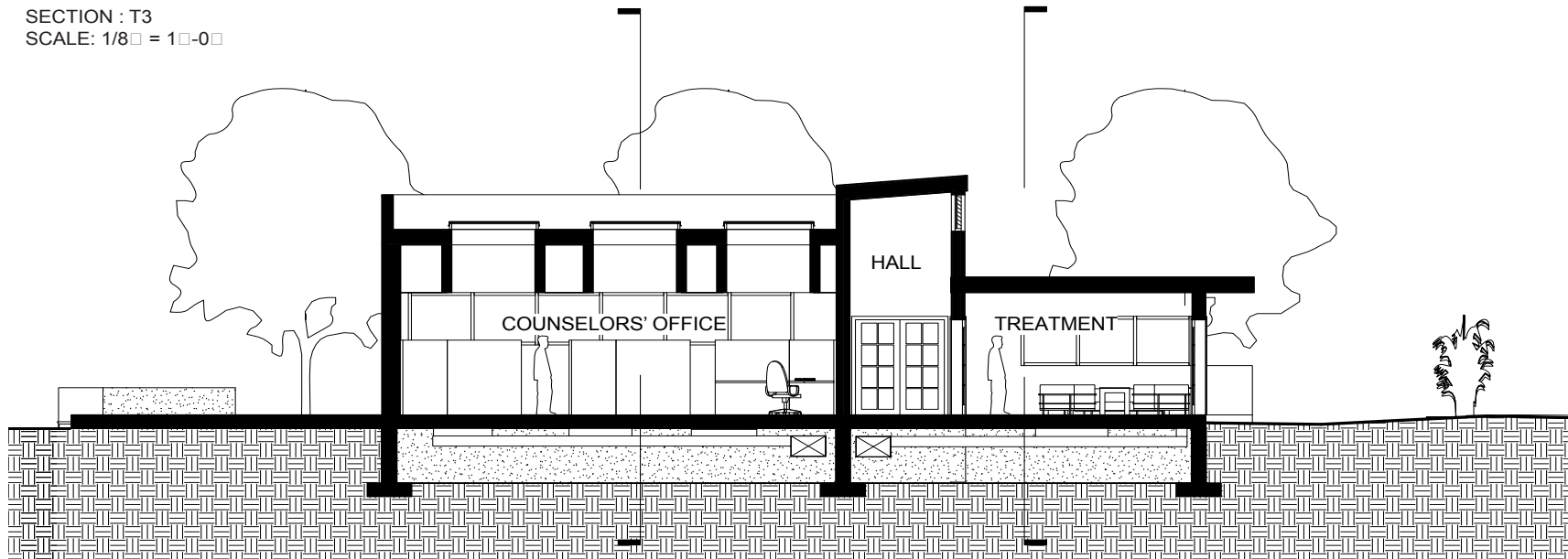




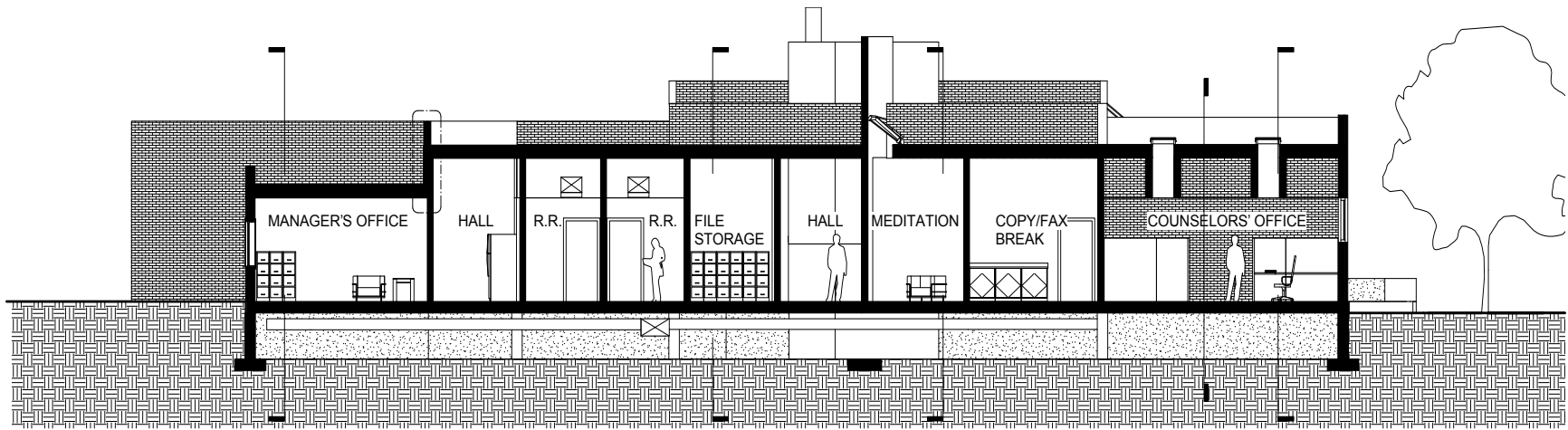




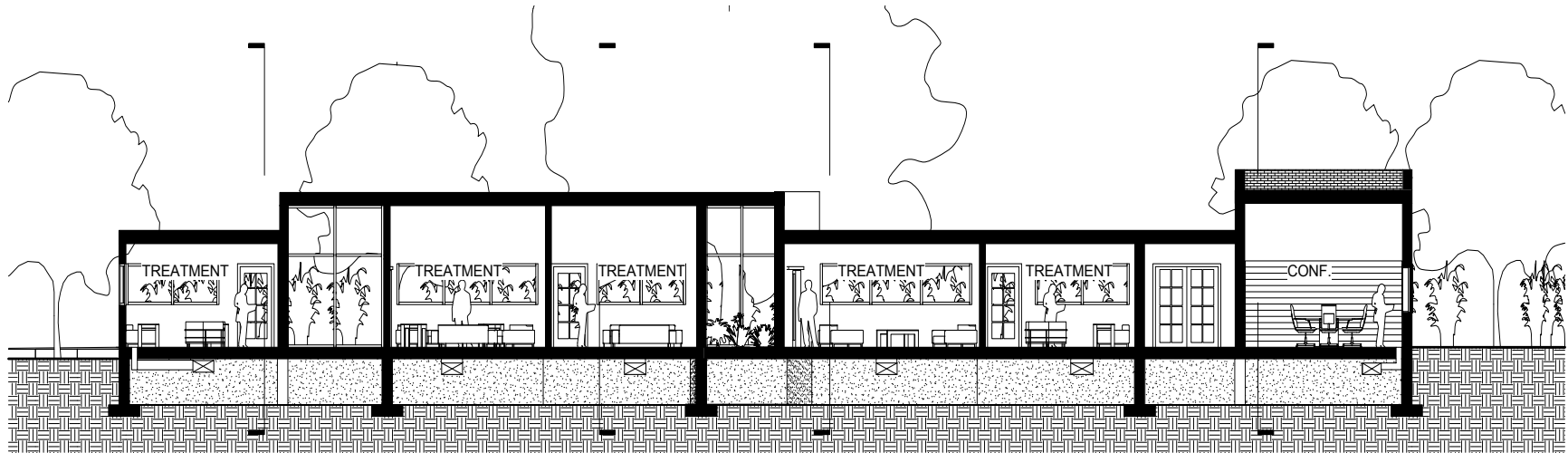
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SCALE: 1/8" = 1'-0"



SECTION : T4
SCALE: 1/8" = 1'-0"



SECTION : L1
SCALE: 1/8" = 1'-0"



SECTION : L2
SCALE: 1/8" = 1'-0"



Exterior rendering from North-West looking South-East



Waiting area looking West



Main hall looking East



Meditation room

Therapy room (greeb)





Group therapy room



Counselors' office

Exterior rendering from North-East looking South-West



Citations

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