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The Implementation of Trauma Informed Design in the United States Prison Campus: A Standardized Design Methodology

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THE IMPLEMENTATION OF TRAUMA INFORMED DESIGN IN THE UNITED STATES PRISON CAMPUS: A STANDARDIZED DESIGN METHODOLOGY

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ABSTRACT

The concept of spaces for punishment has been a topic of conversation for centuries. Only now are members of the community touching the surface of concepts that rewrite the methodology behind the design of these spaces in the hopes of providing a different outcome: rehabilitation. Trauma-Informed Design as a concept is in its infancy, and therefore requires decades of research into the effects of its installation; there is no greater need for this consideration than in the United States criminal justice institution. This thesis will not attempt to cover the changes necessary to United States prison policy. It will instead endeavor to generate a clear standardized methodology for design in the hopes of creating prison environments that are less punitive and more rehabilitative. Through the use of materials, acoustics, lighting, biophilia, and programmatic landscape, it is possible to produce an atmosphere in prisons and other punitive spaces that can rehabilitate its inhabitants in a safe way. These methods will be tailored to inmates within the United States prison system that have experienced Substance Abuse Disorder and non-violent crimes. A standardized design methodology will be created under the principles of Trauma Informed Design to increase rehabilitation rates and reduce recidivism. Using interviews with relevant personnel, this standardization will be reviewed by members of the community directly associated with trauma informed care, substance use, and the United States prison system. It is the intention to be able to apply this standardization across current and future criminal justice campuses within the United States.

INTRODUCTION

There is a growing amount of evidence from research on an international scale that Trauma Informed Design creates a more positive, rehabilitation-focused atmosphere in prison systems. The United States prison system, as of 2020, was comprised of 1,215,821 inmates under state or federal correctional authority jurisdiction (Carson, 2021). This number is down by 24.7% since 2010 but is still a remarkably high figure. One of the most under-studied groups of people in the U.S. Prison System are those with mental illnesses and disabilities. In a data report by US state and federal prisoners in 2016, an estimated 27% of state and 14% of federal prisoners reported being told they had a major depressive disorder, which is the most common mental health disorder reported among prisoners (Maruschak et al., 2021). An estimated 13% of all state and federal prisoners recounted experiences that met the threshold for serious psychological distress (SPD) in the 30 days prior to their interview (Maruschak et al., 2021). These numbers were taken by interviews and questionnaires in a survey of all inmates in 2016 and were published in a report in 2021. As it stands, there are 10 times more individuals with an SMI in prisons and jails than there are in mental hospitals (Al-Rousan, 2017).

For the purpose of this thesis, outside of verbatim source quotes, Mental Illness" will refer to those with an SMI and/or SUD because both are incredibly relevant to the topic at hand. This is an important distinction because the two are often separated in census data and statistical analyses across multiple government and private organizations. It is important to note that almost all studies included the caveat that persons with an SMI as well as people with SAD are overrepresented in the United States prison system. That being said, in data collected in 2019, national statistics showed a total of 19.86% of the U.S. population experienced a mental illness in 2019, half of whom did not receive treatment, and 27.5% of whom report an unmet need for treatment (Reinert, 2019). While this data does not include those in state or federal institutions or those with SUD, it

makes a good basis for measurement when understanding the statistics of mental health issues in the United States. The goal is to further understand the prevalence of mental illness within the United States prison systems (both state and federal across SMI and SUD) to better understand the different ways in which there are potential benefits to the implementation of Trauma Informed Design.

Trauma Informed Design is a term that refers to a framework for implementing trauma-informed care into the design process. When looking to understand what TiD entails, there are several factors to consider. The basic principle is that trauma lives and works through the body, and the body reacts to physical space even before one can cognitively process it. This means our physical space is integral to how one experiences and processes trauma (Grabowska et al., 2022).

Creating more of an intersection between TiD and the United States Prison system has many potential benefits. The following literature review will examine them individually as well as their potential for connection, as well as any and all connections that have been made in the past. This will help determine the ways and extent in which TiD may be beneficial to prisoners in a widespread capacity, which will be processed and outlined in the methods section.

THESIS STATEMENT

The prison system in the United States requires a full overhaul of design principles in order to produce an atmosphere that promotes better mental health for both staff and inmates. When implanted properly, it can increase rehabilitation rates and reduce recidivism.

LITERATURE REVIEW

This chapter will work to uncover the framework for creating a standardization of design methods by taking a close look at the inner workings of prisons across the United States, dissect the foundation of Trauma Informed Design, and find any case studies where TiD has been used in

prisons in the past. By researching any past use of TiD in prisons, constructing a framework for design will produce more thorough and efficient results.

MENTAL ILLNESS WITHIN THE UNITED STATES PRISON SYSTEM AND BEYOND

Studies have been done at many levels when discussing the topic of mental illness in different prison systems. The following literature reviews include studies done at the state, national, and international levels to best understand the research methodologies across the different levels within this topic of study.

Difficulties arose when finding studies of mental illnesses in U.S. prisons done at the state level. This could be due to any of several reasons, but the most likely is that the state prison level does not always have an accurate understanding of broader mental illness prevalence due to the differences in demographics and methodological approaches. A study conducted in the Iowa state prison system is a textbook example of this. This study used the Iowa Corrections Offender Network s health records of all inmates and cross-referenced with both the DSM-IV and ICD-9. In the report, a total of 48% of inmates were diagnosed with a mental illness - 29% of whom had an SMI and 26% had a history of SUD (Al-Rousan, 2017). The prison population in this state at the time the study was conducted was 91% male and 65% white. In the 2020 census, Iowa was found to have a population of 331.4 million people, over 80% of whom were white, and only 4.1% were black (U.S. Census Bureau, 2021). The racial demographics are noteworthy in this case because Iowa is not only one of the less populated states, but its demographics are powerfully skewed when compared to other states' demographics or national demographics as stated in the introduction. Figures 1 and 2 produce a better understanding of the geographical structure of racial populations in the United States. (*2020 Census Demographic Data Map Viewer*).
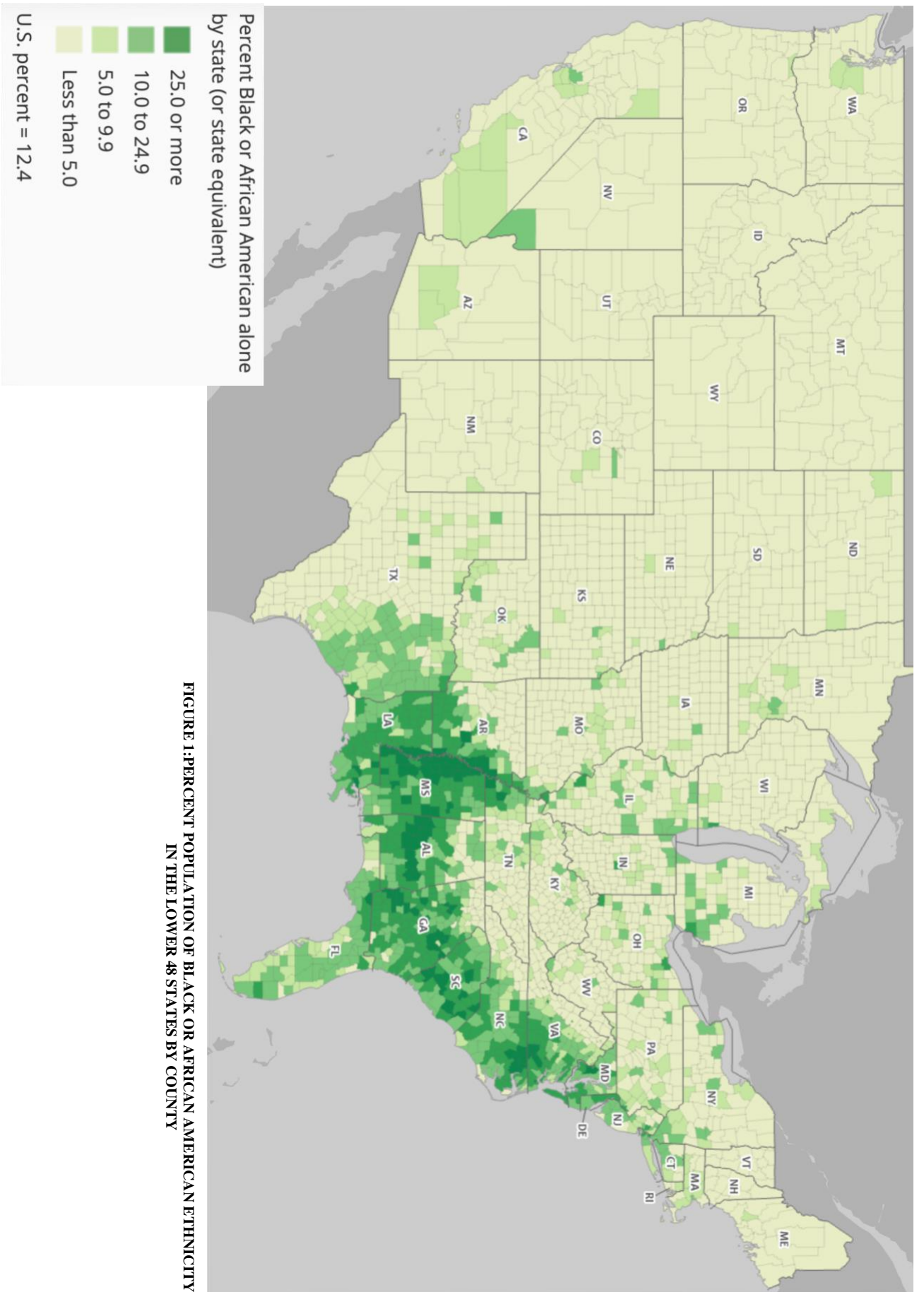
FIGURE 1:PERCENT POPULATION OF BLACK OR AFRICAN AMERICAN ETHNICITY IN THE LOWER 48 STATES BY COUNTY

Percent Black or African American alone by state (or state equivalent)

- 25.0 or more
- 10.0 to 24.9
- 5.0 to 9.9
- Less than 5.0

U.S. percent = 12.4
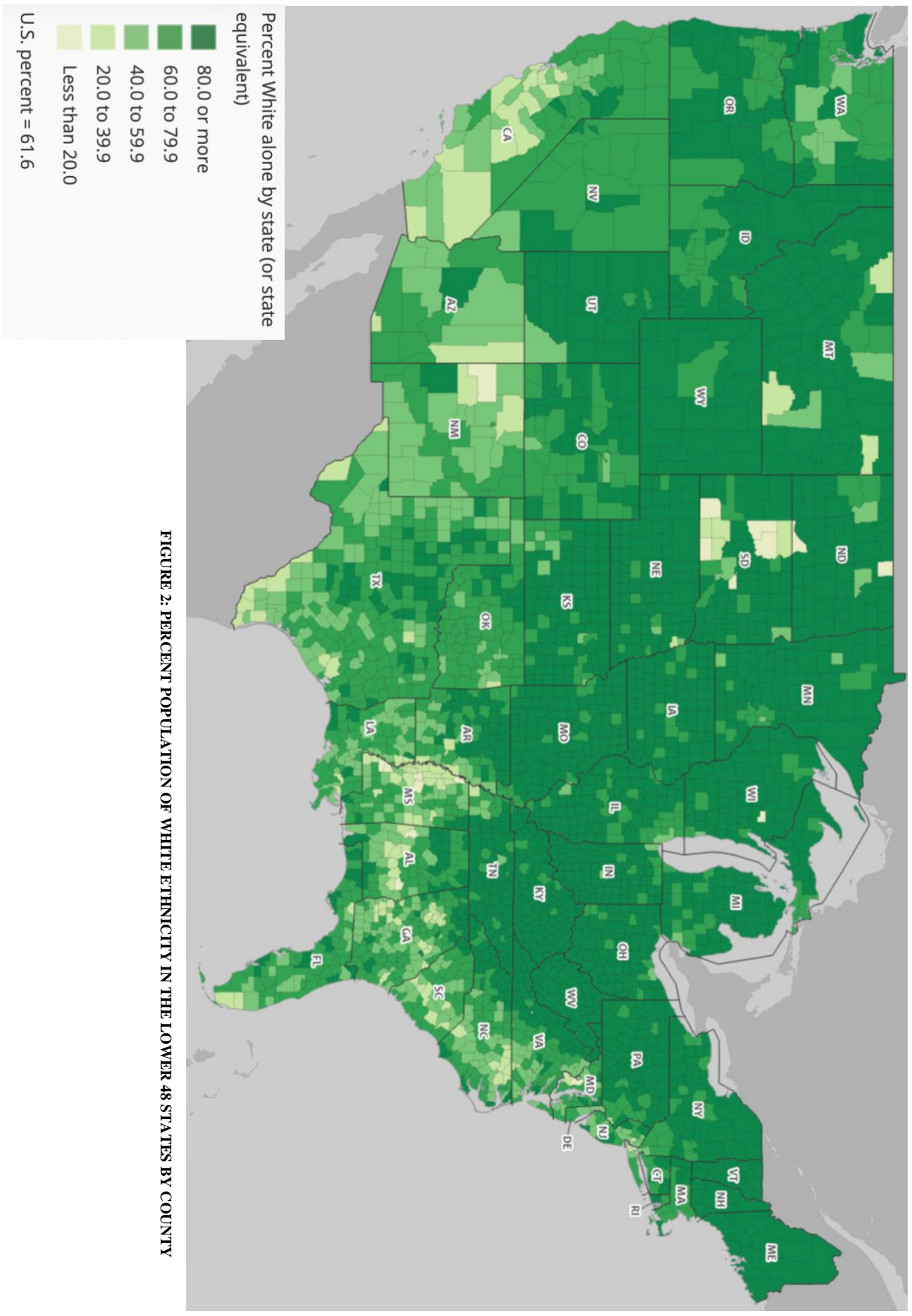
FIGURE 2: PERCENT POPULATION OF WHITE ETHNICITY IN THE LOWER 48 STATES BY COUNTY

Percent White alone by state (or state equivalent)

- 80.0 or more
- 60.0 to 79.9
- 40.0 to 59.9
- 20.0 to 39.9
- Less than 20.0

U.S. percent = 61.6

Race is an important factor for a few reasons. The first of which is that race-based trauma plays a significant role in the different types of mental illnesses among different races. The second is that the black male population is the most incarcerated population in the United States (Carson, 2021). The third is that black populations (especially black youth) are both underrepresented and one of the most under-treated populations among the general statistical populations for mental illness (Reinert, 2021). This could be examined further when understanding the black youth population pipeline into institutions as well as the prevalence of mental illnesses among other minority or special populations. Many topics under the umbrella of mental illness in the U.S. state and federal prison systems do not have a standardized methodology for research.

A study was conducted in 2013 to gauge the amount of information available regarding mental illness in prisons across the United States. This study is of unique importance because it sought to establish a broader understanding of the prevalence of mental health issues in prisons and identify methodological challenges to obtaining accurate and consistent estimates regarding prisoners' and correctional workers' mental health (Prins, 2014). This set of research data is important to obtain because there are only two federal self-report surveys typically cited when referencing mental illness in the US prison system, despite the consistent scholarly attention across multiple different studies as well as the increasing awareness in society at large (Prins, 2014). The two self-report surveys are not necessarily the most widespread data available and may have limitations in scope and accuracy.

In the study, a thorough search was conducted across multiple databases and platforms to find as many studies as possible under the umbrella of mental health in prison systems. The criteria were as follows: they had to be published between 1989 and 2013, focused on the US state prison system, report the prevalence of diagnoses/symptoms of DSM Axis 1 disorders, and have the screening/assessment strategies identified in the study (Prins, 2014). These studies were found in

searches among Medline, PsycInfo, the National Criminal Justice Reference Service, Social Services Abstracts, and Sociological Abstracts (Prins, 2014).

The results of this study found a sizable variance in mental illness prevalence across 28 different studies, which confirms the lack of consistency in this area of research. For example, estimates for current major depression (which is thought to be the greatest mental health epidemic in the prison system) ranged from 9% to 29%, while bipolar disorder ranged from 5.5% to 16.1% (Prins, 2014). These findings were compared against prevalence in different communities as a control group, including the Epidemiological Catchment survey and National Comorbidity Survey, among many others (Prins, 2014).

These findings show a notable lack of consistency in two main areas: measurement and selection (Prins, 2014). The study names the complexity of gathering data and observing mental health issues in prisons accurately, including limitations among researchers and differences in case ascertainment strategies, access to information, and methodological differences (Prins, 2014). The study concludes that some type of standardization is necessary in order to properly grasp the prevalence of mental illnesses in the prison system. It explains that without proper understanding of that prevalence, it may be even more difficult to provide treatment to this special population of people who already must deal with numerous roadblocks within the prison system as well as when re-entering society (Prins, 2014).

At the international level, studies are being done within and across different government-designed prison systems to help understand the role that mental illness plays in prisons, both among inmates, correctional workers, and mental health professionals.

In 2008, the World Health Organization released the Trencin statement on prisons and mental health. This report detailed international statistics within different prisons and found the following: One in nine offenders suffer from an SMI, with AMI numbers even higher (Gojkovic, 2010). The study also suggested that the international prison system reached a record population

of 10 million (Gojkovic, 2010). The idea of this study was to understand the broader implementation of mental health care on the international stage among different prison systems. This followed a number of reports and initiatives including but not limited to the Prison Modernization Agenda in England, and the Prison Reform Agenda in Serbia. International reforms like The Trencin Statement and the Kyiv Declaration were also published by the World Health Organization in 2008 and 2009 respectively (Gojkovic, 2010). These reforms were created in favor of the principle of equivalence" outlined in the Human Rights Act of 1998, which strives to bring the standards of mental health care in prisons to the same level as in the community (Gojkovic, 2010). This, of course, varies by country in both depth and complexity but is a good benchmark to uphold some type of standardization at the international level.

The study outlines several findings, the first of which is that being a prison mental health professional means different things in different countries, although some experiences are more universal, like a staff shortage due to a team's size compared to its intended care population (Gojkovic, 2010). This is so universal because prisons are chronically operating beyond their official capacities: 130% in Europe, 107% in America, and 300% in Africa (Gojkovic, 2010). The study noted that there is a sizable positive correlation between the number of nurses and patient outcomes (Gojkovic, 2010). Prisons are no exception. However, they will offer many more challenges because above all else they are spaces of security, confinement, and punishment. This is shown in the next argument, which is that mental health care in prisons is an example of divergent aims" which explains the tension between care needs and security needs (Gojkovic, 2010). This creates a polarization of roles and can be confusing to inmates because there is a point at which they cannot decipher if the mental health care professional is a friend" or foe" (Gojkovic, 2010). This is especially tenuous and delicate in a space where trust is so lacking toward authority figures of any kind. Overall, the study concludes that being a mental health professional

to a prison population is a uniquely difficult role, and that policymakers are still mostly unaware of the extent and nature of these challenges (Gojkovic, 2010).

Work is being done, however, to combat the difficulties for professionals working in prison systems. An article was published in 2020 that outlines an initiative created between the correctional faculty and staff of Norway and the United States. An initiative was formed after discovering, as had many other studies, the poor health of the United States correctional environment, both among correctional officers and inmates (Ahalt et al., 2020). Correctional systems have taken a different approach in other countries, where correctional culture is more focused on health, humanity, and rehabilitation (Ahalt et al., 2020). In the 1960s, the United States prison system had an objective more directed toward rehabilitation. This is defined in this sense as the belief that positive personal change could maximize incarcerated individuals' post-system success and help reduce crime (Ahalt et al., 2020). This existed until the early 1970s when the United States entered its era of mass incarceration and the idea of rehabilitation was largely abandoned and replaced with dehumanization and punishment (Ahalt et al., 2020).

The idea of this initiative was to train U.S. correctional officers in the methods used by Norwegian correctional officers when working with incarcerated populations. The findings concluded that more humane, health-promoting correctional environments enhance both prison safety and job satisfaction for correctional officers (Ahalt et al., 2020). This came along with supporting data that showed 78% of participating staff agreed that Norwegian correctional concepts enhance officer safety, and 94% said the training provided new perspectives on how prisons could change for the better (Ahalt et al., 2020). It also found that new training programs were well-received, feasible, and positive for the workers. Further findings noted the implemented changes positively transformed inmates experience and better prepared them for reentering society (Ahalt et al., 2020). The study concluded that Engaging correctional staff directly in prison reform is important because everyone in these systems can benefit from smaller, more humane institutions

in which staff are empowered to work closely with residents to promote health, healing, and rehabilitation" (Ahalt et al., 2020).

In general, the prison system requires many changes in order to better support the inmates and correctional staff. One of the simplest ways to do this is through TiD because it does not involve any changes in policy, training, or involve any staff in the process. All it requires is attention and awareness on part of the design team and collaboration with the appropriate officials in the prison system.

TRAUMA-INFORMED DESIGN

The implementation of TiD has been on the rise as the concept has become more well-known in broader circles. One of the leading places known among the TiD community is Denver, Colorado. This is the case because of the city's government, policy initiatives, and private organizations in different fields that work to support the role TiD plays in the community.

There are three spatial principles and design values that should be implemented in a TiD space. These are Sensory Boundaries", Nested Layers", and Identity Anchors". Sensory Boundaries are a way to modulate stimuli in a person's environment. This means creating harmonious balances between different senses through the use of material in an environment (Grabowska et al., 2022). The next value or principle is Nested Layers; nesting layers in a space creates an atmosphere of choice for people in different stages of their trauma. By adding well-ordered spatial complexity, people who have experienced trauma can choose their level of social, physical, and sensory engagement (Grabowska et al., 2022). A good example to this affect is a quiet corner in a kindergarten classroom or a courtyard garden at a senior living facility. The third value or principle is something known as Identity Anchors; these are a way for people to see themselves in their environment or be a part of something bigger than themselves. It is a way for people to combat isolation with a sense of belonging - a way for them to feel valued after being

marginalized (Grabowska et al., 2022). This value is the broadest because it can be implemented in the greatest number of ways. Some examples of this are welcoming exteriors, intergenerational spaces (spaces across specific age groups), gathering/community spaces, stylistic and symbolic ties to community, gender-responsive spaces, and more. (Grabowska et al., 2022).

In 2017, an apartment building was designed in Denver to support 60 one-bedroom units designated for single adults or couples who have experienced chronic homelessness. This demographic boasts the highest utilization of emergency services (Enos, 2017). The goal of this housing project, apart from providing a TiD home for Denver residents, was to reduce emergency service utilization and reduce justice system involvement in the population (Enos, 2017). The architecture firm, Davis Partner Architects, based its design features heavily on the need to reduce barriers and intrusion and create open and comfortable living spaces for residents (Enos, 2017). They did this by implementing the following:

- Cutouts that allow them to see into the living room of their apartment.

- Avoided carpets to reduce the amount of maintenance visits and avoid disturbing residents.

- Equal portions of engagement and living spaces (unlike typical apartment complexes that are a majority private spaces)

- Bringing features in from the outside like colors found in nature and foliage of different degrees.

- Increased number and variation of sightlines in the building.

- Color-coded floors so residents always know where they are.

All of these design features help the residents, a majority of whom have high levels of anxiety, feel more comfortable and calmer in their spaces because they always know what to expect (Enos, 2017). Other amenities include a community room, wellness center, library, art room, basketball courts, and locations for gardening or planting outside (Enos, 2017). Every aspect of TiD in this case study is used to help an individual's particular and unique needs in their experiences around trauma.

Most articles surrounding TiD call for the practice to be more widely studied, accepted, and used by different practices by describing the same data or recommendations as discussed in previous studies. These recommendations even include a thesis that describes in detail the ideal course at the graduate level to teach TiD to emerging designers (Lippard, 2022). Her thesis explains the importance of TiD but also mentions that when given to a test group of students, most did not understand what TiD was and specifically mentioned broadening their perspective by understanding the complexities and necessities of TiD (Lippard, 2022). Any article found that was not focused on recommendations discusses different case studies in the environment where TiD is most closely attributed: correctional facilities.

USING TRAUMA INFORMED DESIGN WITHIN THE UNITED STATES PRISON SYSTEM

Architects around the world are beginning to implement TiD more regularly into their prison designs. One article rather succinctly examines the basic categories that require the most attention within the design of a correctional institution.

The first basic category that is typically addressed is the implementation of a sense of personal control for the inmates; as stated in the article, a sense of autonomy and control in areas where this is possible helps to create a sense of humanity for the inmates. For this reason, the spaces begin incorporating elements that are less institutional (such as a wood door instead of steel where it is not a security issue) (Goodale, 2022).

Another basic category when approaching TiD in prison systems is understanding a shift in priorities. A basic human-centered element must be re-established to help inmates feel comfortable enough to begin the rehabilitation process. A good example of this is stated in the article and discusses the use of Air Conditioning units for spaces used solely by inmates. Where community input is sought for a masterplan, sometimes the community members may see elements like air conditioners or soft beds as too nice" for inmates (Goodale, 2022). In this respect, it is

essential to remember that when we are out of homeostasis, our body becomes uncomfortable and can have us stuck in a fight or flight state and unable to process as well. It is paramount to incorporate design elements that create physical comfort for people in prisons. Without these, the inmates (and staff) may find themselves in needlessly hot or cold temperatures, which could in turn lead to them becoming more angry, resentful, contemptuous, suspicious, and could further exacerbate any mental illness (Goodale, 2022). When basic human needs are ignored, positive outcomes for inmates and the quality of life for staff is decreased.

Another critical design category is that of those for spaces specifically designated for visitors and staff. These spaces should incorporate the introduction of daylight, meaningful views, designated break areas, places to connect with each other and the outside world" (Goodale, 2022). All of these elements create better staff morale, which in turn leads to lower attrition rates due to a newer and more calming workspace and can then create an even calmer environment for inmates by establishing more of a norm with their respective members of authority (Goodale, 2022).

The number of prison architects implementing TiD are now large enough in numbers to compare their methods. Across every one of these designs is one common theme that remains the most important point of all: the goal of TiD in the prison system is to better rehabilitate prisoners and give them a better chance of succeeding in life after they re-enter society. However, the design approaches for how best to achieve this are somewhat different when looking more closely. For example, a few different designs focus specifically on replicating outside life for those in prison. This means incorporating parts of life one may not realize is integral to feeling normal, like having multiple buildings on the prison's campus (Hill, 2019). If an inmate spends 20 years of his or her life doing every function – eating, sleeping, working, socializing, and exercising – in the same building, there is obviously a much greater chance of increased stress and insanity (figurative or literal). The goal of this design approach is to create a sense of normalcy and patterns akin to those

on the outside where people get up, go to work, spend time outdoors, and get to come back home and go to sleep in their own space (Hill, 2019).

A different architect by the name of CF Møller approached the idea through another lens, creating a campus that emulates an urban environment that prisoners may be familiar with. Møller, instead of focusing on the prison's bigger campus to implement design strategies, focuses on individual prison cells to instill a sense of identity (Hill, 2019). Partner at CF Møller, Mads Mandrup Hansen spoke in an interview and stated:

By adding as much humanity as we can into our design approach, penal architecture can essentially go from being cruel and institutional to becoming a place of positive stimulation, despite its confining constraints. If you balance things right, trying to add as much normality and healing aspects into your design as possible, I truly believe it can make a difference. If you believe in rehabilitation, the journey of change starts with the way you design the cells." (Hill, 2019).

In Glasgow and Dundee, the Scottish prison reform looks more like adaptive reuse and reducing the prison's size to allow for a more intimate atmosphere. The goal is by making the prison airy, spacious, domestic, and low-rise", to reintroduce women more smoothly to society by incorporating more levels of independence while still in a secure perimeter (Hill, 2019). A particularly large proportion of women in correctional facilities have experienced some type of physical, sexual, or psychological abuse in their lives, and it is, therefore, paramount to create a space where these women become confident in taking care of themselves and having responsibilities necessary to succeed in society (Hill, 2019).

Although the costs of these shifts in design are greater than their less-humane counterparts, the reduction of cost across communities is worth the investment if the result is a reduction in crime and recidivism. These are just a few ways and examples of architects taking the steps to

create a better society and positively influence the lives of thousands of people, families, and communities.

CONCLUSION OF LITERATURE REVIEW

Mental illness and TiD have a very natural intersection in a prison's architecture. It is the crossroads that requires empathy for those who get the least amount of help in the United States. By taking examples and learning lessons from other countries' implementations of these practices, the United States has the opportunity to completely alter the way criminal justice is handled and perceived. There are two major places where there is a lack of literature and research. The first of which is among prisoners who have been experiencing these changes and incorporations of TiD into the prisons they inhabit. There is no way to truly know the depth of change happening among prisons that received TiD without speaking with the prison population itself. In short, we do not know the results on a scientific scale. The other area in most need of further examination is the implementation of TiD in prisons within the United States. The US has been routinely behind in most areas of reform across first-world countries and prison reform is no exception. The next step is to discover different means of implementing TiD within the US to normalize the practice and create more opportunities for its inception within future prison design.
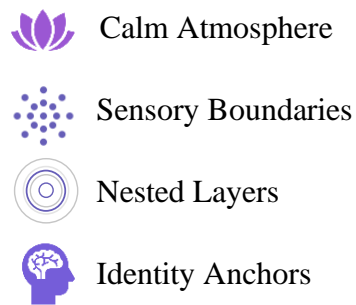
HYPOTHESIS

Trauma Informed Design - when implemented properly into prison architecture – has the potential to promote well-being for prison inmates and staff, increase rehabilitation rates, and reduce recidivism. The proper standardization of methods can be implemented by interviewing relevant personnel and receiving feedback. Of the design methods included in the standardization process, 80% will be proven to increase the well-being of all users.

METHODS AND DATA ANALYSIS

This study proposes using interviews and census data to formulate a method of design that can be standardized across United States justice campuses to be based in Trauma Informed Design. The dependent variable is the effect of Trauma Informed Design on the inmate population in the United States in prisons where TiD is implemented. The independent variables are the number, age, race, sex, gender identity, and mental illnesses (if any) of the inmate population. Interviews will be conducted with a psychologist specializing in childhood trauma and PTSD, two former prison inmates, a partner of a former inmate, the Community Liaison for the Rochester Police Department, and the director of the criminal justice studio for architecture at Labella Associates. Interview questions will be created to determine the hypothetical benefit of different design methods in the following pre-interview areas: program, lighting, color, biophilia, texture, MEP, furniture, wayfinding, and proportion. The interviews will be conducted after a primary set of design standards are created and will be adjusted accordingly after interviews are conducted.

STANDARDIZATION OF METHODS

The standardization of methods is the foundation of this document and can serve as the guide for any and all prisons seeking renovation as well as any potential new prisons (although building new prisons should be a last resort). The standard is made up of eight Concepts & Factors that are broken down into subcategories for consideration. Although these concepts have been placed in a technical order of most to least pressing, it should be noted that their weight and importance should be viewed as equal, as the curation of concepts has been pared down to encompass only what is necessary. The symbols outlined below will serve as a graphic indicator for bigger themes within each category and show which organization categories are the main focuses in each method of standardization. They are as followed:

🔕	Sound Reduction	🪷	Calm Atmosphere
🌿	Biophilia	⣿	Sensory Boundaries
🏞	Murals or Colors	◎	Nested Layers
🛡	Sense of Safety	🧠	Identity Anchors

NOISE REMEDIATION:

> *"...And science, you know, you're in a big concrete echoing block with 40 people yelling pretty constantly, you know? And so it's deafening all the time. So I don't know how you change that, but the noise is a huge thing. It's really hard. And then they give you like dominoes where people are slamming them on metal tables and so it's just constant. It's constant bombardment in the senses."*
> - Robert Veeder, interview by author, September 15th, 2023

> *"...It was deafening. I mean, those visits, I would be hoarse for three days after and you can hardly hear each other and we're sitting so close and it's so loud. It was so loud. Everything was hard in that room. The walls, tables, chairs, the metal cookware, everything was hard. There was nothing to absorb sound, not anywhere."* – Kara Veeder, interview by author, September 17th, 2023

Noise remediation is perhaps the most obvious problem that one begins to face when they enter a prison campus, even for visitors. The amount of concrete and solid surfaces creates a deafening amount of sound and causes distress immediately. For inmates, it is constant; there is no escape from loud sounds at any point. This concept attempts to remediate this issue to help create an atmosphere that is more calming and less overstimulating.

⇒ ACOUSTIC DAMPENING

Acoustic paneling or acoustic dampening materials are to be prevalent in all rooms, especially large and cavernous spaces like the chow hall and corridors. Every space except the bathroom should be fitted to increase sound absorption and reduce decibel levels. In a typical

prison in the United States, walls and floors are so hard and reverberate sound so intensely that there is no space that is quiet by any definition of the word. So much so that loud or startling sounds continue to trigger most inmates even a decade after they are released from prison. While interviewing a previous inmate, people laughed too close to a cavernous space such that we were forced to retreat to a quiet outdoor area, so they were able to focus, stay relaxed, and remain
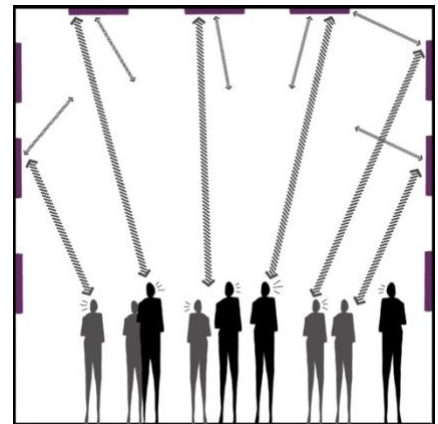

FIGURE 3: ACOUSTIC DAMPENING

untriggered by any surrounding loud or abrupt sounds.

⇒ WALL RATING (STC)

STC ratings of 50-60 are to be maintained in between all single-person rooms and their common spaces, as well as between the podular layouts where applicable. They should also encompass the notably quiet spaces like the quiet room, interfaith center, and the library. All other spaces may have lower STC ratings as long as acoustic materials are used to account for sound dampening.
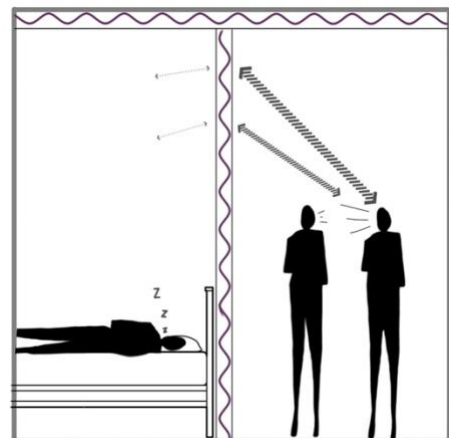

FIGURE 4: STC WALL RATING

PROGRAM:

The program is the method in which the most change can occur within a prison. The way the building(s) is arranged and organized will determine the way in which the prison staff and inmates interact with each other and their space. This can have the biggest effect because it is where the organization principle of Nested Layers can be implemented at the largest scale. Specifically, this is when Nested Layers is most effective because the way the prison is designed will help integrate the more communal spaces with the private ones. The fact remains, however, that the program can have the largest impact in all three organization principles (nested layers, identity anchors, and sensory boundaries).

⇒ PODULAR LAYOUT

Podular layouts are not the only way to arrange a prison with TiD in mind, but it is one of the best ways to achieve the idea of "Nested Layers" (Grabowska et al., 2022). As stated in the literature review, this is one of the three main organization principles paramount to the implementation of TiD. In this case, Nested Layers work to allow inmates to gradually move from more private to more public spaces. This can help inmates feel safer, and also allows the bigger and more crowded spaces like the chow hall or courtyard to feel less jarring. This is also a chance to separate inmates into violent and non-violent sleeping arrangements. In the interviews conducted for this thesis, it was noted that the opportunity to be in a block with other non-violent criminals would have made inmates feel safer in their own spaces. By reducing the number of

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people in a space and being able to provide the promise of non-violence in particular quarters, inmate sense of safety would increase immensely.

FIGURE 5: PODULAR LAYOUT - STORSTRØM PRISON / C.F. MØLLER
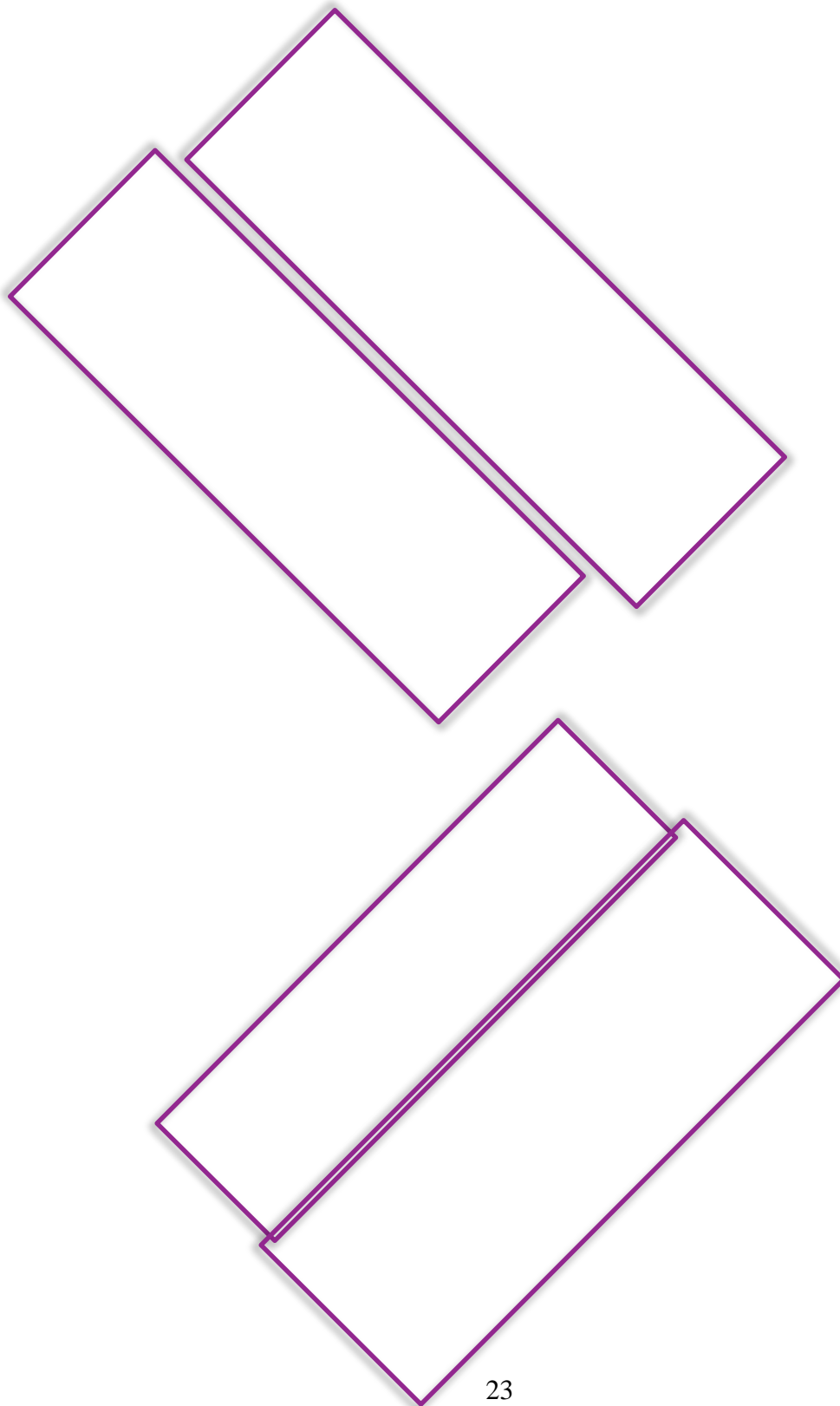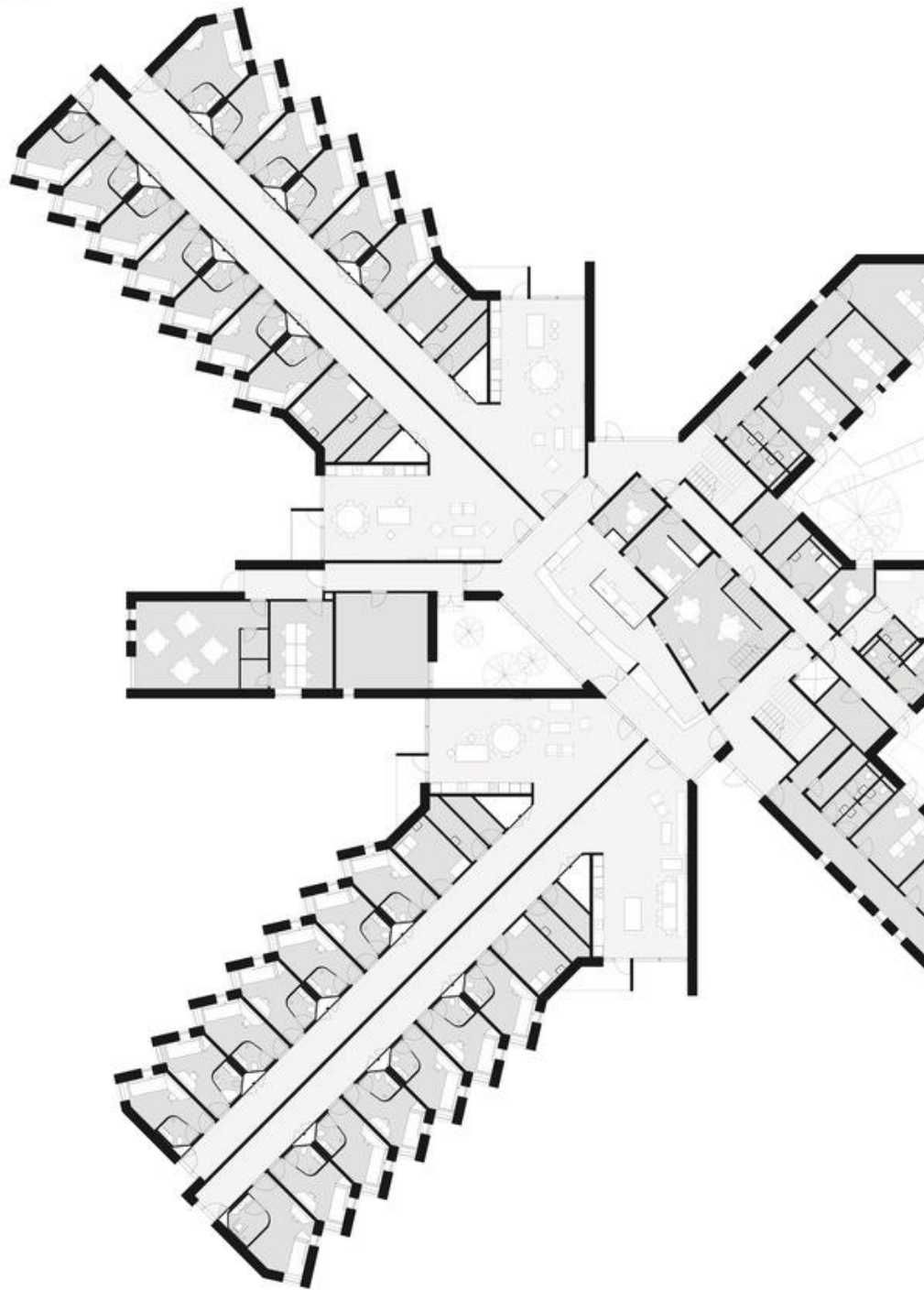
1. SINGLE PERSON SLEEPING QUARTERS

Single person sleeping quarters are an essential addition to the standardization. It is not the only way to create a safe space, but it is perhaps among the most important for a few reasons. Firstly, single person sleeping quarters provide a safe sleeping space that can allow inmates a reduced level of stress while in their most vulnerable state. Secondly, it instills an amount of dignity and maintains a level of identity to have a space of one's own. Thirdly, it creates a feeling of privacy for inmates. All of these are essential to the principles of TiD.

FIGURE 6: SINGLE-PERSON ROOM- STORSTRØM PRISON / C.F. MØLLER

2. COMMUNAL SPACE

The communal space in a single pod is only for the inmates that inhabit the pod itself. Within each pod can be anywhere from 10 to 20 single-person sleeping quarters. This helps in the following ways: 1) it creates less sound, which is typically a very large problem for inmates in large cellblocks. 2) It increases the square foot per inmate, creating a less crowded and claustrophobic atmosphere. 3) It creates a larger sense of community among the inmates within

one pod. While it does not need to have full capabilities of a kitchen, it should include a sink and a way to heat up food belonging to inmates.

FIGURE 7: COMMUNAL SPACE- STORSTRØM PRISON / C.F. MØLLER

FIGURE 8: HIGH STREET RESIDENCE HALL - DICKINSON COLLEGE / DEBORAH BERKE PARTNERS

⇒ SECONDARY SPACES

All secondary spaces detailed below add necessary meaning to inmates in prison, beyond the obvious need for a chow hall, infirmary, and common area. They continue to establish an inherent sense of purpose, individuality, and meaning to inmates' daily lives. All these spaces should be designed with intention and focus on the categories graphically represented under each space.

1. INTERFAITH CENTER

The interfaith center in a prison should be as calming and spiritual as would be expected of any interfaith center in community centers or college campuses. The space needs to maintain a peaceful and thoughtful atmosphere while acknowledging security and privacy issues a prison always must. In order to de-institutionalize an interfaith center, add pendant lights and include ample natural light. Since this is a place of worship and spirituality, it is also important to use calming/warm color palettes and acoustic materials for maximum noise absorption. This space should also include live plants and access to fresh air. Items should be provided for inmates such as prayer mats and an array of religious texts. Religious symbolism should be available, but also removable, to allow for the space to be used by multiple different faiths.
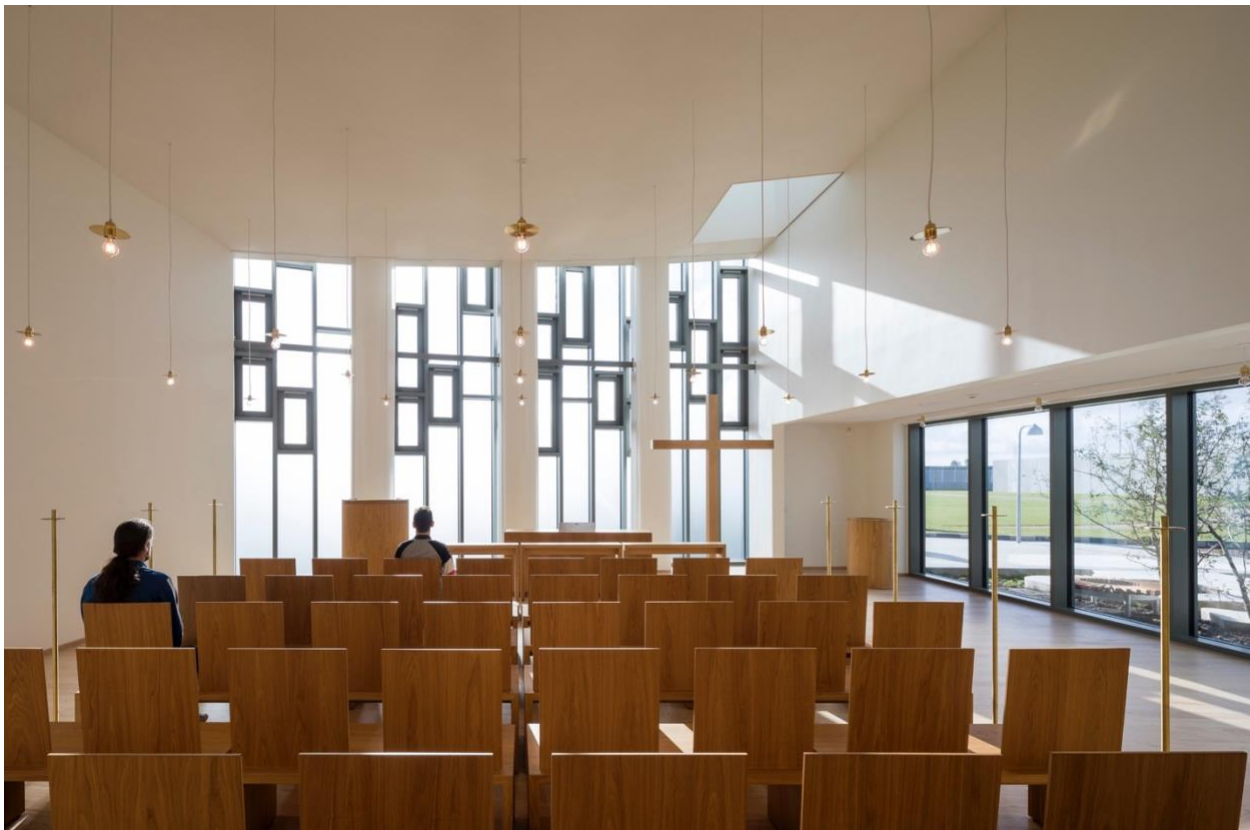

FIGURE 9: INTERFAITH CENTER- STORSTRØM PRISON / C.F. MØLLER

2. LIBRARY

The library is typically a quiet space, which means this room first and foremost needs to have acoustic dampening properties via high STC ratings in the walls as well as acoustic paneling and soft materials throughout. There needs to be a few different types of seating arrangements available to allow for private reading, desks/tables, as well as group seating capabilities. This means there should be chairs and tables but also couches or armchairs for comfortable reading. The space should be colorful, open, and not include any interior stacks to avoid blind spots. An open space with books lining the walls and windows, while all seating spaces remain in the center of the room is best. This reduces any blind spots in which inmates could feel unsafe and allows for easier monitoring by the resource person or a CO.

FIGURE 10: THE SMALL, GREEN LIBRARY - G/O ARCHITECTS

28

3. CLASSROOMS

> *Quille Hughes: "... What were the places that made you feel the safest?"*
>
> *Robert Veeder: "The classroom was a big one. In part because the kind of people that were going to classes were, sort of, future oriented. They wanted to get out, they wanted to do something when they got out, they wanted to change things."*
> - Robert Veeder, interview by author, September 15th, 2023

Classrooms should have moveable furniture as well as bookshelves and white boards or chalk boards. This is a space that does not necessarily need to be acoustically dampened but should remain enclosed in high STC rated walls to reduce outside distraction while learning is taking place. The walls should be colorful in paint or murals and include educational ideas (i.e. the periodic table, inside of a cell, or quotes of important figures) to encourage curiosity. This both allows inmates to gain a stronger sense of self and create a space of further development, giving them a greater sense of purpose.

FIGURE 11: CLASSROOM - SHIVE-HATTERY ARCHITECTURE+ENGINEERING

4. QUIET ROOM/NON-VIOLENCE ROOM

"…I wanted like a meditation space. I wanted a place where I could go and sit quietly and be still, and not feel threatened at any point of the day. Just give me one room, you know, I didn't even need to be a big room…. It needed carpet and a damn bean bag or a couch or something soft, you know. … I don't need a book, I don't need – just let me have 15 minutes where I can just be still quiet and we just were never given that, we never had that. Other people would have been fine coming in there. It just woulda been nice to have the space to regroup. And not talk or whisper…" - Robert Veeder, interview by author, September 15th, 2023

The quiet room is one of the most important additions to the normal programmable spaces of a prison. It has been requested by all inmates interviewed, and for good reason, because it allows

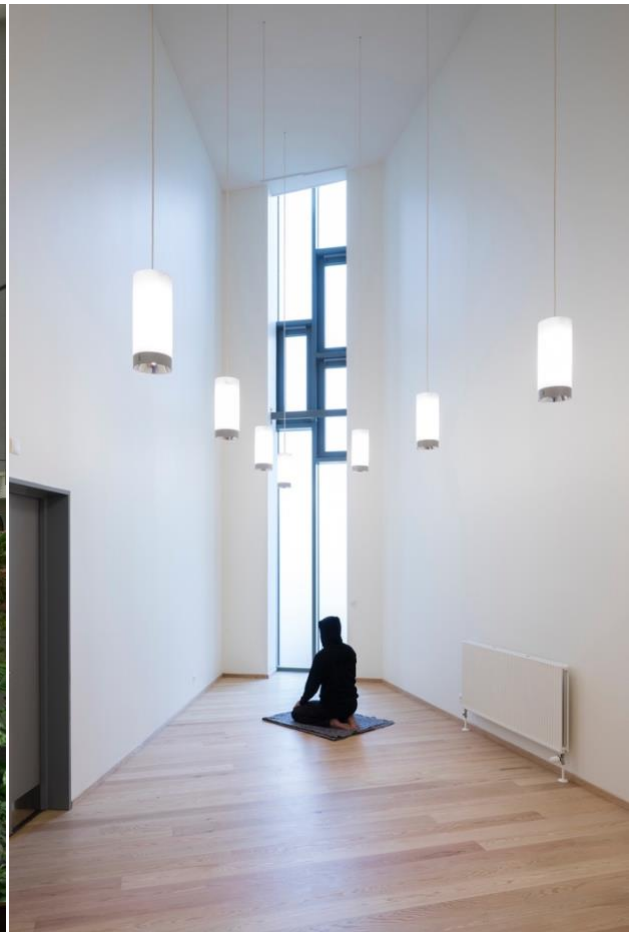**FIGURE 13: SECRET GARDEN HOUSE / ROOM+ DESIGN & BUILD**

FIGURE 12: QUIET ROOM - STORSTRØM PRISON / C.F. MØLLER

for solitude in a non-punishment setting, absolute quiet in an otherwise incredibly loud atmosphere, and a space for reflection and calm. This is a space that should be occupied by one or two people at a time maximum. The tones of the room should be warm and muted with ample natural light. This space should have warmer color temperature and more plants than most other spaces in the prison to allow for further feelings of peace and quiet. Mats should be provided to allow for silent meditation or prayer.

5. COURTYARDS

Courtyards are one of the places in a prison that incite a large potential for violence due to the size and distance from COs. This being the case, it is especially important to design a space that feels safe but also creates a place of calm as well as a space for recreational activity. One of the best ways to promote a feeling of safety here is by reducing sharp corners to eliminate blind spots and therefore the possibility of surprise. Picnic tables and grassy areas should be included as well as some type of basketball court. This is a space that can provide color and texture in a way that some spaces inside cannot. Adding texture to walls is a quiet way of showing intention in a space; this is important in every space as it helps inmates feel a sense of identity by instilling the

FIGURE 14: COURTYARDS - STORSTRØM PRISON / C.F. MØLLER

idea that these spaces, although ultimately meant to keep them confined, were designed carefully and with the intention to support them. These spaces should be designed to be used for relaxation, visitation, and lighter recreational activity.

SECURITY:

⇒ SECURITY CAMERAS

Security Cameras need to account for every square inch of the prison except for the locations that demand privacy (shower stalls and single-person sleeping quarters). This is the only way to maintain accountability for both inmates and correctional officers. In one of the interviews, a previous inmate stated he felt unsafe in large part due to the lack of accountability for both other inmates and COs. It should be noted that if no other method of design is taken from this thesis, this is the one that should still be required. There is no chance of safety for any person inside a prison without accountability.

⇒ AUTOMATIC LOCKS

Single person sleeping quarters are to include automatic locks that open and close based on the days scheduled events. This removes a task for guards and implements an amount of security and safety for inmates and correctional officers alike. Below is an excerpt from an interview recalling a specific instance in which automatic locks prove to be essential for all inmate's safety:

"... I got a knock on my cell door by the police, by the guards, and they said…"Look, this guy down at the end of the hall, we got wind that he's planning on raping you. And so we want to put you in solitary confinement." And they did a protective custody, which is solitary confinement, which is a huge cultural no-no within the prison system, you never ask the guards for anything. So I was like, "Hell no, I just got here. I got eight some odd years to go. I can't spend it in solitary

confinement. And I can't have that on my reputation." as somebody who would, they call it "checking off".

*So they were like, "Well, okay, you don't have to, but you should know that the last guy he got ended up in the emergency room. And he ended up being tied up in sheets for most of the day. And he comes, he goes to the basketball and come back in and raped the guy." And so I was like, "All right, fine, whatever." And so then they put me in handcuffs and took away all my stuff and put me in the hole. So for about two weeks I kicked and screamed and beat on the door and said, 'I didn't wanna be put in the hole.' until they got mad and frustrated enough of hearing me kick and scream. They decided to let me out. **And honestly, as a kind of revenge, they put me in the cell closer to the guy they were trying to keep me away from and refused to lock my door. So there's no safety**."*

- Robert Veeder, interview by author, September 15th, 2023

⇒ MINIMIZING BLIND SPOTS

Minimizing blind spots is essential to creating a space that feels safe for all people inside a prison. The less chances for surprise, the better. There are various ways to accomplish this. One possibility involves using rounded corners whenever possible to avoid 90° angles. Mirrors should also be placed wherever a blind spot is unavoidable so those coming from all directions can see
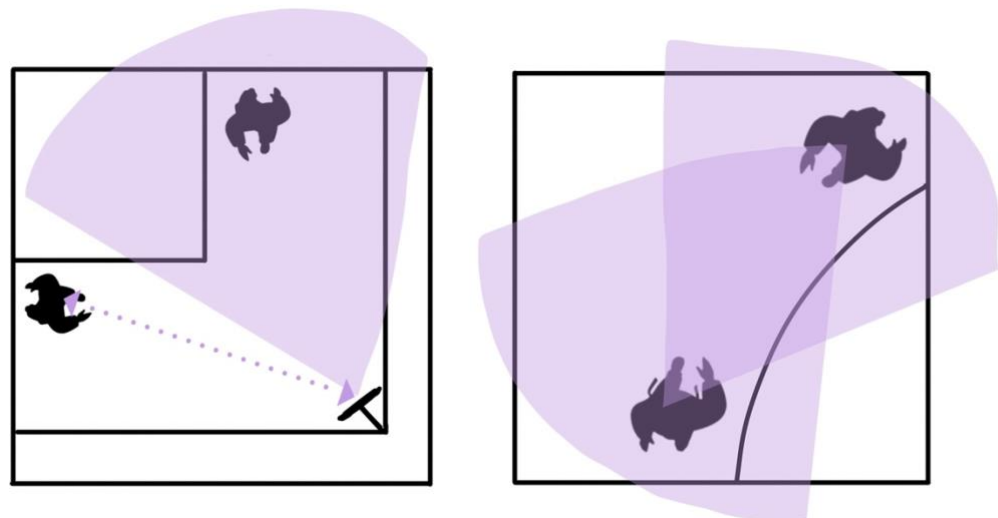

FIGURE 15: MINIMIZING BLIND SPOTS

what lies ahead. Wide hallways should be used in corridors to avoid any feelings of claustrophobia and crowding. Furthermore, all rooms should avoid columns or obstructions from view to eliminate the potential for surprises.

BIOPHILIA:

Although technically a part of landscape architecture, biophilia is similar to the concept of furniture in the sense that it is an integral part of prison design and is therefore included here.

⇒ INDOOR

Plants should be in common spaces, library, classrooms, quiet room, and interfaith center. This helps add an atmosphere of calm, increase the amount of fresh air indoors, reduce bad odor, and help decrease the institutional atmosphere.

⇒ OUTDOOR

Foliage should remain short and abundant throughout all outdoor locations to increase the amount of green and plant life on the prison campus. In a study completed in 2001, evidence showed a direct reduction in crimes committed in areas and neighborhoods where vegetation was prominent; a total of 52% fewer total crimes committed ("Environment and Crime in the Inner City: Does Vegetation Reduce Crime? | Office of Justice Programs" n.d.). Another study noted that horticulture programs led to the following outcomes: lower depression in inmates with emotionally detached mothers, reduction in the number of substances abused, and a sustained desire to seek help. Furthermore, inmates who had been part of horticulture programs retained a greater desire to seek help after three months of release. ("Impact of Horticultural Therapy on Psychosocial Functioning Among Urban Jail Inmates | Office of Justice Programs" n.d.)

NATURAL LIGHTING:

Concepts in lighting such as window location, quantity, and size can directly impact a person's quality of life. Even more so than artificial lighting, it is essential to have adequate daylighting in all spaces to avoid depression, increase our ability to heal and maintain our physical health, and support quality sleep. As was the case with artificial lighting, this concept will be more quantifiable than most others in this series of considerations and is referenced from WELL Building Standards because it is based on more specific research and empirical data and has similar enough intentions to this document to support the same outcome.

⇒ LOCATION

All spaces should have natural lighting to some degree except for bathrooms and corridors. Bathrooms and corridors should have natural lighting, if possible, by way of skylight or transom. Natural light is essential to reduce an institutional atmosphere.
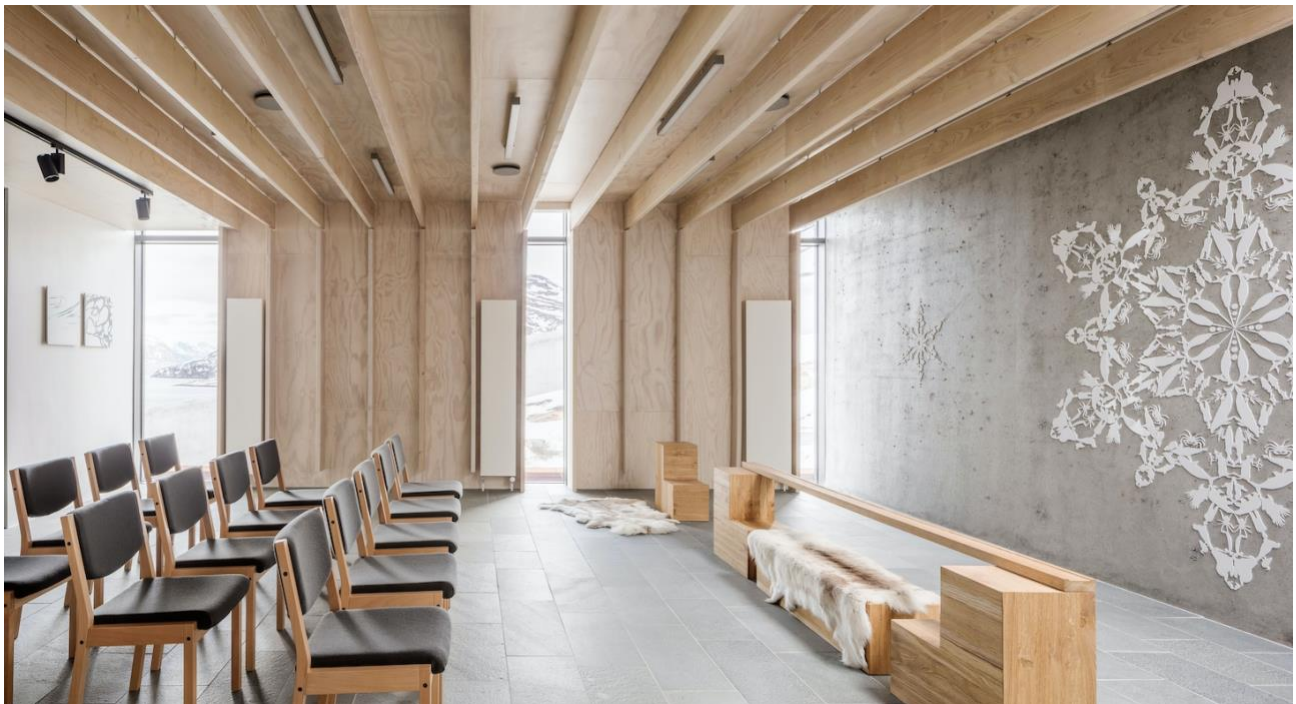

FIGURE 16: INTERFAITH CENTER - ANSTALTEN CORRECTIONAL FACILITY / SHL + FRIIS & MOLTKE

$\Rightarrow$ W<small>INDOW</small> D<small>ESIGN</small>

Single-person sleeping quarters should have windows that are a minimum of 3'x5' to allow for as much natural light as possible. Beyond single-person sleeping quarters, the following requirements should be met (*WELL Building Standards*, pg. 115).

1. R<small>EGULARLY</small> O<small>CCUPIED</small> S<small>PACES</small>: Maintain target illuminance of 200 lux in >30% of single-person sleeping quarters throughout 50% of daylit hours of the year.

<center>OR</center>

2. I<small>NTERIOR</small> L<small>AYOUT</small>: At least 30% of regularly occupied seating is within 15 ft horizontal distance of envelope glazing in each floor or in each single-person sleeping quarter.

<center>OR</center>

3. B<small>UILDING</small> D<small>ESIGN</small>: The envelope glazing area is no less than 7% of the floor area for each floor.

FIGURE 17: SINGLE-PERSON SLEEPING ROOM - ANSTALTEN CORRECTIONAL FACILITY / SHL + FRIIS & MOLTKE

ARTIFICIAL LIGHTING:

WELL Building Standards concepts in lighting such as lux and color temperature can directly impact a person's ability to heal, maintain circadian rhythm, improve sleep quality, mood, and productivity. Different spaces should be designed accordingly based on their purpose. As lighting is based on specific units of measurement, this concept will be more quantifiable and is referenced from WELL Building Standards because it is based on more specific research and empirical data and has similar enough intentions to this document to support the same outcome.

⇒ LUX

In general, every space within a prison needs to maintain a minimum of 200-300 lux during daylit hours.

⇒ COLOR TEMPERATURE

The color temperature in a prison is important because it one of the easiest ways to de-institutionalize a space. Fluorescent lighting is notorious for causing feelings of disquiet and anxiety. Lighting that measures 3000-5000 K in all spaces will create a relaxed and vibrant atmosphere without adding fluorescence to a space. This is important because fluorescent lighting is one of the leading contributors to an institutional atmosphere. Differences in color temperature can also be used to help delineate spaces and create a particular atmosphere. For example, a library

FIGURE 18: COLOR TEMPERATURE CHART

may want a value closer to 4,500K to create a space more conducive to vibrance and focus, while an interfaith center may want a value closer to 3000K for a more peaceful and relaxing atmosphere conducive to prayer or worship.

COLOR:

"It just would have been nice if some of those walls had poetry on it. Some of those ceilings had math. Things that just would inspire your curiosity so that you did wanna go to the library and go like, "Well, what's that all about? Let me go find out. What the Pythagorean theme means, if that's important." So I think those things woulda been helpful. Just, if the environment itself would have been a kinder environment I think the people in that environment would have been softer, more gentle people." - Robert Veeder, interview by author, September 15th, 2023

⇒ MURALS

1. EDUCATIONAL: Murals depicting academic concepts including but not limited to: periodic table, quotes by poets, biological diagrams, education diagrams in other scientific fields, arts, and culture.

2. NATURE: Murals depicting scenes from nature or the outdoors of different places or climates.

3. COLORFUL: Abstract or collage-like murals as depicted in Figure 18.

⇒ BY TYPE OF SPACE

1. EDUCATIONAL: Educational murals should be placed in the primary and secondary spaces like the library, classroom, and some gathering spaces like the chow hall or community rooms. Multiple interviewees mentioned the benefits possible by implementing art that creates curiosity in these areas. Curiosity is one of the best ways to instill an identity anchor into inmates.

2. NATURE: Murals depicting nature should be placed in areas with more opportunity for stress or more benefit of a serene atmosphere, like the visitor's center. A study done in 2009 showed that the installation of murals in a booking area of a county jail directly correlated to a decrease in heart rate and less stress among inmates, as well as an increase in performance of cognitive tasks and higher levels of tolerance among the staff. (Farbstein, Farling, and Wener, n.d.)

3. COLORFUL: Transitional spaces should remain simple but inviting, which means color can be used to reduce stress, create a designation of spaces, or reduce white/grey space in places like corridors or entrances.

FIGURE 19: CORRDIOR - MONROE COUNTY PUBLIC LIBRARY

FURNITURE:

Furniture, although not technically an architectural method, is an important part of prison design and is therefore included here. Interior design should be included when relying on these methods as they are equally integral to the success of Trauma Informed Design. In general, spaces should be adaptable to provide the atmosphere best suited for different tasks. They should focus on safety and comfort while maintaining security.

⇒ MOVEABLE

Adaptable and moveable furniture was another specific note made during interviews. Immovable furniture added to atmospheres that felt institutional, careless, and unnecessarily distrusting. Replacing any and all immovable furniture is an easy way to show inmates that care

was put into the design of a place they will spend so much time. It creates an atmosphere open to comfort and trust, and therefore helps maintain an inmate's identity.

The most important places to focus this method are within shared spaces. The visitor's center was a space specifically noted for creating discomfort because of the lack and immovability of the furniture. It was noted that these spaces were awkward to be in and did not create an atmosphere for connection. When prompted for suggestions, an interviewee who frequented the visitation room noted the need for more and movable furniture; as simple as adding a table between an inmate and their visitors so they can set down their belongings or rest their arms is enough to increase the comfort of a space and help people feel more at easy during such a precious period of time.

Libraries are best known for providing multiple different types of spaces to read or study. They should include comfortable spaces to read like desks, tables, and bean bag chairs to touch different rungs on the ladder between comfort and focus. Rugs or carpet tiles should be placed throughout the library to help with sound dampening and provide a more comfortable or "cozy" atmosphere.

Moveable furniture in the chow hall is also important and has more than one purpose. Firstly, it can create adaptability based on the number of inmates populating the prison. Unused tables can be placed in storage based on population to help reduce crowding of the space, which can create an atmosphere of uneasiness, a lack of safety, and claustrophobia. By removing unused tables for eating, it gives inmates more space to give one another the respect of personal space and reduces feelings of unease in such a large space.

Community space within the pods should include moveable sofas and coffee tables for

give people space and privacy or grouped together for different purposes like game night, movie night, group therapy, etc.

Recreational spaces and therapy rooms should all have moveable furniture to allow for individual or group set up.

$\Rightarrow$ <u>MATERIAL</u>

When choosing materials for furniture, focus on materials that are cut resistant but comfortable, like specific types of fabrics. Furniture in the chow hall can be plastic, but other locations should include more comfortable furniture as standard. Chairs with cushioning, for example, should be commonplace. Avoid metals as they are cold and reverberate more sound and are also prototypical of institutionalized places.

Most importantly, inmate's beds need to be soft. A soft and comfortable bed, even if it is narrow, is of the utmost importance for multiple reasons. Firstly, adequate sleep is a need shared by all, and must be achieved in order to reduce stress and increase the chance and effectiveness of rehabilitation. Secondly, a soft bed is one of the many ways to establish an identity anchor for inmates. Inmates deserve to feel that they are worth of a comfortable place to sleep even when being confined. This includes a soft bed, a blanket, and a pillow.

Summary Table

Factor	Topic	Requirements	Specifications	Source
Noise Remediation	Acoustic Dampening	Acoustic Wall Panneling	7% of wall area in common spaces are covered with acoustic wall panels	WELL v2 - Sound
	Wall Rating	High STC rating between single-person sleeping quarters and quiet spaces like library and non-violent room	STC rating of 50-60 exist bewteen single person sleeping quarters, around quiet/non-violent room, and around library	WELL v2 - Sound
Program	Podular Layout	Cell blocks should include single person sleeping quarters and community space that includes kitchenette, storage, and furniture	10-15 sleeping quarters per pod with enough furniture and storage space to accommodate	
	Secondary Spaces	Included spaces to program that ampligy feelings of safety, reduce institutional atmosphere, and increase quality of life for inmates	Interfaith center, library, classrooms, quiet/non-violent room, and courtyards	
Security	Security Cameras	All rooms and areas accounted for	100% of sq. ft. accounted for in security cameras, except for bathrooms and sleeping quarters	
	Automatic Locks	Automatic locks included in podular layout and on specific secondary spaces aligned to days activity	All single person sleeping quarters as well as pods entrances	
	Minimize Blind Spots	Reduce blind spots wherever possible to allow for safety	Mirrors used at any 90 degree angle if rounded corners cannot be used	
Biophilia	Indoor	Include biophilic aspects in all common spaces except bathrooms	40% of common spaces have some type of foliage, real or fake	
	Outdoor	Include low-lying foliage in all courtyards	Low-lying shrubs or grasses cover 10% of ground in all courtyards	**
Natural Lighting	Location	Incluce access to natural light in all locations except bathrooms	80% of indoor rooms have access to natural light including 100% of sleeping quarters and common rooms in pods	WELL v2 - Natural Light
	Window Design	Single person sleeping quarters have window that measures at least 3'x5' - all other areas specified in next column	>30% of regularly occupied seating is within 15 ft horizontal distance of envelope glazing in each floor or in each single-person sleeping quarter.	WELL v2 - Natural Light
Artificial Lighting	Lux	-	maintain a minimum of 200-300 lux during daylit hours	
	Color Temperature	-	Lighting that measures 3000-5000 K in all spaces	
Color	Murals	Murals should be placed on walls to increase curiosity, feelings of peace and safety, and reduce heart rate and physical manifestations of stress	**Educational**: academic concepts **Nature**: scenes from nature or the outdoors of different places or climates. **Colorful**: Abstract or collage-like murals	
	Type of Space	Choose type of mural by type of space	**Educational**: library, classroom, and some gathering spaces like the chow hall or community rooms **Nature**: visitors center **Colorful**: transitional spaces like corridors and outside pathways	
Furniture	Type	Whenever possible, furniture should be moveable to allow for feelkings of trust and adaptability	60% of furniture, not including beds, are movable	
	Material	Whenever possible, furniture should use soft but durable fabrics to decrease insitutional atmosphere and improve quality of life for inmates	All beds should be made of soft but rip-resistant fabric	

FIGURE 20: SUMMARY TABLE

ANALYSIS

While all these factors are necessary for a prison that is trauma informed, there are factors stated that should be present in all current prisons that are not. Noise remediation is a remarkable problem in prisons, it causes stress at every turn for inmates and staff. The lack of security measures for inmates' safety is also astounding, there are prisons all over the country that do not have security cameras set up in every location. While every factor listed in this thesis is helpful for inmates to begin successful rehabilitation, it is condemnable that any prison in the United States refrains from spending money to ensure basic security measures like security cameras are not put in place for inmate and staff safety and accountability.

This prison touches on many different areas of design, and they have all been chosen because they can support a common goal: redesign current prisons with better intentions. Before a designer or developer or even a state government decides to build a new prison, renovating a prison that already houses inmates should be first and top priority. In general, the goal should be to reduce prisons in the United States, and this paper condemns the design and construction of any new building meant to serve as a prison or jail before first addressing issues of policy and budget.

"Isn't there a risk to implementing these designs?" What risks do these design factors pose should they be implemented? First, it is important to state that all design has risk factors. Although they can be exacerbated in places like a prison, it is important to take a step back and understand the benefits far outweigh the risks. Secondly, Robert Veeder was asked in a follow up conversation what he thinks about the idea of risk factors that come along with these design factors.

"I'm always torn about it. Because the prison system uses THAT particular question at every point. That's why they took down the foam sound dampeners, because they somehow decided that people could use those to hide razor blades in. So, 'of course [there are risk factors]' would be the obvious answer. People would definitely use plants as yet ANOTHER place to hide weapons. That probably says more about the culture of prison itself that it does about the risk factor of having indoor plants. And it seems that the solution to this would be to change the culture of prison and the way to do THAT would be to have indoor plants! So, maybe there's some risk in that, in offering trust. But there's DEFINITELY risk in not changing anything at all." – Robert Veeder, text conversation October 30th, 2023

This idea of prison reform is no longer avoidable. Now there is only the opportunity to decide what it means to creation a prison that serves both the people inside, and the general population. No one will be worse-off if inmates receive care. However, if they don't, it could affect any number of people in a negative way.

All of these factors are the bare minimum requirements. Several factors were not included from the list of design factors because they were not solely architectural. Ideas such as MEP design, Exterior Facades, accessibility, and bathroom and visitors center design were excluded from this and should be considered as well when any future design of prisons is necessary.

Lastly, the Design Factor Correlation Matrix shown in Figure 20 is a diagram that perfectly shows the ways in which these design factors affect each other. The dark purple shows a large correlation, the pink shows a medium correlation, and the dotted lines show a small correlation, respectively. The biggest correlations are within program, and the least are within color.
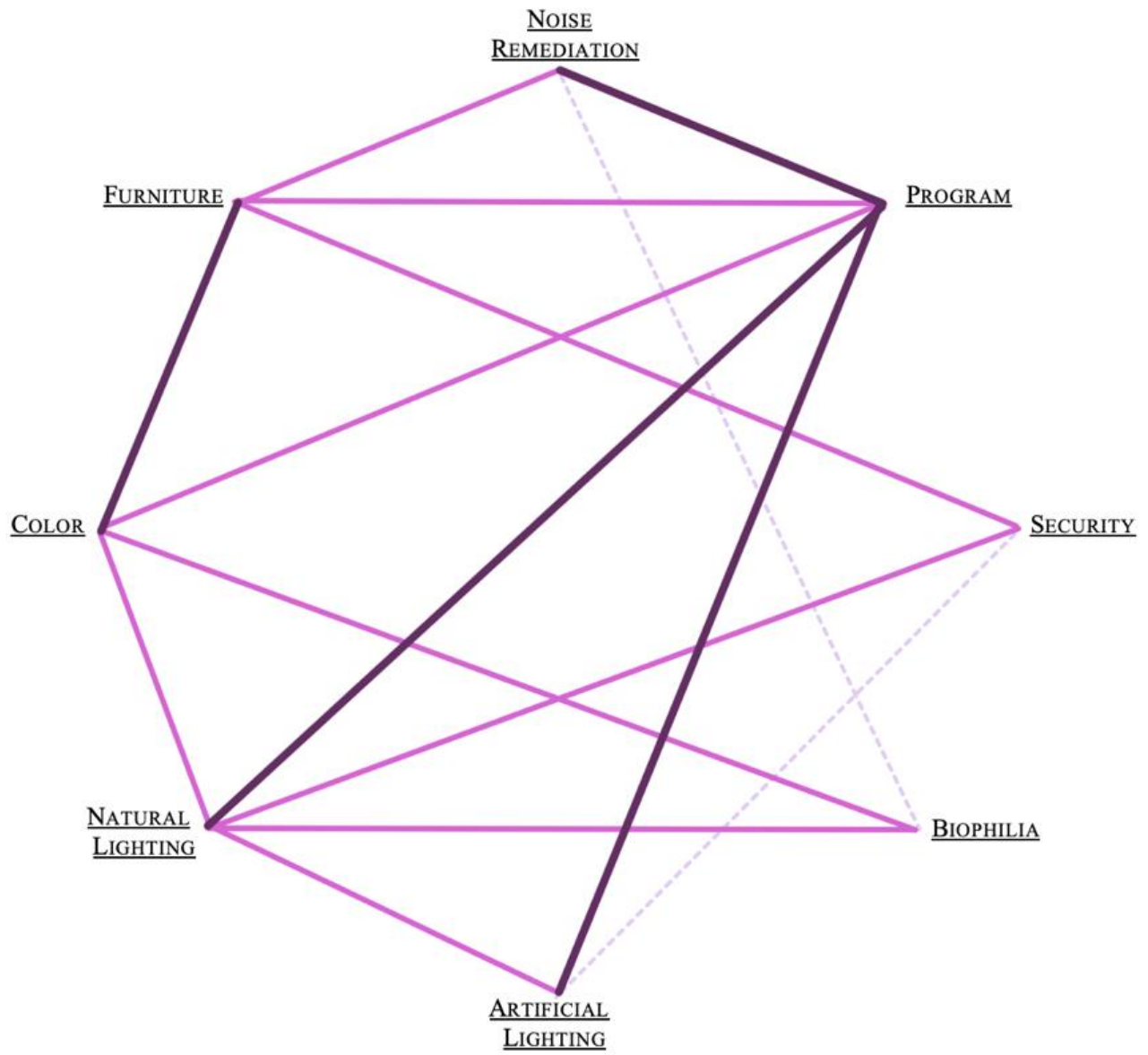
FIGURE 21: DESIGN FACTOR CORRELATION MATRIX

CONCLUSION

FURTHER RESEARCH

The next step beyond this thesis is to move forward with a PhD that delves deeper into the research of the effects of trauma Informed design within prisons. This can happen in two ways. The first is research involving questionnaires and interviews with current inmates that live in both United States Prisons, and Trauma Informed Prisons. The second is by implementing these ideas into a current Untied States Prison, and interviewing inmates both before and 10 years after it has been done.

PRISON REFORM

None of this will be possible if we do not first address the idea of Prison Reform. Both budget and law need to be addressed. This topic is perhaps the most important within prison architecture, but the concept of prisons as a whole requires many more changes before one can hope to instill change at this architectural level. Looking to countries like Denmark, Norway, and the Netherlands is a great start to understand what prison reform looks like if it appeals to the humanity of inmates.

EDUCATION

Before prison reform can happen, the general population needs to be educated on the risks that are posed to society if this topic is not addressed. Police reform is brought by lawmakers. The public votes for lawmakers. Therefore, it is important to first address the taboo topic of treating prisoners with humanity, and the risks we pose if we do not.

The need for a change in the way we design prisons is long overdue. We cannot hope to create a world that is more peaceful if we rob the humanity from the very people in need of peace

the most. This idea of trauma-informed design is born out of an understanding that the people in prisons require humanity as much, if not more, than the rest of that. Giving them back whatever agency is possible and instilling an environment that actively lets them heal while they serve time for their crimes is the best way to show society that change and betterment for us is possible.

APPENDIX 1: DEFINITIONS

AMI - Any Mental Illness: any mental, behavioral, or emotional disorder in the past year of sufficient duration to meet DSM-IV criteria (excluding developmental disorders and SUDs).

Correctional Culture: the values, beliefs, and norms of a correctional institution or system

Correctional Officers (CO(s)): Correctional officers guard people in penal institutions and guard those in transit between jail, courtroom, prison, or other point

DSM-IV: Diagnostic and Statistical Manual of Mental Disorders (Al-Rousan, 2017)

ICD-9: International Classification of Diseases, 9th Revision (Al-Rousan, 2017)

Prison: an institution (such as one under state jurisdiction) for confinement of persons convicted of serious crimes

Jail: such a place under the jurisdiction of a local government (such as a county) for the confinement of persons awaiting trial or those convicted of minor crimes

Serious Mental Illness (SMI): any mental, behavioral, or emotional disorder that substantially interfered with or limited one or more major life activities.

Sound Transmission Class (STC): an integer rating of how well a building partition attenuates airborne sound.

Substance Use Disorder (SUD): the recurrent use of alcohol and/or drugs causes clinically significant impairment, including health problems, disability, and failure to meet major responsibilities at work, school, or home.

Trauma Informed Care: A program, organization, or system that is trauma- informed realizes the widespread impact of trauma and understands potential paths for recovery; recognizes the signs and symptoms in clients, families, staff, and others involved with the system; and responds by fully integrating knowledge about trauma into policies, procedures, practices, and seeks to actively resist retraumatization.

Trauma Informed Design (TiD): Realizing how the physical environment affects an individual s

sense of identity, worth, dignity, and empowerment; recognizing that the physical environment

has an impact on attitude, mood, and behavior and that there is a strong link between our

physiological state, our emotional state, and the physical environment; and responding by

designing and maintaining supportive and healing environments for trauma-experienced

residents or clients to resist re-traumatization.

APPENDIX 2: LIST OF FIGURES

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