

EXPLORING the
MIND of

design

written by MORGAN FREDRICKSON

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MORGAN FREDRICKSON

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INVESTIGATING HUMANITY

THESIS SUBMITAL

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Primary Thesis Advisor

Thesis Committee Chair



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This thesis is in response to the immense challenges facing the prison system in the United States. An unprecedented number of incarcerated individuals has led to a deterioration of the prison system. The psychological atmosphere is increasingly violent, inhibiting the rehabilitation of inmates, failing at the basic function of a 'correctional' facility.

Delving into the psychology behind the problem encourages a different approach than the traditional 'caged' punishment found in the United States. A new program called SHOCK incarceration is designed to address the psychological issues with incarceration. However, there has been little to no consideration of design for this approach. This thesis extracts the key elements of the SHOCK program and creates a 600,000 square foot facility to strengthen its program. Located in Waite Park Minnesota

keywords

prison system, incarcerated, rehabilitation, psychology, discovery, design, improve, recidivism, SHOCK

ABSTRACT

What psychological effects can architectural design generate for the incarcerated, especially promoting their rehabilitation?

PROBLEM STATEMENT

state the claim

The act of thoughtful designing results in desired, positive psychological effects in the inmates as well as the staff.

premises

Actor: Design and psychological considerations will be mechanisms to improve the lives of inmates.

Action: These considerations should include lowered levels of violence, heightened security and higher rates of successful rehabilitation.

Who is acted upon: The inmates and staff.

unifying idea

A thoughtful design can greatly benefit the incarcerated by lowering psychological stress and violence as well as increasing safety. This will, in turn, lower recidivism rates and increase safety for inmates and staff.

project justification

There is immense overcrowding in prisons across the United States resulting in general failure in what the prison system strives for. There may be a design solution that creates in an overall more rehabilitating environment, generating safer communities; saving time, money and heartache in the future.

The United States Prison System is over crowded. Facilities have been beyond capacity for decades now and the problem is only increasing. Since 'the war on drugs' in the 60s and 70s the number of incarcerated individuals has sky rocketed. Counting only those behind bars right now the number is 2.4 million. Add in those who are on parole and it is nearing the 8 million mark, which rivals the number of people in the United States pursuing a college degree.

This has created a terribly expensive social problem. Most of the arrests, roughly 1.8 million in 2010, are for drug related charges. With drugs comes money, which brings violence. The amount of drugs on the street will continue to grow because when one drug dealer disappears, another is ready to start up and take his place so the problem is not going away.

Housing this endless line of drug offenders is an immense financial burden. It is common for a facility's per-bed construction cost to be more than \$40,000. With economic times as they are, this hardly seems a productive use of such incredible funds.

With no change in legislation in site this has pushed for alternative approaches to solving this national crisis. Three major goals play a part in forming this solution. First, is to cut down on costs. Primarily prisons provide little more than the basic needs, especially as budgets get tighter, but there has been studies proving the benefits to inmates of having such programs as drug and alcohol counseling available. These amenities increase costs, but may help lower recidivism, which brings us to the second point.

Over half of all convicts will be arrested at least a second time. Of the 67% arrested, 51% will serve jail time again.* If these second or even third or fourth offenses never occurred a huge burden would be lifted from the prison system, freeing up more beds, increasing available funds for needed programs, and providing an overall less hostile environment for the staff.

Another avenue to lowering overcrowding is to reduce the length of a sentence. Even non-violent, small volume drug possession charges can get a several year sentence. The system is not design to hold the number of criminals the law brings in.

There has been many searches to solve these problems, usually individually, but one approach attempts to achieve them all simultaneously. The program is called Shock Incarceration.

NARRATIVE

* Drug Reform Coordination Network
<http://stopthedrugwar.org/chronicle-old/409/toohigh.shtml>

Shock tries to accomplish these goals by taking a selected group of volunteer inmates through a 'boot camp' version of prison. It is high intensity and about a third do not make it through the program but in turn the inmates are offered a much shorter sentence, thus helping free up beds and lowering costs. The inmates are also shown a great deal more attention, counseling and directing. Almost their entire day is regimented, leaving no time for free thought. They are worn down so they can be built up again, reformed. This approach is to address recidivism levels and attempt to curb them, also freeing up space and lowering costs. There has been mixed results in their effectiveness, but there is also very little regulation or consistency in their program or facility design. There are many facets to this program, most of which are masked by stereotypes of violence and darkness, but in these facets are the details and intricacies I wish to bring emphasis. There is much to be gained by simply paying attention and designing accordingly.

The combination of economic, political, psychological, environmental, functional and aesthetic components call for innovation. *The perfect place for a thesis to begin...*

A thesis is inherently a complex compilation of information, gathered, analyzed, and with conclusions drawn from it, is thrown back out into the world for others to collect, analyze and regurgitate. The biggest hopes are that the process presents a challenge, knowledge is gained in this pursuit and it provides a use to others down the road. This last part is key, and can be approached in three different avenues: the academic, the professional and the personal.

The academic realm seeks out information so as to scrutinize it, hopefully learn from it, and then look for the next thing to scrutinize and learn from. This all happens with the protection that of the intellectual umbrella, meaning, since the scrutinizing and analysis are conducted under academic pretenses it is acceptable if they lack in real world applicability. The hopes are simply that something, almost anything, be gained from such endeavors. With this thesis the goals are no grander. The aspiration is that this exhaustive exercise drastically improves my critical thinking skills, so going forward I can better scrutinize and analyze the work done by others, and in turn, my own. In addition, this is a wonderful opportunity to work on organization. Simply conducting in-depth research is quite a task in itself. Although skills learned are taken with a grain of 'academic world' salt there are undoubtedly real world applications of all of them, which leads to the professional realm.

Professionally speaking I anticipate the skills learned and honed through this thesis project will help me immensely to become a successful, effectively communicating professional. Any of the afore mentioned skills can be easily translated into common professional scenarios. In terms of this project holding professional merit, I have no high expectations. I do not expect this will lead to some revolution in prison design or psychology. But I do anticipate a better understanding and appreciation for projects of this nature.

On a personal level, psychology has proven to be a deep interest of mine. Since my high school psychology class I have been hooked, trying to buy my book after the school year was up. It fascinates me like few other things I have studied ever have. For example, the first week after my roommate and I got internet access in our apartment I rarely went to sleep before 4 am because I would stay up entranced by one psychological or social documentary after another. This project is for me and my passion for understanding something that fascinates me. If in the end, I had as much fun researching for my thesis as during the actual designing, I would not even be surprised. That just goes to say how much I enjoy this.

GOALS

The decision to start a new correctional facility is normally initiated by an existing prison administration, although the designing and building process is mostly handled by state or federal public works.*

Owned and operated often by local, state or federal institutions they are designed primarily for the detention and rehabilitation of the incarcerated. Correctional facilities are filled with a wide array of users, with vastly different needs. Inmates are there for detention and rehabilitation. Due to the violent atmosphere personal safety is also a concern, especially for the staff of the facility. Guards are at the most risk but inmates generate an enormous amount of violence and are periodically victims of murder or suicide.

The inmates vastly outnumber the staff on hand. They inherently become a dominant force on the facility. Also, their entire life must be contained within the facility. This requires a large majority of the program to be dedicated to the needs of the inmates. Those needs include basic food, shelter and health/hygiene facilities as well as exercise and social spaces. Prominent in all of this is the feeling of the guards' dominance. Without this, there would be a loss of control, and in the end, that is all a prison has.

The other side of the coin are the staff and visitors. They should not feel their freedom inhibited but should feel security. Visitors will only utilize a small portion of the facility but the staff have access to every space. Their needs are limited as they spend most of their time in the same spaces as the inmates but they are responsible for the security of the entire complex and must be considered carefully.

Unlike most building types, a prison does not easily allow access to itself. It is meant to be formidable and relatively inaccessible. The feeling inside is complex and can change without warning. Prisoners are often on edge and prone to psychological issues, some of which are severe, which could endanger themselves and others. The guards must try to keep this under control, make it rehabilitative, and keep themselves safe. Such a dichotomy between the guards and inmates, free and imprisoned, creates a lot of tension which will have to be addressed in the design. Consideration will include access to outside, daylighting, views and spatial arrangements.

* E. Vetere, *Prison Architecture* (The Architectural Press, London 1975), pg. 69

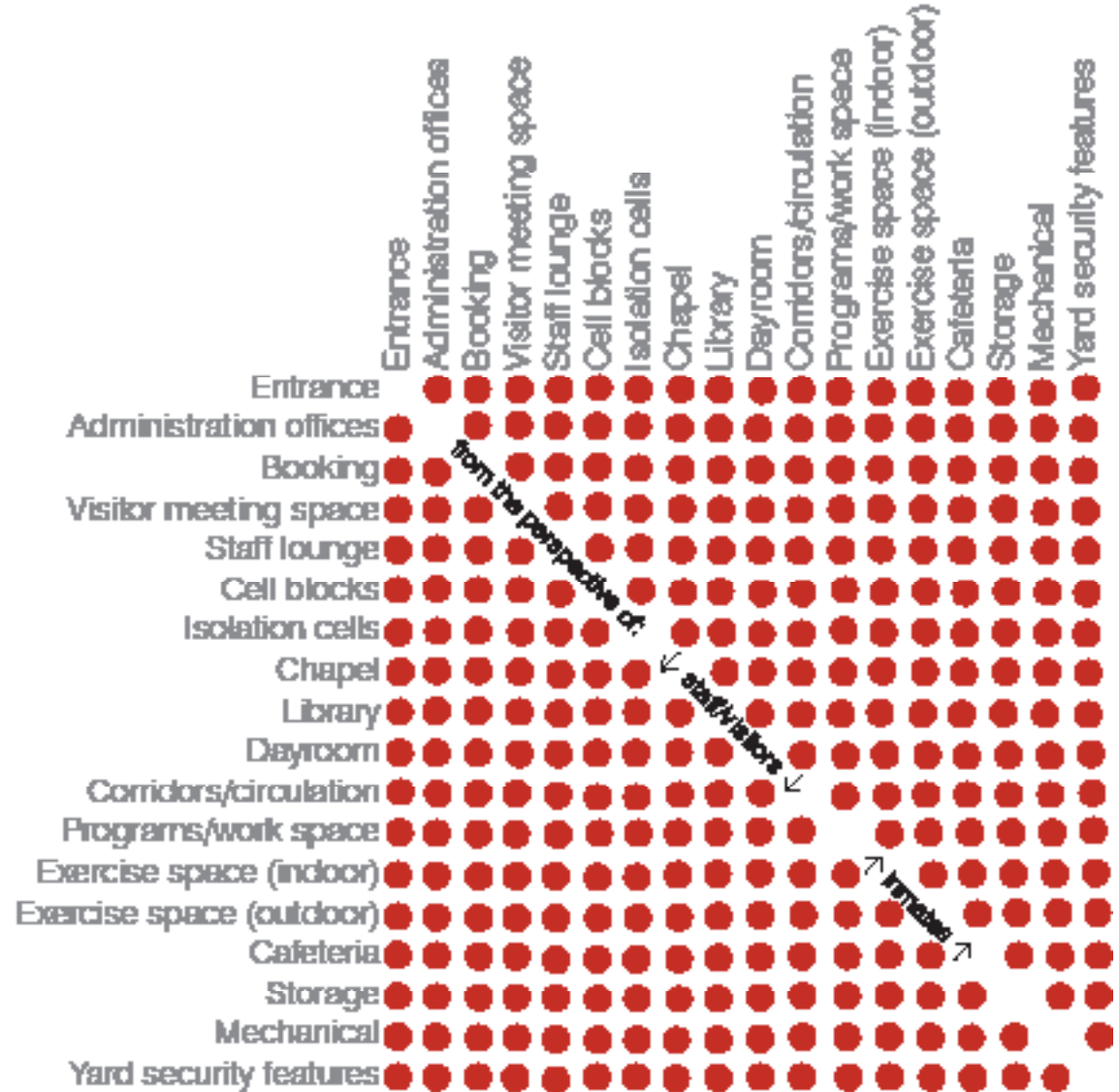
USER/CLIENT DESCRIPTION

Administration offices	1200 sq.ft.
Booking	500-800 sq.ft.
Visitor meeting space	500 sq.ft.
Staff lounge	300-600 sq.ft.
Cell blocks	3000 sq.ft.
Isolation cells	100 sq.ft.
Chapel	600 sq.ft.
Library	1200 sq.ft.
Classrooms	(2) @ 800 sq.ft.
Dayroom	(2) @ 500 sq.ft.
Clinic	500 sq.ft.
Corridors/circulation	20% of total
Work space	1600 sq.ft.
Exercise space (indoor)	2000 sq.ft.
Exercise space (outdoor)	4000 sq.ft.
Cafeteria	3600 sq.ft.
Storage	15% of total
Mechanical	10% of total

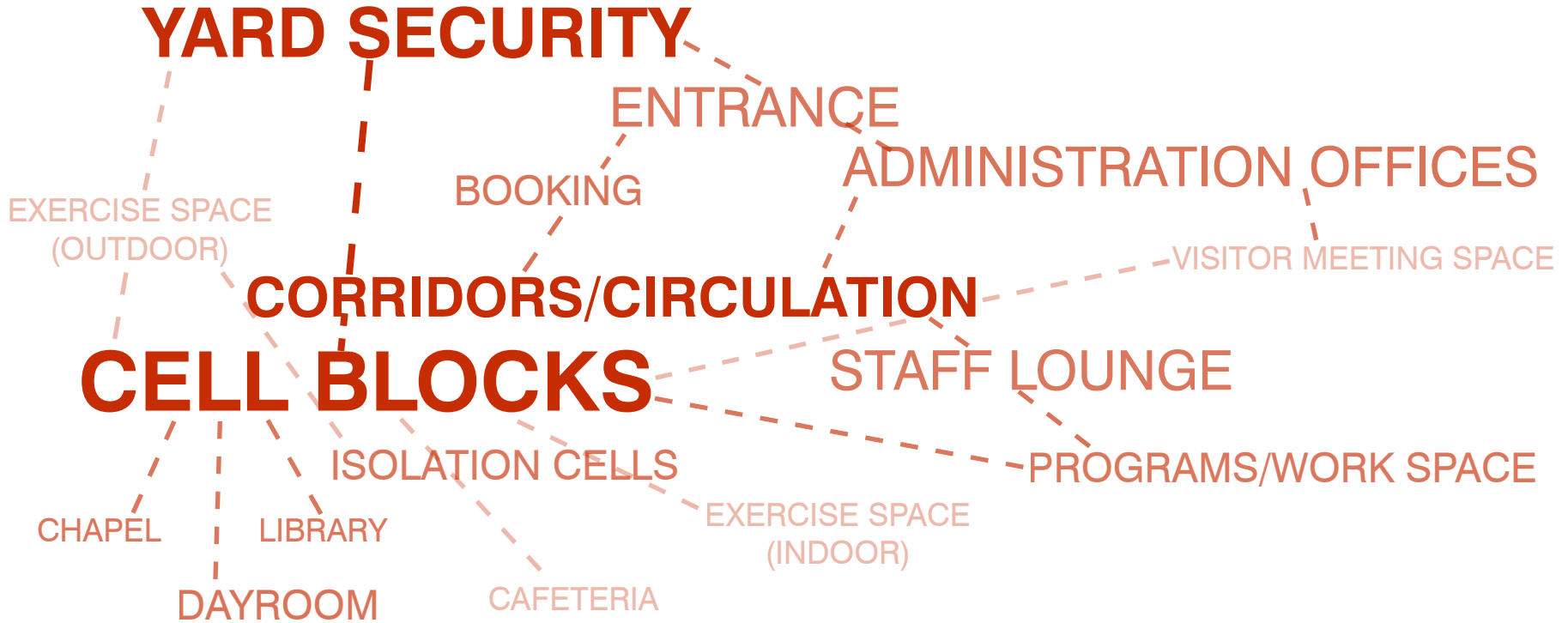
MAJOR DESIGN ELEMENTS

This graphic illustrates the relationships of certain spaces to one another from both the view point of a staff or visitor, as well as the inmate for easy comparisons.

The graphic on the second page shows relationships in terms of their types of connection ranging from critical and formal to casual and informal.



INTERACTIONS



The concept of prison and punishment has been around for thousands of years. It has evolved, in some regards, but remains brutal and primitive in others. In recent centuries these advances have been not only documented, but explored, and improvements were sought for the first time. Medieval times thought the crimes were to be punished out of you, often with torture and equally tormenting solitude. These practices always produced a changed man, assuming he lived, but never a rehabilitated man. This was the goal of later generations. First credit went to the Quakers and the 'Pennsylvania' system. The idea of a penitentiary was derived from the concept of giving penitence and solitary reflection on one's crime. The inmates were held in complete solitude. This may have been useful to some extent but often resulted in serious mental conditions such as depression or eccentric behavior. This breakthrough showed a vast improvement over the torture and torment that other incarceration facilities at the time were implementing. People visited these penitentiaries and studied them. Noticing the large number of inmates that, although not physically harmed, were coming out seriously mentally damaged and that the buildings became a tremendous cost people continued to look for another improvement. From this came the Auburn style. Here inmates were still housed in solitude, often in long corridors, but were to remain in silence. Differing from the Pennsylvania style this approach called for the inmates to be allowed out of their cells to work.

HISTORICAL CONTEXT

Mostly they did hard labor, while in small groups, but this still meant the men could get out of their cages, see the men around them, and do some work which brought funding into the prison. They were still not allowed to talk, but even this little bit of humanity helped a great deal. Then the onset of complexes and campuses began. The systems were being altered only slightly. The largest change came in the buildings themselves. The plans became larger, and then it was a complex, then a fortress. The walls grew thicker and the walls higher. Several different arrangements were tried and made popular. First was the 'Telephone pole'. This is where all the needs of a single group of men, maybe a hundred or so, were grouped into a single straight building. Everything from dorms to cafeteria to medical facilities was in these massive structures. There could be numerous iterations of this building to accommodate however many men were to be housed there. They would be built in a row, and quite swiftly, because of the repetitious design, and then connected by a single, long corridor. This would give the guards vast control over the movement of the prisoners, with only one way in or out of the complex. Even so, this was an inefficient design. Numerous areas could be used more efficiently communally such as cafeterias and exercise spaces.

Realizations like this led to the development of the radial style. As the name implies, the non communal functions radiate off of a central hub comprised of the essential communal spaces. This made for much more efficient use of facility amenities and is still a common starting point for some designs. This is not very efficient however, as it means there is a lot of unused space between each 'spoke' and a lot of wall material and construction that would not be necessary if these functions were brought closer together. Also, there was less supervision.

Having a single point of supervision for the complex was a strong idea, but not as great in practice, particularly with larger buildings. This led to the chain style. 'Boxes' of different functions would be formed with an open central area, like a square ring. Cells and corridors around the outside, often multiple stories tall, would have an open atrium in the center to allow for light, supervision, and a group of essential, communal spaces to be easily accessible to the prisoners. Then a series of these boxes would be built consecutively, sharing a wall, thus minimizing building costs and maximizing space efficiency. These could also be self enclosed facilities, removing the need for an exterior wall.

[cont.]

Following World War II the outlook on the penal system began to change. It seems the optimism of the early reformers began to wear thin and as more and more studies were done to test the validity of the systems, more bad news kept making its way back. It seemed that even with all of the 'improvements' in design and program done over the previous hundred years that overall the system was still terribly hit-and-miss for its ability to actually help inmates. There was more rigorous testing to follow and the explanation was found to be in the secret second society built by the prisoners themselves. This second society could easily undermine the progress of any inmate's rehabilitation efforts. This spawned a new approach to reform that included an encouraged social regimen, education and training. For the first time since the Quakers the architect and planners were taking a serious look at the inmate as the basis of their design. They intended to realize the importance of the second society and use it to the benefit of the inmate and program with the help of design.

From this realization there have been many advances into the area of prison design and prisoner rehabilitation but none could have managed what happened in the 60s.

With the popular 'War on Drugs' in full swing, the late 60s and early 70s brought the largest uptick in arrests and convictions America had ever seen. The prison population was doubling in a matter of years. The new anti drug laws were bringing anyone and everyone involved with drugs, and punishing them strictly. This dramatic increase never stopped. As the legislation tried to adjust and reign in this anti-drug war-horse the problem became bigger and started trickling into every aspect of our culture. The effects of this are now incalculable. The number of people currently incarcerated has never been higher, now sitting around 2.4 million. It ranged in the low 100,000 before 1960. The prison system could never keep up, let alone catch up to this flood of new inmates. There have been many attempts to fix the problems but none have stuck. The facilities need more money, and are overall, relatively ineffective. There is a need for a better program, which produces citizens, not ex-cons. This system needs to cost less and be quick about it. The solution currently being tried, with great potential and some proven results is Shock Incarceration, the basis of this project's design. Read the Research and Analysis section starting on page 20 for current information on this program.

[cont.]

The site has had an interesting history closely tied to that of the entire St. Cloud, MN area and that is in granite. Granite quarries have been active in central Minnesota for over a century. The land was originally owned by Cold Spring Granite Company (CSGC), which is still in operation today, shipping and processing granite for all around the world. While owned by CSGC two small quarries and several gravel/scrap piles were created. These quarries are still available to the site, and are no longer accessible to CSGC without an easement. They are now filled with water and have been overgrown but add a great deal of character to the site and touch to the rich history in granite this area has. This land was sold to a local farmer who farmed it for several years, and later sold an 8.5 acre piece of it to Alvin and Lillian Brick in 1982. They built a house and warehouse on the land, living there for 26 years. Alvin began A. D. Brick design out of his home and warehouse where he designed engravings for granite monuments. He had worked with CSGC for many years before continuing his own legacy with granite.

SITE HISTORICAL CONTEXT

The unifying idea revolves around two key areas, architecture and psychology, but each of those can again be broken down into numerous subgroups. Many of them overlap into a complex web. My research looks into these subgroups in hopes of best understanding the connections and disconnections between them. Areas immersed that one may not have considered so key to a correctional facility. Areas such as economics and politics and sociology have proven extremely insightful. Although research may never be fully finished this is the preliminary findings in some of the key areas as well as what it will mean for the design. First, a look into the areas of psychology and what that means for the project.

It was stated in the unifying idea and premises that the role of psychology will be critical in determining the effectiveness of the architectural design. The psychological effects generated by the design will help or hinder the overall success of the project for the inmates and staff. Psychology itself can be broken down into almost innumerable categories but I will be focusing on several which are more pertinent to prison design and the incarcerated.

Specifically, I have begun to look into criminal psychology, which somewhat explores reasoning behind what drives people to crime. This area will greatly impact the understanding behind what brought these inmates here, and what can help to keep them from returning.

RESEARCH & ANALYSIS

Criminal psychology is not a new field but is still relatively speculative. There is much room for interpretation especially when it comes to rehabilitation strategies. The truth is there is no one-size-fits all solution when it comes to incarceration experience or rehabilitation. This means the design will have to be somewhat flexible, or be rigid but at least accommodate the differences in needs for the variety of inmates. A lot of this variation in prisoner needs can be accounted for through the guards, their demeanor, and the form of the rehabilitation programs offered, but there is inarguably an element of the built environment that plays a huge role in this rehabilitation as well.

Developmental psychology is another crucial field involving prison design. The lives of those inside prison is of obvious interest, but also consideration of those who were left on the outside, wives, husbands, children, etc. 75% of incarcerated women are mothers.* It has been proven that there is a serious lapse in childhood development if these children are separated from their mother for long periods of time at early ages. This has been the main consideration for several more recent prisons, in particular the KIND mother/child facility which allows mothers of young children to be 'incarcerated' with their mothers. (See case study on pages 33-37) This has proven very effective at eliminating the

lapse in development traditional incarceration leads to. And further consideration for those who have loved ones inside prison may help families better recover and keep those incarcerated more focused to rebuild their lives once they are released. Special considerations within the design for the psychological impact on the visiting loved ones will be an important factor going forward.

Developmental considerations also apply to young offenders who are now incarcerated. Their needs, coping skills, mental maturity, etc, are vastly different than their older, prison counterparts. There is more at stake when a youth is behind bars. Their re-entry into society and long life ahead of them depends on their ability to turn their life around after incarceration, and the largest factor affecting that is the environment surrounding them.

A final area of crucial psychological considerations is addiction, as almost all offenders have either a drug or alcohol problem, or both.** There will be programs available to help the inmates get over their dependencies but it will always be a part of them. The meeting spaces for these programs should be a design consideration.

* Gennaro, Giuseppe Di. Prison Architecture. An International Survey of Representative Closed Institutions and Analysis of Current Trends in Prison Design

** Drug Reform Coordination Network
<http://stopthedrugwar.org/chronicle-old/409/toohigh.shtml>

[cont.]

Another major factor with prison development but which is often overlooked is the area of economics and politics. The choices made within these two fields can make all the difference for the lives of those in prison and their families. These are the areas that determine the funding for the prison, the type of facility it is and the critical programs offered. It is easy to understand, the public often does not believe in spending a lot of money on helping those behind bars. More often than not the view is 'the inmate got him/herself there, they deserve whatever consequences that brings.' The fact of the matter is prisons are expensive to build and maintain, with current laws and social and cultural structures the problem is only going to increase.

The prison population is expected to grow at a rate three times faster than the general population over the next ten years. The current system is already overcrowded and needs revamping. Construction cost of new facilities averaged \$53,000 per bed in 2010*. If the funding is not provided there are issues of understaffing of guards, and overcrowding of inmates. Both of those factors lead to heightened violence and general stress on both inmates and guards. This is terribly unhealthy and not conducive to rehabilitation. This is generally out of the hands of the architect.

The best the designer can do to counter these factors is to design efficiently. Limit design features to what is critical, use economical materials and methods, and be extra considerate of spacial use, energy efficiency and sustainable design to limit energy and renovation bills later. The initial budgeting cannot be determined by the architect. It is up to the community and its politics to determine that long before the architect gets involved. However, the architect plays a major role in the lasting success of the prison by designing an efficient and economically conscious building, one that can easily be funded and maintained by the contributing taxpaying community.

Prison typology has been evolving greatly over the past 30-40 years with a huge push due to the 'war on drugs' legislation passed in the 60's and 70's. Since then there has been extreme overcrowding with vast majority of these violations dealing with drugs. However, out of desperation comes innovation. The research put into prison design has grown dramatically, with some great breakthroughs, forever changing the face of prison design worldwide.

* Spens, Iona. Architecture of Incarceration

RESEARCH & ANALYSIS

From door details that heighten safety and visibility to basic campus planning that greatly increases the sense of freedom for the prisoners, improvements are saving lives. The lowering of the stress and violence increases the safety for the guards and other staff while maintaining a higher level of security. These innovations are being developed and implemented with success.

In recent decades a new approach to incarceration and rehabilitation has taken hold, one which has become the basis for this thesis. Designed after the military's boot-camp concept these facilities are meant to do three things: lower recidivism, shorten sentence time which lessens overcrowding and lastly, but perhaps most influential, save money. There is no set standard for these facilities or their programs but in general they follow a similar format which will be explained.

These facilities take select inmates that meet a series of criteria and offer them shorter sentences if they can finish this intense, paramilitary 'boot camp'. These offenders originally were limited to young, first time, non-violent offenders but this did little to help with the overcrowding population since these offenders faced short sentences anyway. There are facilities that still follow this similar standard but more and more are directing their facilities to older convicts, particularly those facing longer sentences, to free up some desperately needed bed space. Rarely are those convicted of violent crimes allowed to enter into these types of programs. For all but two programs nationwide (Oklahoma and Louisiana) it is limited to only non-violent offenders. In every case the convict needs to be recommended by a judge or prison staff, go through a series of screening processes and in the end, volunteer for the program. If they do not complete the program their time in it does not go towards their original sentence and they will serve out their original full sentence, in a regular prison.

[cont.]

After entering the program which can vary in length from 45 days to 18 months the convicts will endure a highly regimented life style with a schedule meant to leave them with no free time. The blend is always different from one program to another but the parts are often the same. Extensive physical labor, counseling and drug or alcohol addiction classes, basic and/or secondary adult education courses, and military exercises. The blend of tough discipline and counseling support is meant to break down the old mindsets, habits and preconceptions that brought each individual into crime and replace them with beneficial coping strategies, usable work skills and overall, a different outlook on life and society. Finding the right balance for each inmate is a challenge in itself and there is no doubt that the staff are what truly determine the success of the facility overall, which could account for the wide range of results when the success of these facilities and programs are tested.

Controversy follows wherever these programs are instated. Research proves that no one program works for every inmate. There has not even been a program with drastically lowered recidivism rates. The average difference between program graduates and general population is only 3-5% lower.* But this is not a sign of failure, for several reasons. Some programs, such as that in New York has shown consistent recidivism rates of 10-15% lower than the general population average.*

That is a statistic a lot more palatable to state officials. Also, of the graduates that do return to jail, vast majority are back on technical parole violations, not on new crime convictions. Even so, a 10% lower recidivism rate is nothing to get too excited about but there were three goals for the program to achieve.

The next was to shorten sentences and thus, overcrowding. There are 2.4 million Americans behind bars this year. With little money to build more prisons, little funding for the ones we have and no change in policy on the horizon something needed to be done. Programs similar to this one intend to shorten the length of time needed for each inmate to receive the same if not improved level of rehabilitation before being released. Shortened sentences mean less time behind bars and more beds free for the ceaseless parade of new inmates. The program does do that. Even if the level of recidivism is not drastically lower it is still taking select inmates through the system in a much shorter time frame. For some, it could mean as much as 10-20 more years of their lives spent outside of prison. Not showing an increase in recidivism, but shortening the time incarcerated saves money as well. Just how much money is saved depends greatly again on the type of program it is, duration, and special needs programs offered.

* Spens, Iona. Architecture of Incarceration

RESEARCH & ANALYSIS

All of these can increase the cost of stay, but still, on average, these programs come out ahead of a traditional system. An example taken of the New York SHOCK incarceration program in 1994: “DOCS estimates it saves approximately \$2 million in care and custody costs for every 100 Shock Incarceration graduates (about \$20,000 per inmate). For the first 8,842 graduates from Shock Incarceration as of September 30, 1993, New York DOCS estimates it saved \$176.2 million in care and custody costs. This savings takes into account costs associated with the 5,331 Shock Incarceration inmates who did not graduate.” It is safe to say that programs like these can more than meet the goal of saving money. Combined with a cost and energy efficient design these facilities could become a new face of incarceration across the nation, it just has not been attempted yet.

The Shock Incarceration program works on focus of three main goals: the first being the desire to lower recidivism rates. This is done by giving the inmates more grueling, rigorous, scheduled lives while incarcerated but also supplying them with more tools necessary to succeed once released such as special programs for drug and alcohol counseling, primary and secondary adult education programs and a more expensive parole program after graduation. The second is to shorten sentences giving motivation to the inmates to stay focused and make it through as well as freeing up much needed bed space in other facilities. This brings up the final goal which is to cut costs. If either of the first two goals are met, they will produce a very noticeable savings of funds over time. The cost per inmate daily may be higher, but the gains would be much greater overall. The typology has changed immensely from the original tombs of darkness and torture centuries ago; however, there are many aspects that will never change. The sense of compassion for those inside, sadness about their situation, stress and anger will always remain. Although a disheartening percentage of inmates will return at some point in their life, the designer must do what they can to set the scene for the inmates to have successful lives during and after their time here.

[cont.] with summary

RESEARCH & ANALYSIS -*CASE STUDIES*

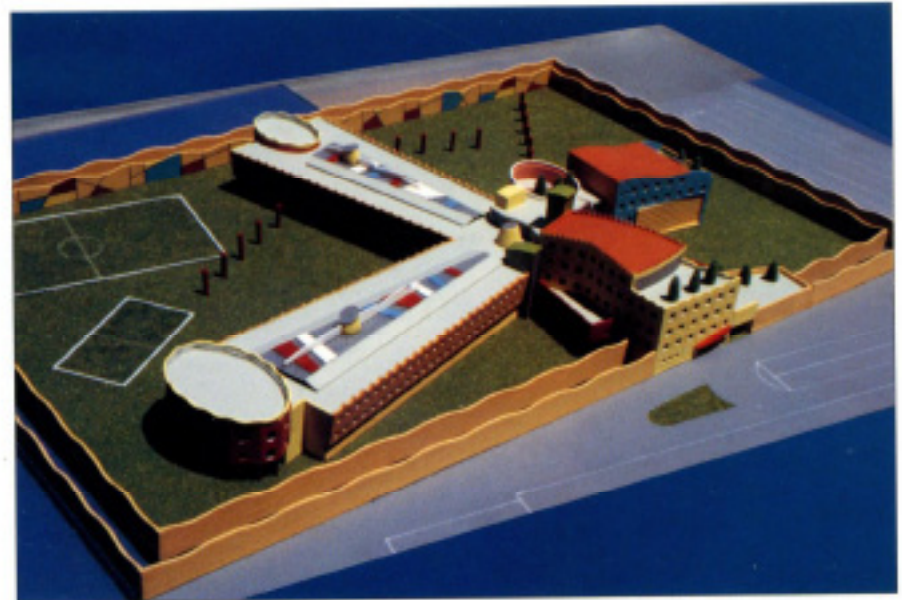
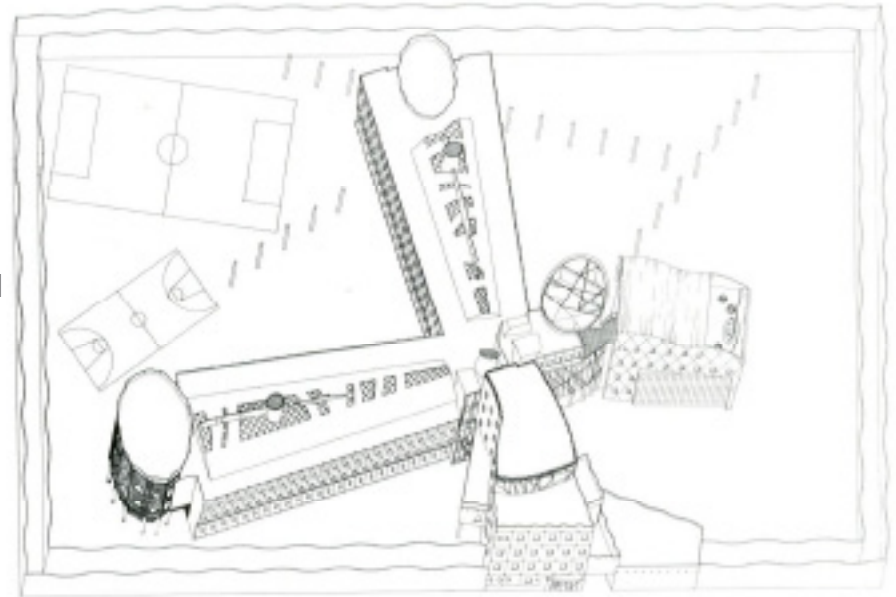
Pages 28-44 look at case studies of different approaches to prison design. There are explorations in different building layout, as well as programs and psychological approaches. However, there has been surprisingly little research or design consideration put towards the Shock program itself. Due to lack of funding most Shock facilities use existing buildings, and then loosely remodel them to their basic needs. This accounts for some of the large differences in results from one facility to another. There is no consideration or consistency of design goals. This thesis poses that with focused, design-guided attention these facilities and programs could become vastly more effective.

Dordrecht Prison, Netherlands

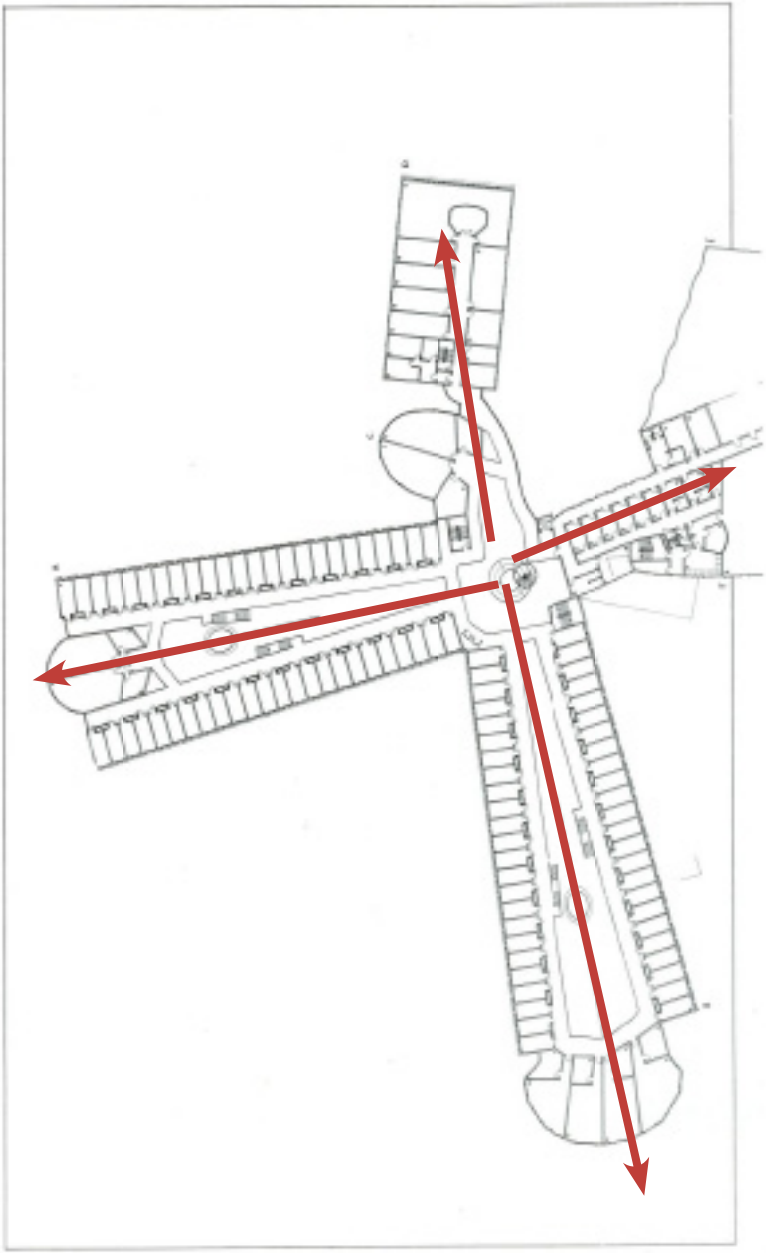
This design, although never built, shows some strong signs of prisoners' mental health acting as a design influence. Designed by Neutelings Riedijk Architects as part of a competition, they exaggerated the colors and forms of the design to showcase their psychologically sensitive design.

The essentials of the form itself was taken from prison designs of the past. A radial layout like theirs had been tried and proven effective numerous times over. With long corridors it allows maximum visibility of the prisoners to the guards, a window to the outside to all the cells, which was allowed in this facility, and overall, maximum control of the movement of the inmates. This project is noteworthy almost solely for the attention to color, generating the overall playfulness of the design.

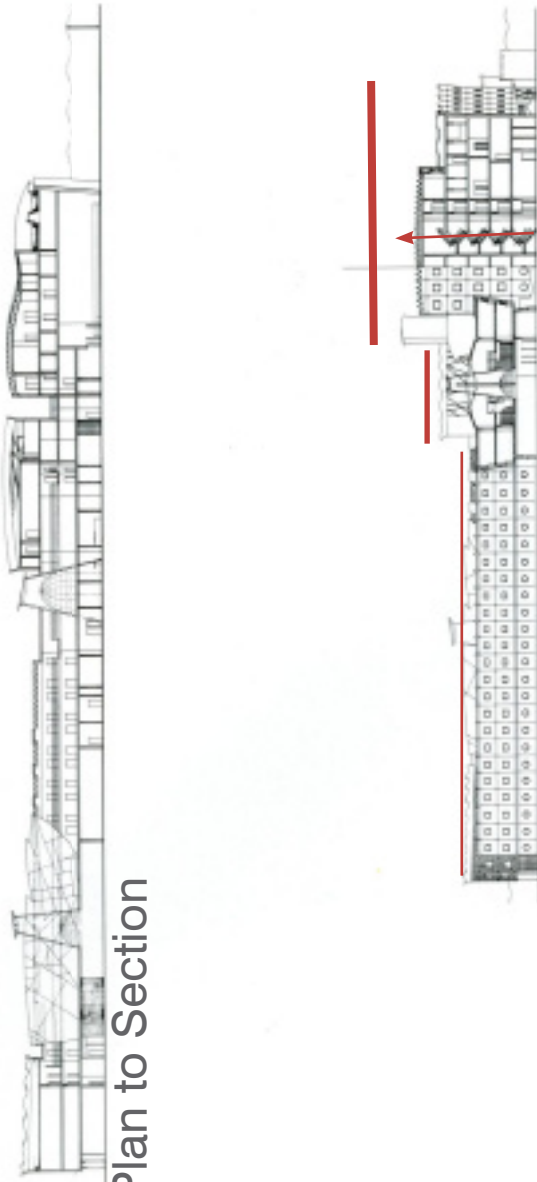
The use of color makes it seem almost childlike, as if it were a large, intense, childcare facility. This was what the designers were shooting for. They wanted something warm and welcoming, in the hopes that it would calm and secure the prisoners, making for an overall more secure facility. Clearly evident in the fun, undulating fence lines and bright use of primary colors on the geometric forms, the almost laughable, relaxed approach to such a stern typology makes this project stand out from all the others, and in a way, however exaggerated here, that could be drawn from in future designs.



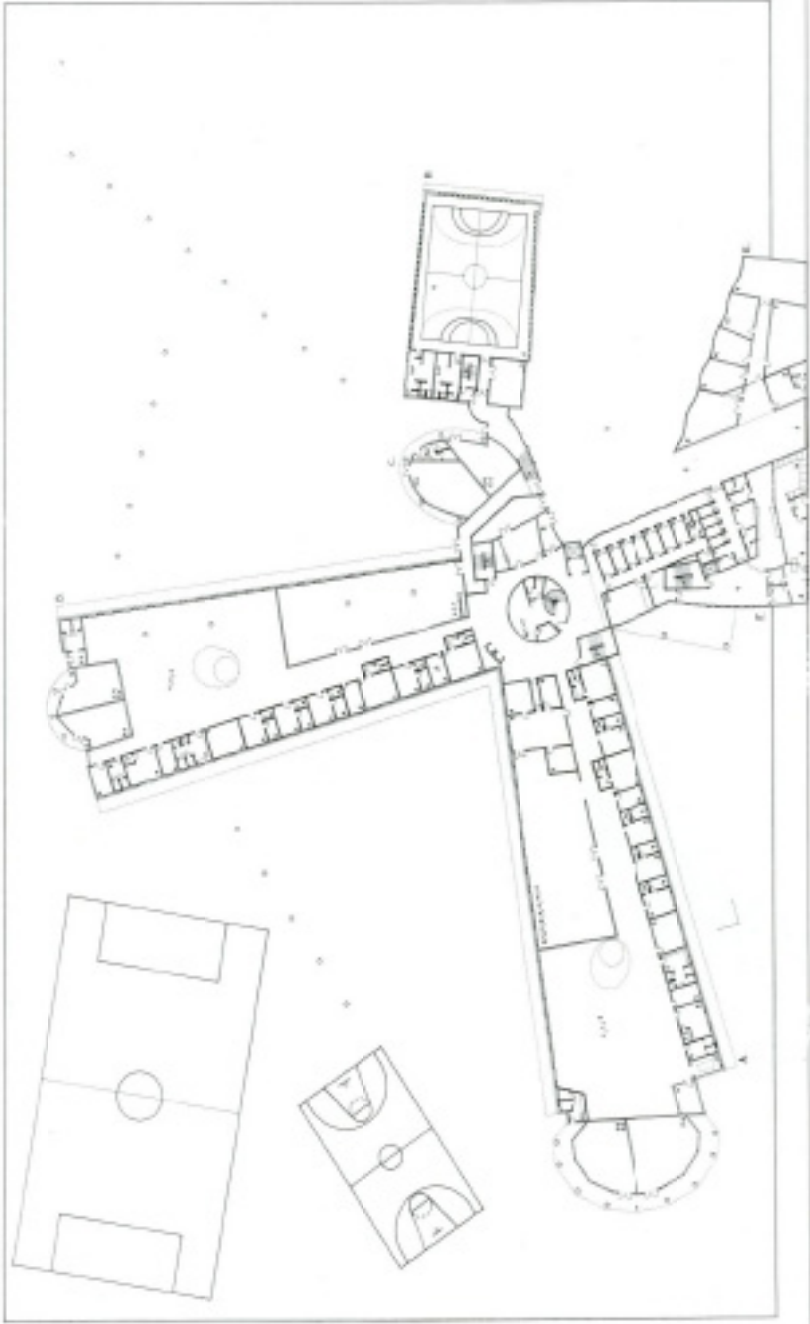
Radial Circulation



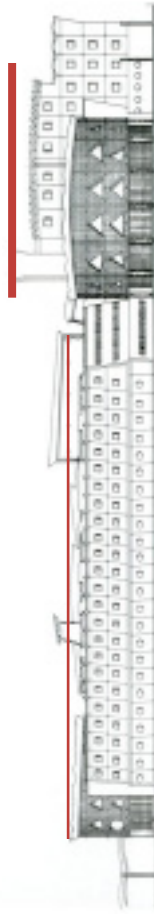
Plan to Section

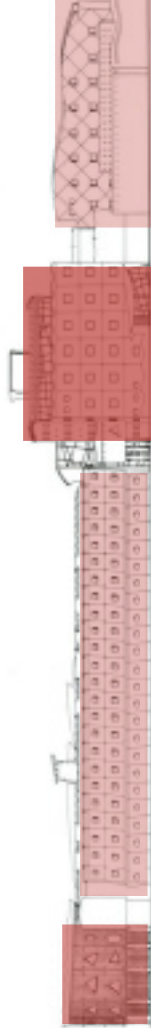


Hierarchy
Vertical Circulation



Plan to Elevation

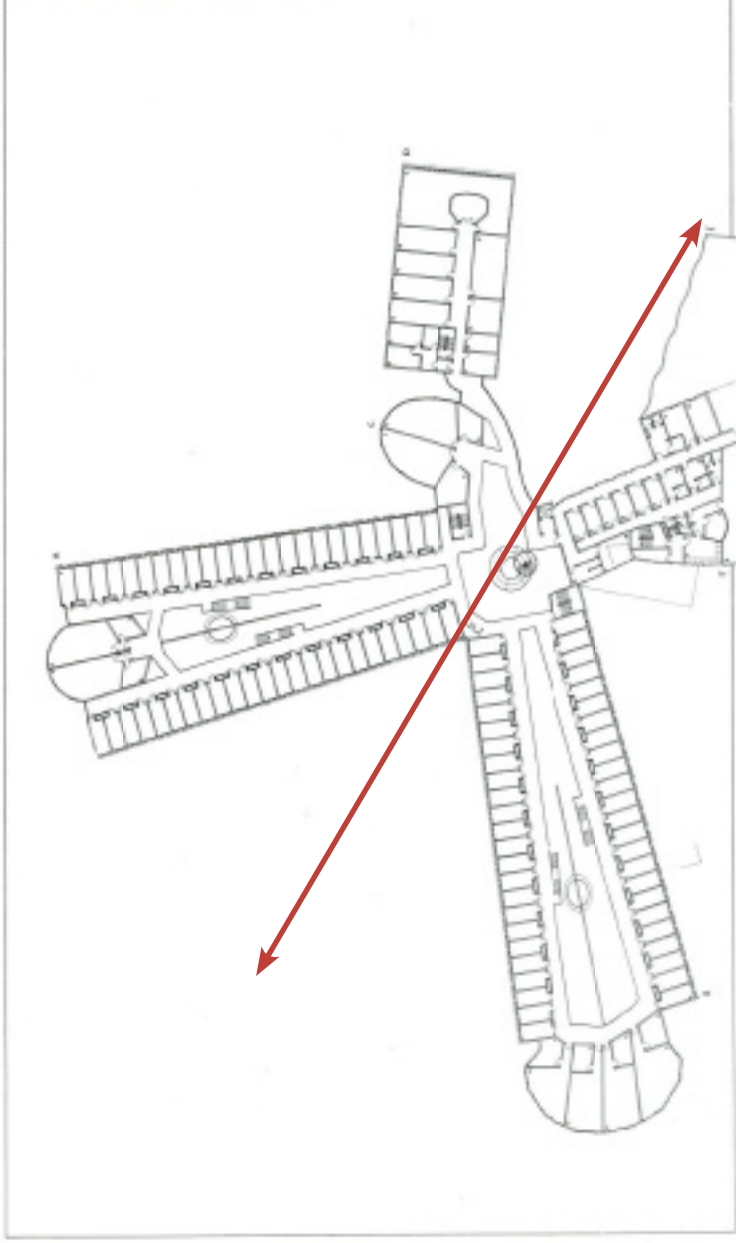




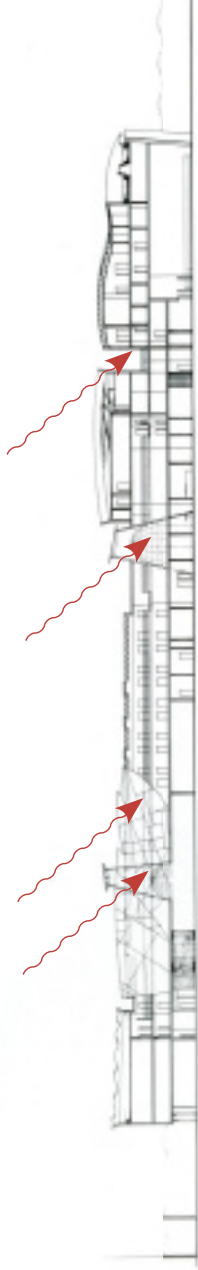
Massing



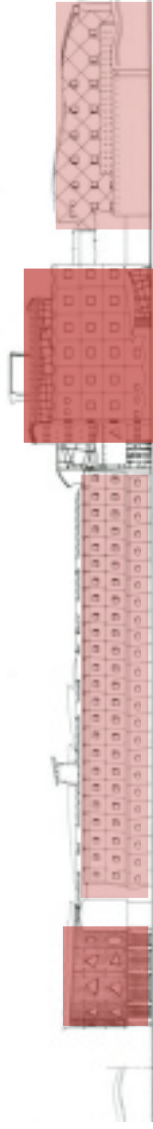
Structure



Symmetry



Natural Light



Additive and Subtractive

KIND

Mother & Child Facility

Germany

Vast majority of the women incarcerated are mothers as well. There have been countless studies that prove that early childhood development is severely hindered by separation from the mother. This women's prison institution attempts to address that problem, and has been quite successful about it.

Still very rare around the world, including the United States, facilities like this one are separate wings of a larger prison facility and house selected mothers and their children until the child reaches three years of age. If the mother has a drug habit or receives a life sentence the child will immediately be placed into foster care. This whole concept was put in place with the psychological development of the child and the restless conscience of the mother in mind, and this shows through in the architecture as well.

Bathed in light and soft, warm colors this unique design creates a daycare center atmosphere while maintaining the full security measures of the prison. The children are locked up' in the cells with their mothers. However, they are allowed to leave the facility with the other parent or guardian at any time and on staff child care professionals see to the medical and other developmental needs of the children.

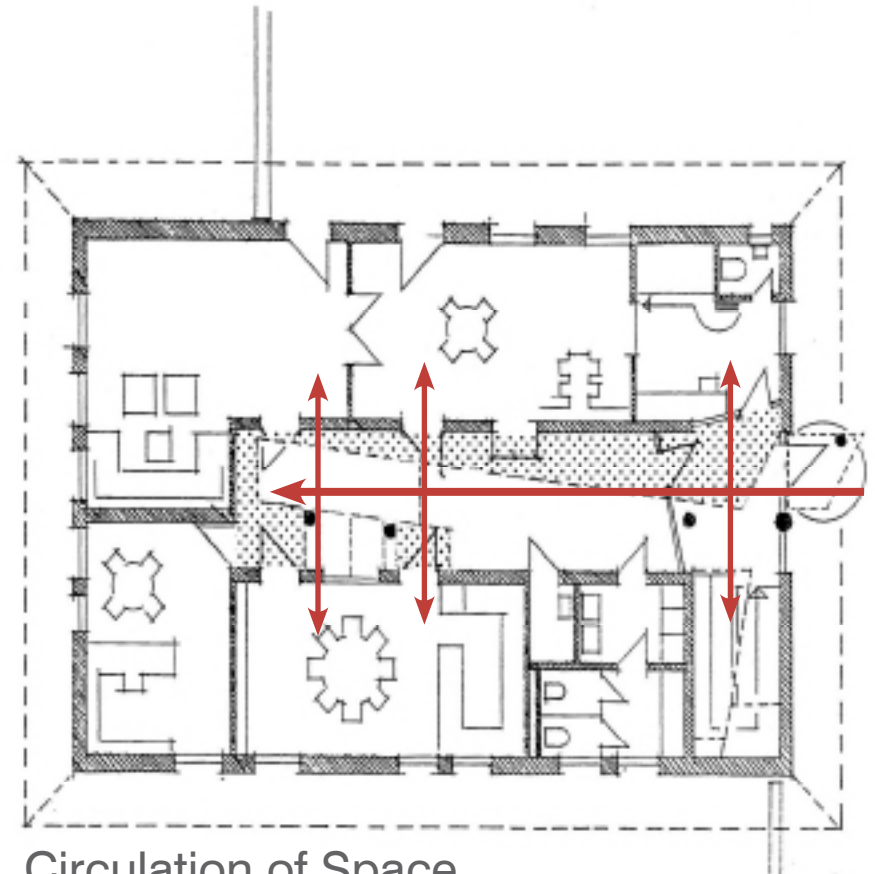


The mothers often face difficulties in 'raising' their children behind bars. Especially once they near the three year old limit they become increasingly inquisitive of their situation, often confused as to why they are 'locked up' too.

Solving the issues of security for the prisoners, but creating a sense of youthful freedom for the children was not easily accomplished. The floorplans show how certain views are allowed or hindered, generating differing levels of privacy and intimacy even in such a small building. Ample daylight brings the space to life, emulating the life and energy the children bring as well.

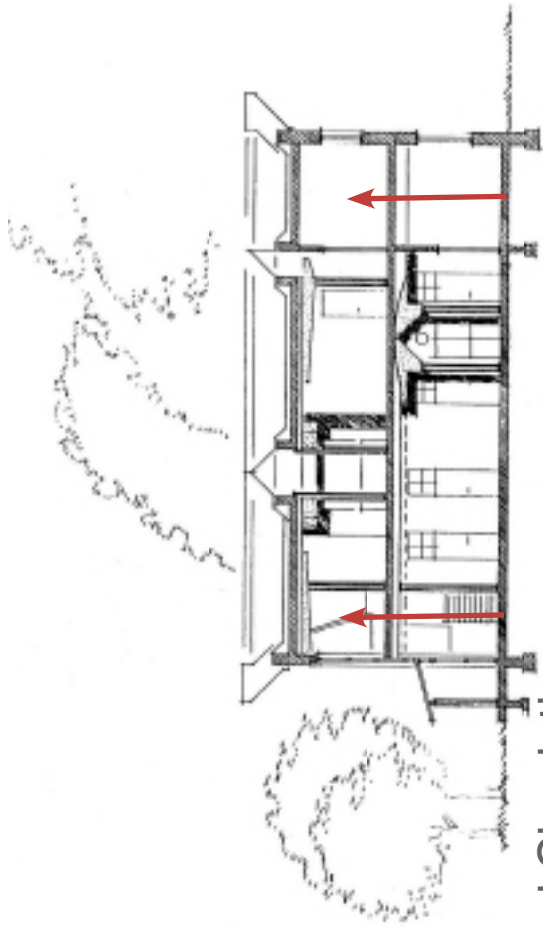
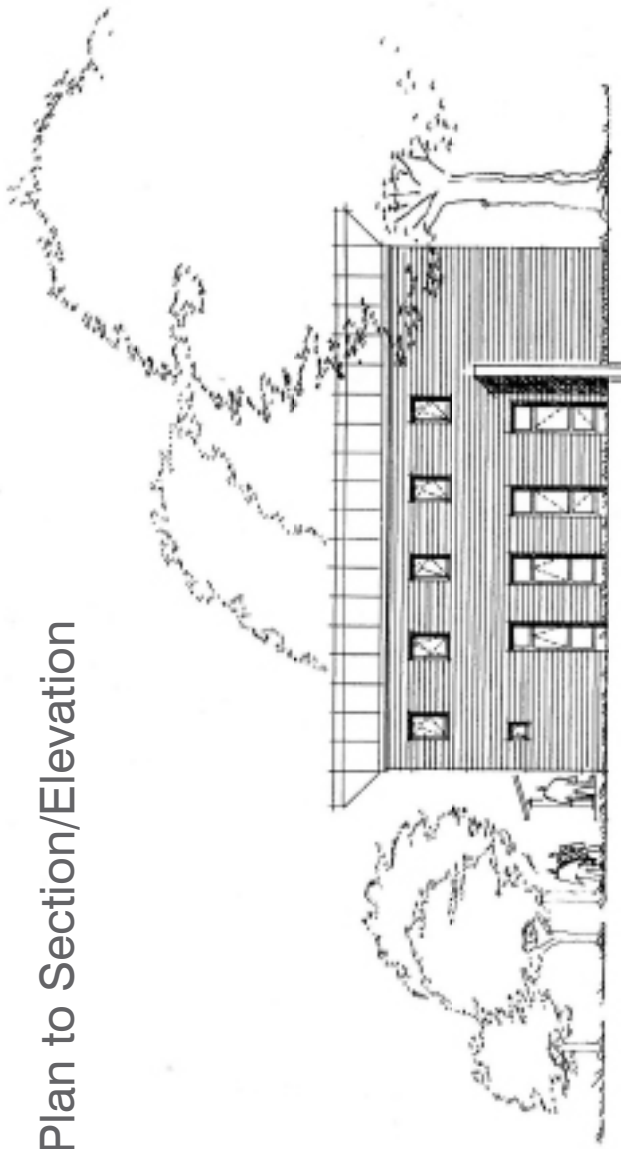
Psychology of the incarcerated is the core of this project's concept and design. More so than the other case studies this is truly human development focused. Giving the children best possible start and the mothers the best possible motivation for rehabilitation, this design pushes the limits of current incarceration design.

Facilities like this are in high demand, but with the larger expenses tied to them, i.e. on staff child care professionals, more expensive design and construction costs, increased legal processing and administration work they likely will remain a God-send to the lucky few mothers and children they house who would have otherwise missed the critical first few years together.

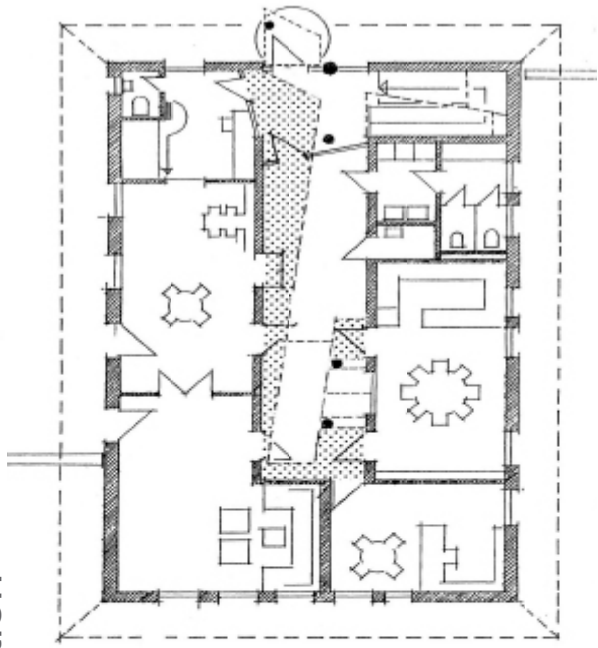


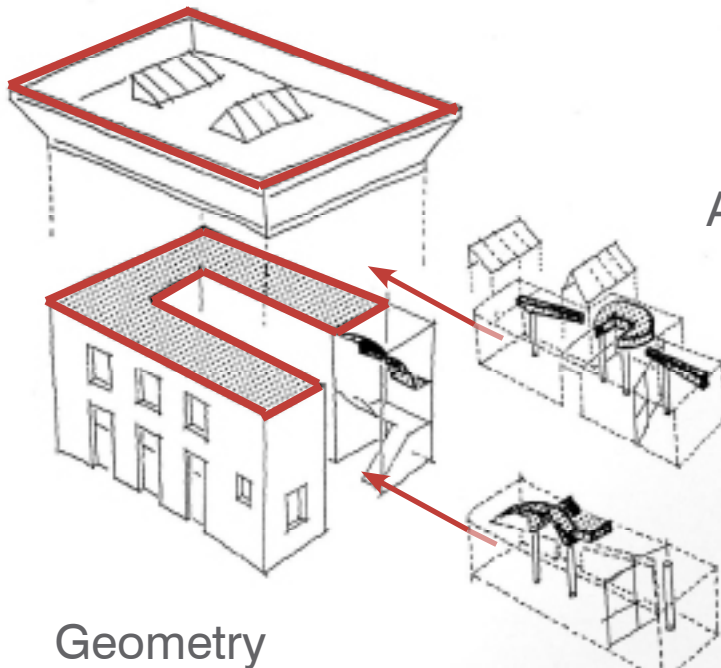
Circulation of Space

Plan to Section/Elevation



Vertical Circulation





Geometry



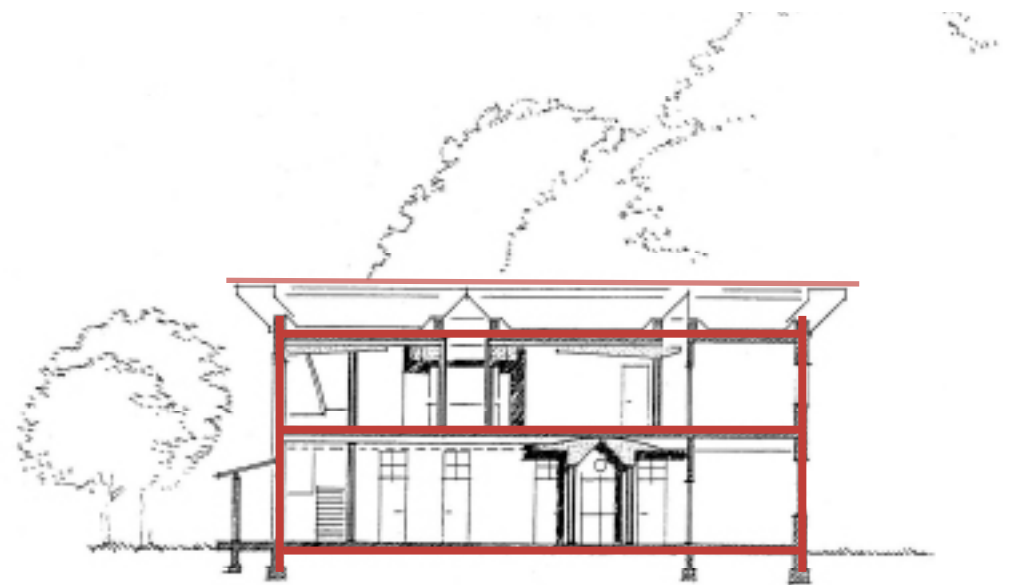
Additive/Subtractive



Massing



Structure & Hierarchy

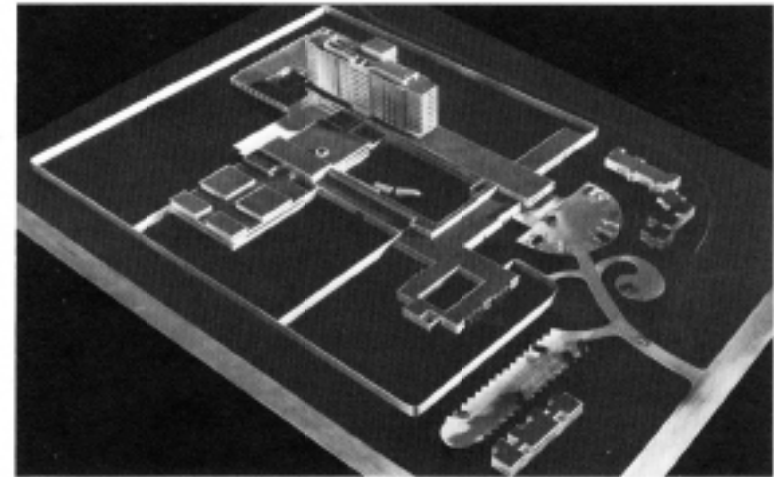


Natural Light



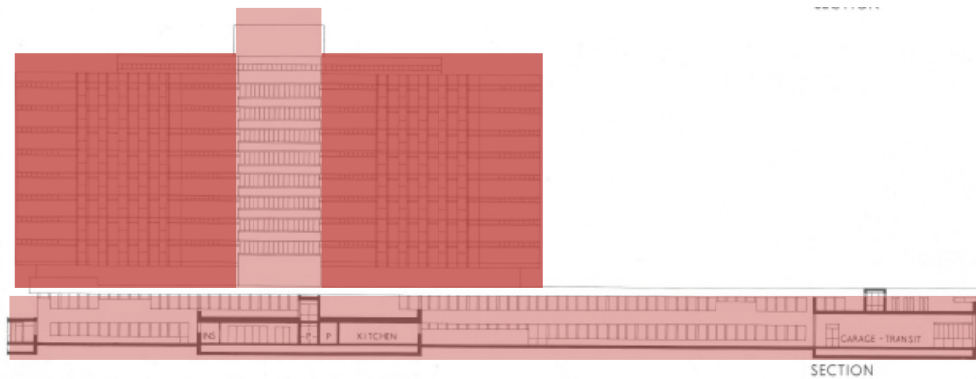
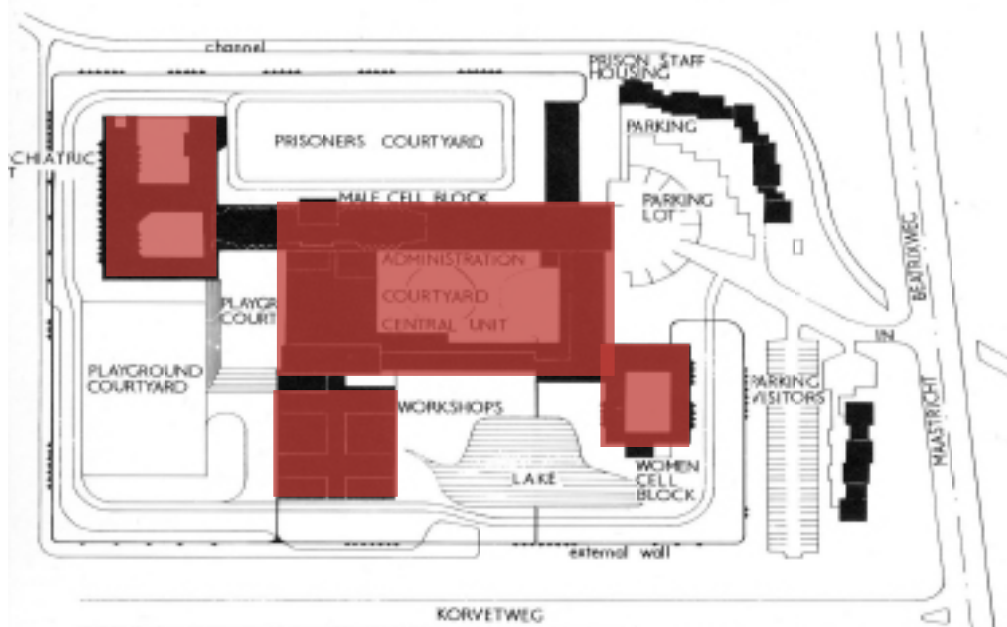
Maastricht Holland

This is a large complex, designed around a very traditional prison approach. Even the smallest detail, such as prisoner visibility, prisoner mobility, cell orientation and organization, materiality, cell door operation, were all reinvented during this design. At the time of its construction, in 1972, it was cutting edge in its design. Some of these practices are still used now, and most others led to major future innovations and refinements of these designs. Still in use as a medium security facility in Maastricht it houses over 4,000 men.

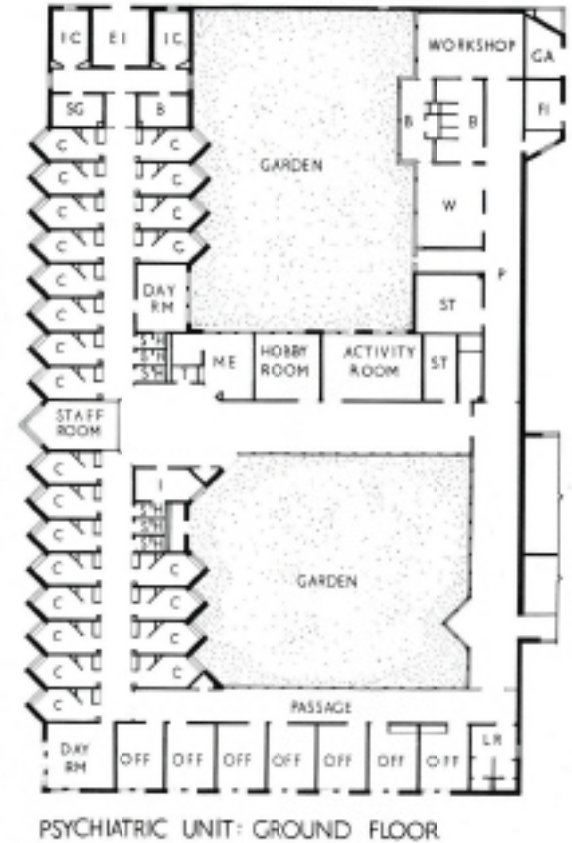


ORIGINAL SITE MODEL

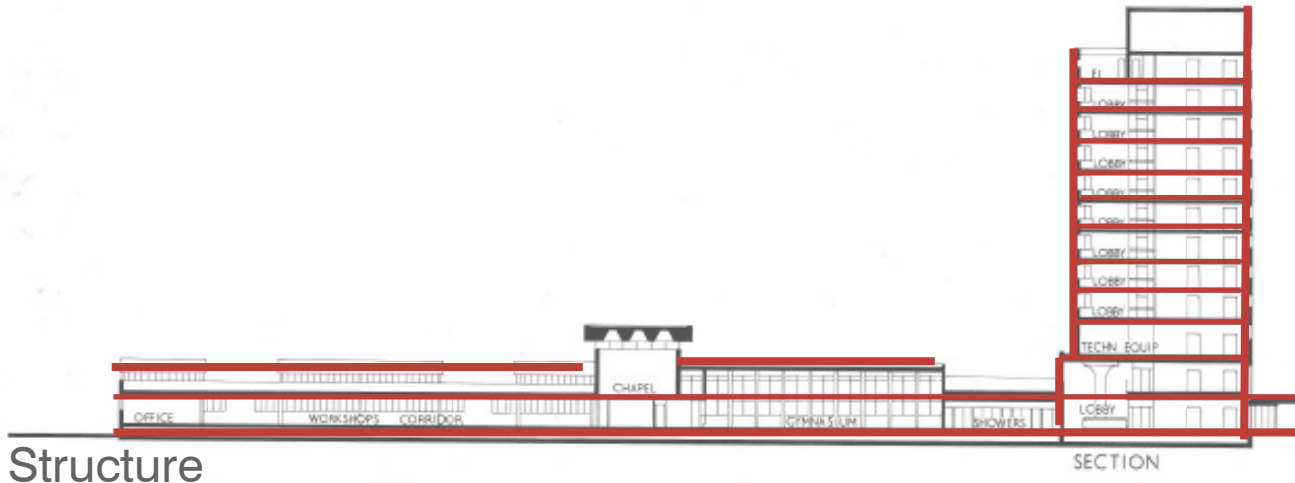




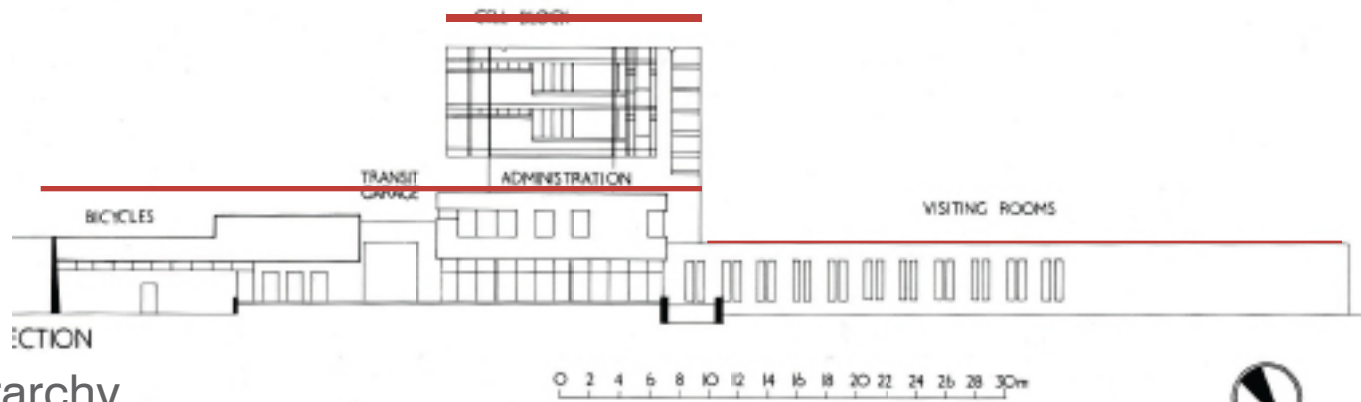
Massing



Floor plan with Elevaion

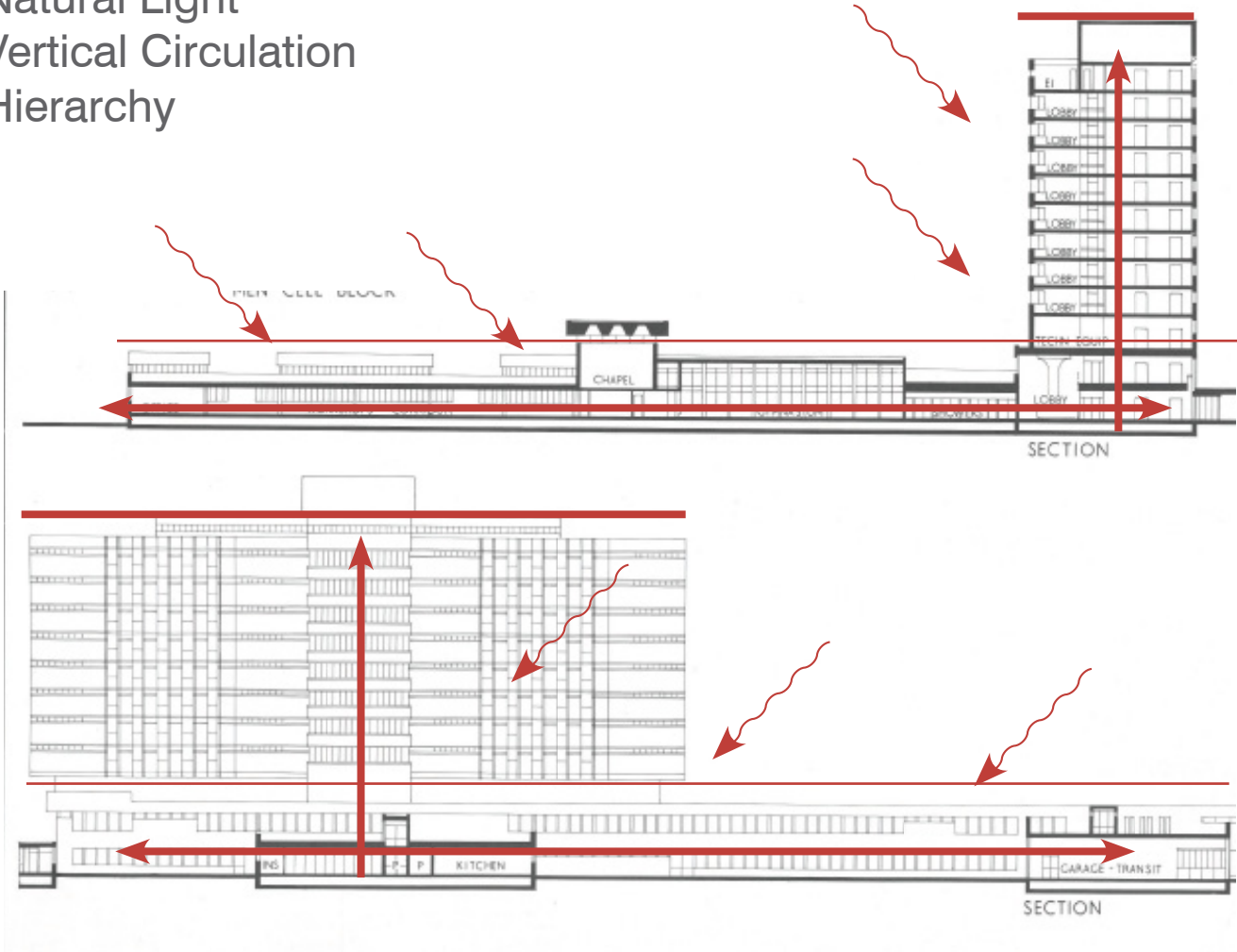


Structure



Hierarchy

Natural Light Vertical Circulation Hierarchy

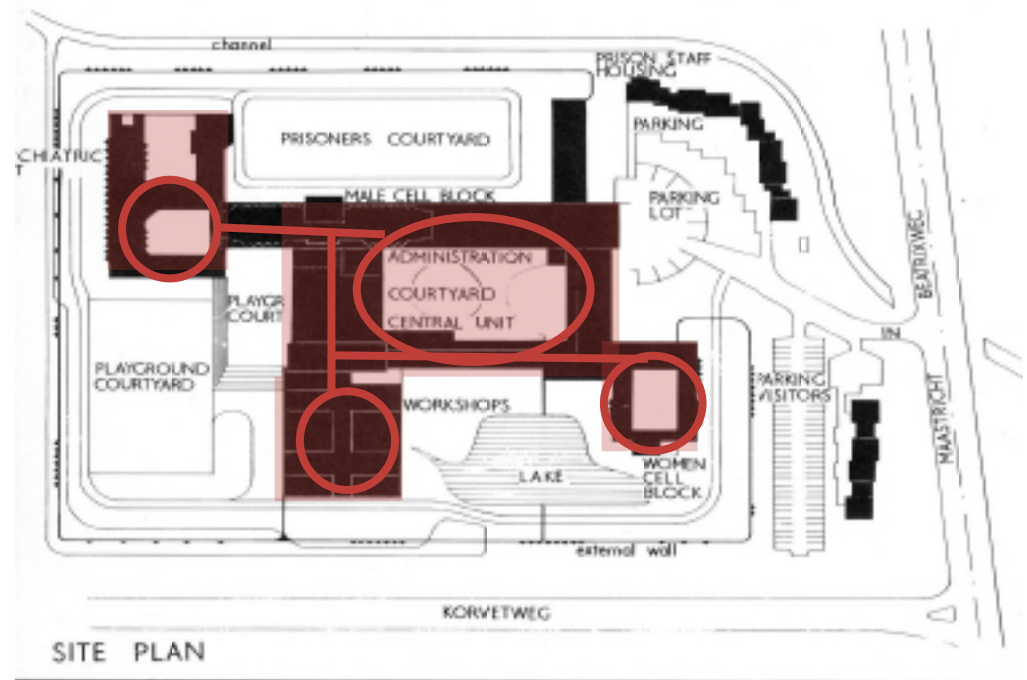


The sun exposure diagrams illustrate the consideration to light and movement given to the layout of spaces. With the cell blocks becoming vertical, the overall foot print of the facility was dramatically decreased while still allowing for sun exposure and a view out for every cell. It had been proven that being able to see sky and sunlight on a daily basis drastically improved the demeanor of the inmates, lowering overall incidences of violence.

The layout of the yard also plays a part to the increased security. It minimizes the interaction inmates will have with one another, and the amount of time they will spend in transit, inbetween secure locations.

The saw tooth cell block design is the most notable element of the design. It allocates the most usable space to the inmate per cell, while staying 100% visible at all times. Most crucial is the access to light and views each cell receives while completely inhibiting direct inmate communication. No inmate can directly see another while in their cells so each cell can act in isolation.

The design improvements made and implemented in this design have had an integral influence on the present and future of prison design.



Circulation Geometry

Each of these studies has proven useful in its own way. I knew going forward that there would be critical pieces taken away, integrated into my own design. What I had yet to learn, was what those would be.

The facility I will be designing will share factors similar to all of these, as I will outline here. Most critical will be the attention to psychological elements within the design in the hopes of improving the environment for the inmates and staff of the facility. The first two case studies, Dordrecht and KIND both focused heavily on this as well. The similarities between them, is that both used color as a major design factor to generate a feeling of welcome, and warmth. That is about where the similarities ended.

KIND paid closer attention to the use of a small space. In this design I could find more insights for spatial considerations that I too will need to address. Even so, I will be needing to address more programmatic characteristics than what was present there. My inmates will also be male, with all of the necessary facilities connected to/within this one facility, such as yard and activity spaces, cafeteria, clinic, staff lounges, booking and administration. With KIND they were still adjacent to the larger women's prison facility and so did not need to provide these considerations.

CASE STUDIES [summary]




SITE ANALYSIS

1792 36th avenue South, Waite Park, MN

The site is located just outside Wait Park in central Minnesota. Minutes away from Highway 23 and Interstate 94 this 10 acre site has several intriguing physical features to benefit the project.

Seclusion

The hectic outside world whizzes past, yet you are left standing still, seemingly forgotten by the whirlwind of life and its many appointments. You have stumbled to a place outside the world's expectations, free from their infliction, but not their influence. It is fall and the leaves have been dropping. The breezes crossing the surrounding farmland have little hindrance in their path. Standing in the open, grassy field you know there are countless cars zooming by on the highway at the end of the driveway, each one on its own path to some seemingly important event but they are of little concern. You lay down in the deep grass and are immersed in its magic. The thin blades act together, shielding you from the bombardment of the highway. The warm sun hitting your face, the heat of the ground soaks into your coat and you close your eyes. There is a touch of winter in the air. That crispness, like the scent of fresh sheets, is undeniably the smell of winter.



You hear the many birds singing in the trees to one another. If you remember they are there you can still hear the cars, but you would rather just focus on the birds. A flock of geese fly over quite low, taking a rest in the pond to the north on their migration to Mexico. You can feel their exhaustion and listen to the uproar of wing beats, splashing and squawking as they make their landing. The small creatures have begun to find you now. Their little legs crawl across your arm. A grasshopper tries to jump through the grass shield surrounding you, clumsily missing his mark and falling onto your coat. As the light grows soft and warm it is time to keep moving. There is something else that drew you here. Looming in the woods it sits in silent splendor, waiting to be found.

Major physical features of the site are first, the quarries, located partially on the site and adjacent. The large mountain of scrap granite manifests a semi surreal feeling. The granite pile is daunting, and dominates the skyline. It seems to elude to the project, even before its designing.

The second most apparent feature is the body of water located to the North and Northeast perimeters. One is permanent, the other seasonal but still they bring in an array of water fowl and wildlife year round.

Finally, the nearby roads bring in noise and movement. They break the spell of the site. They create a needed connection, acting as a reminder of the outside world.

SITE ANALYSIS

1792 36th avenue South, Waite Park, MN



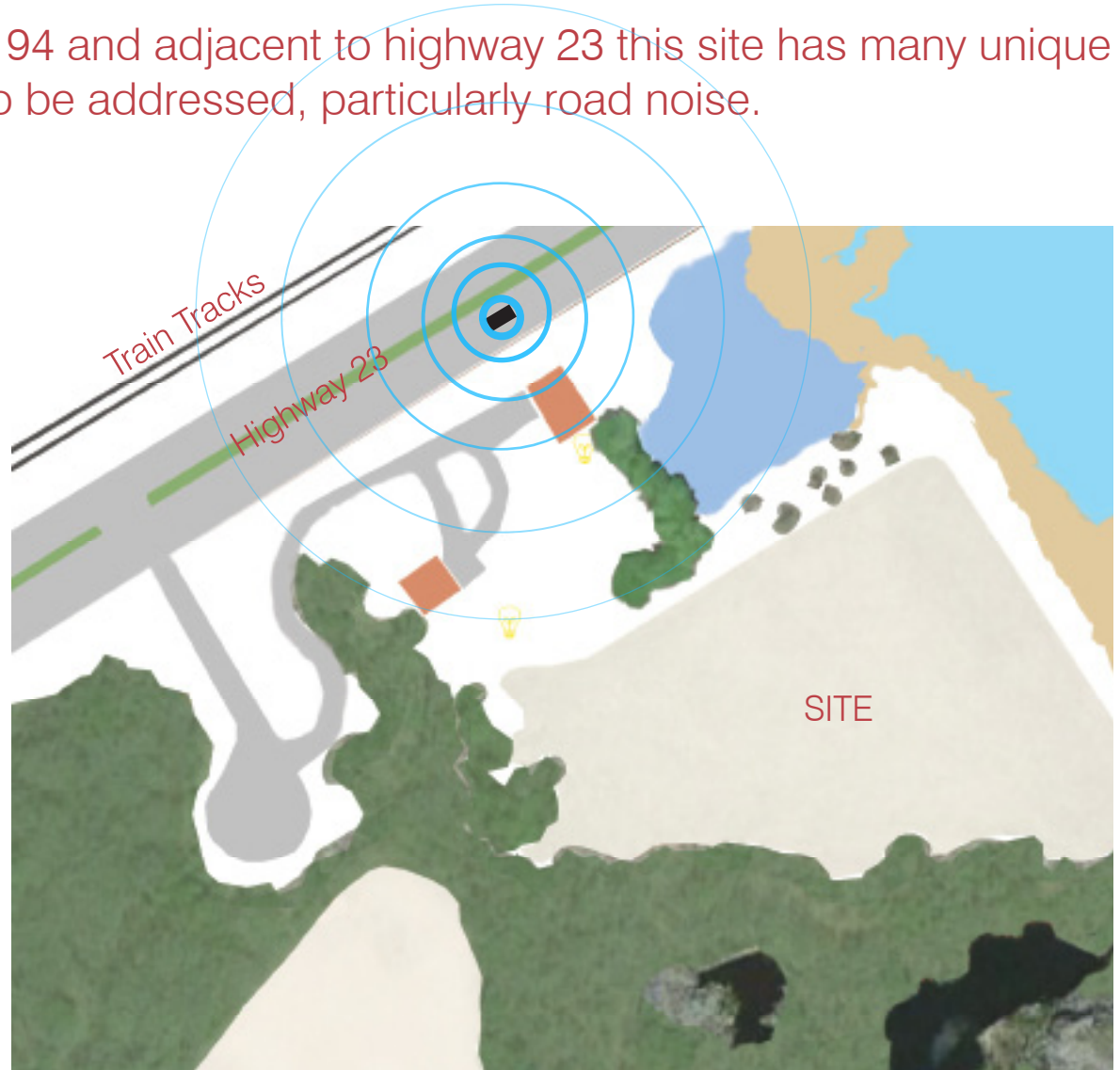
The relatively remote location, the size and the rather vacant surroundings make this an ideal site. This particular site was further selected in part for its history. The project will be a facility that will work in connection to a larger facility. In this case, the larger correctional facility would be the Saint Cloud State Penitentiary, a maximum security facility 30 minutes away from this site. With that factor anchoring the project's general location this site was further selected for its interesting history with the granite industry, a major factor in the development of all of central Minnesota.

SITE ANALYSIS

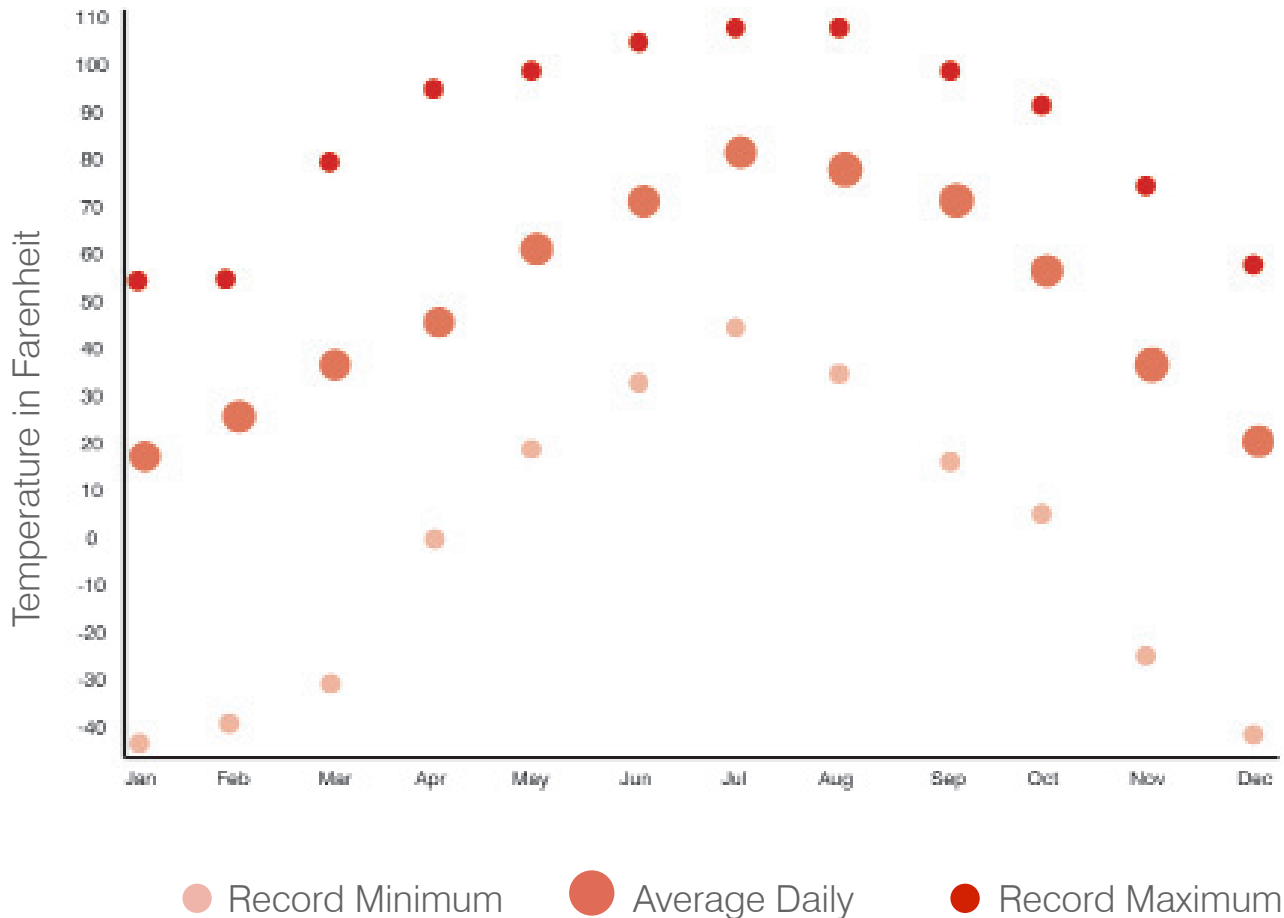
1792 36th Avenue South, Waite Park, MN

Only a mile from interstate 94 and adjacent to highway 23 this site has many unique characteristics that need to be addressed, particularly road noise.

Traffic: The vehicular traffic is the most prevalent form of traffic on the site. Both in getting to or from the site the proximity to the highways is crucial. The location has easy access but this also brings about a lot of road noise at all hours of the day. The highway is used by anything from cars to semis to tractors. Also, a train track runs parallel to highway 23 and although rare, there is still periodic train traffic. There is no pedestrian traffic, outside the occasional care breakdown or hitch-hiker. Since the land is currently vacant the most common traffic outside of vehicles on the highway are deer, geese and squirrels.

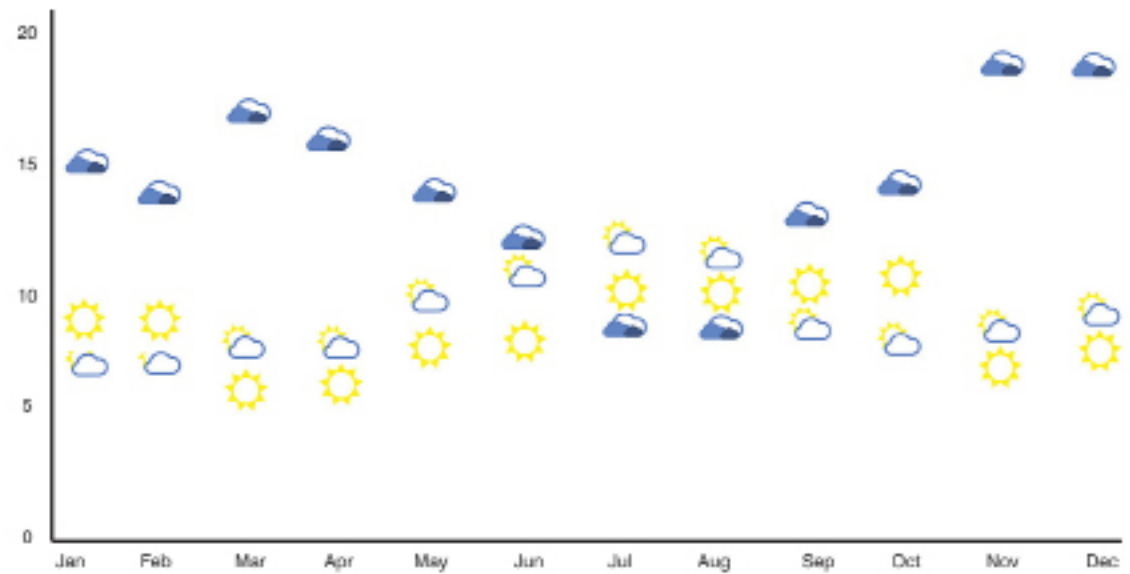
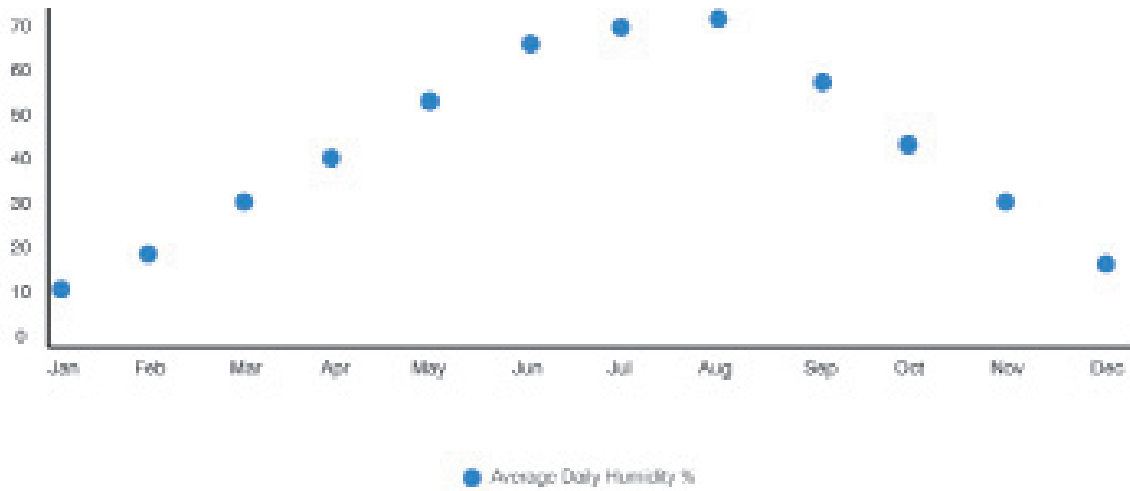


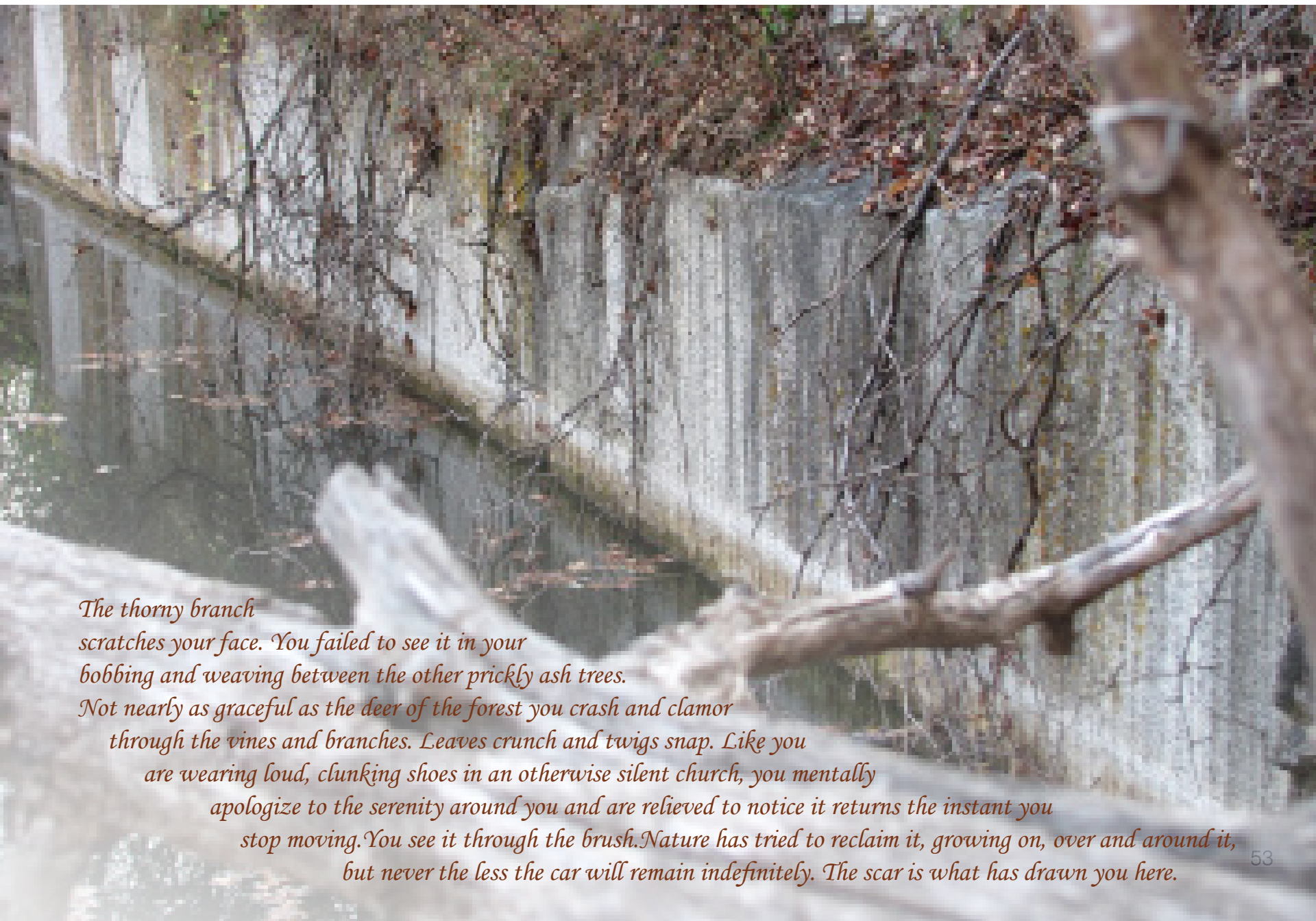
Located in central Minnesota unique climate considerations are critical to an efficient building and keeping utility costs down.



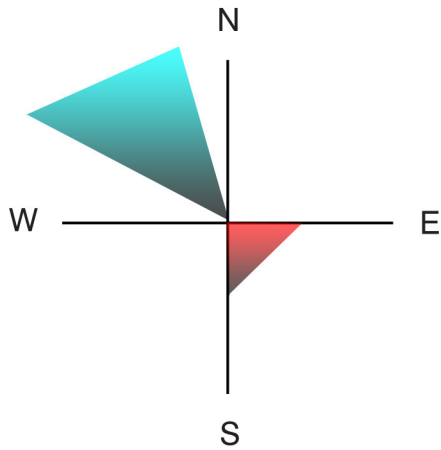
Utilities and Zoning: As this property had most recently been used as residential all utilities are already available on the site. It is currently zoned Highway Commercial/ Light Industrial although the original buildings (home and warehouse) are still on site.

Utilities and Climate: Due to a rather extreme temperature swings the heating and cooling of any building on this site should be carefully considered.

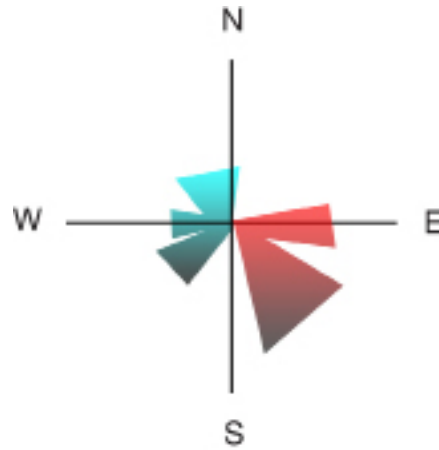


A photograph of a forest with a car partially visible through the trees. The car is white and is positioned in the lower left quadrant of the image. The trees are mostly bare, with some brown leaves still clinging to the branches. The background is a dense forest of tall, thin trees. The overall scene is somewhat dim and overcast.

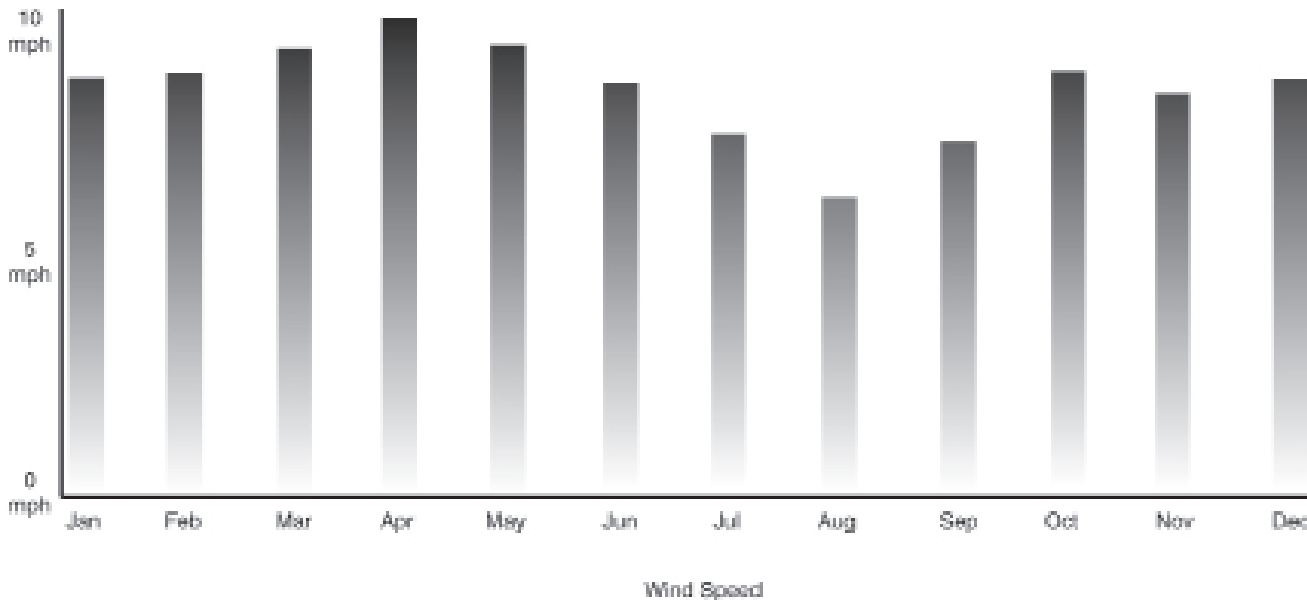
*The thorny branch
scratches your face. You failed to see it in your
bobbing and weaving between the other prickly ash trees.
Not nearly as graceful as the deer of the forest you crash and clamor
through the vines and branches. Leaves crunch and twigs snap. Like you
are wearing loud, clunking shoes in an otherwise silent church, you mentally
apologize to the serenity around you and are relieved to notice it returns the instant you
stop moving. You see it through the brush. Nature has tried to reclaim it, growing on, over and around it,
but never the less the car will remain indefinitely. The scar is what has drawn you here.*



winter prevailing winds



summer prevailing winds



Wind upon the site is not a huge factor. Although consistent, it is not strong enough to force any critical design factors. The strongest wind normally occur in the spring and fall. The winter winds are predominantly from the North-Northwest carrying cold air and potentially snowfall. Considerations for heat loss on that face of the building may be helpful. Due to the consistency of wind, there is potential that a small wind turbine could be efficient enough to support some small portion of the energy load for the building.

Most of the site is covered in a sandy-loam suitable for agriculture. In the past it had been used for alfalfa and corn crops. Nearby are granite outcroppings and a small gravel pit which when combined, comprises most of the soil typologies on the site.

There are several areas of standing water on the site. The most visible are the drainage ponds near the highway and Northeast perimeter. The smaller is permanent and the larger has been known to dry out during draughts. The others are the water filled quarries located near the South perimeter.

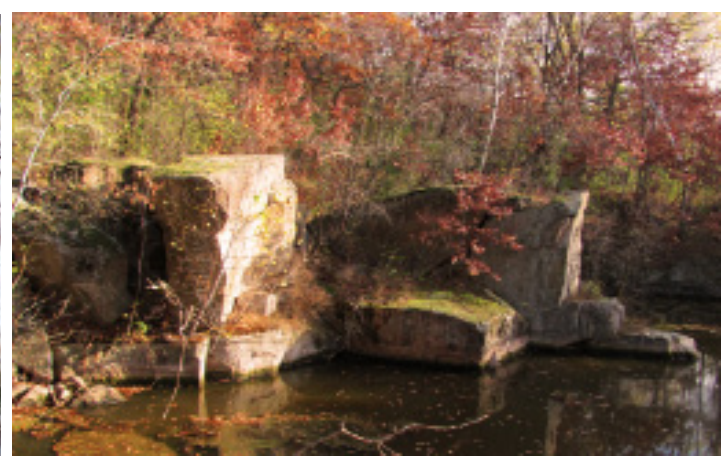
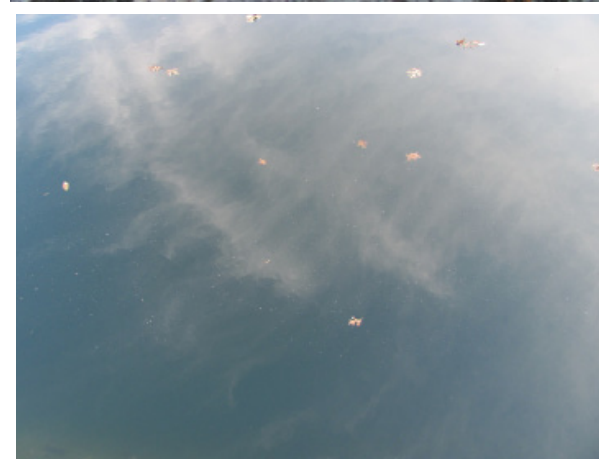
There is no evidence of critical surface problems, however, rock cropping are prevalent. Not seen as a problem, these will be integrated into the design.

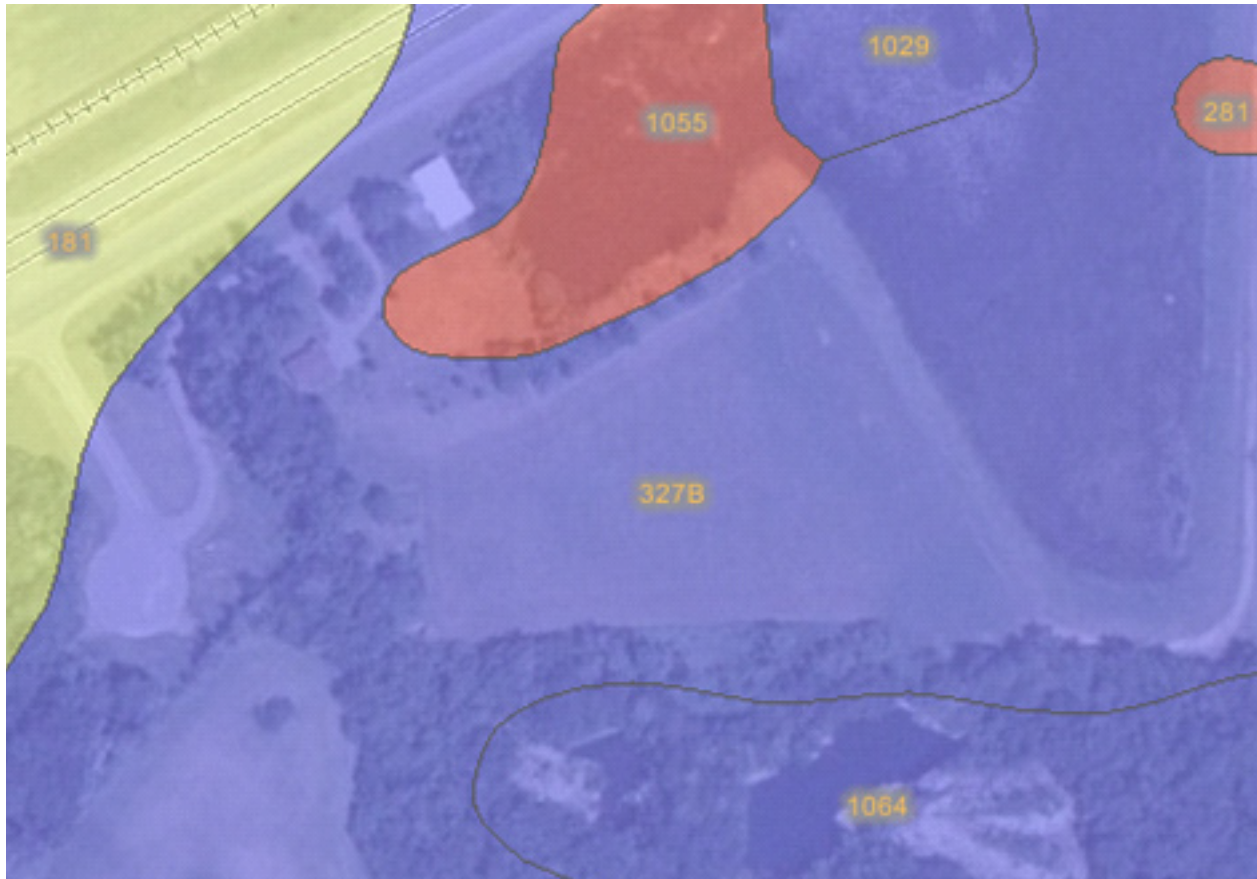


Symbol	Map unit name	Rating	Percent of AOI
181	Litchfield loamy sand	SM	16.5%
281	Darfur coarse sandy loam	SM	1.6%
327B	Dickman sandy loam	SC-SM	59.4%
1029	Pits, gravel		3.3%
1055	Histosols & Haplaquolls, ponded	CL	6.5%
1064	Rock outcrop-Lithic Eutrochrepts complex		12.7%
Totals for Area of Interest			100.0%



*In the matter of a few steps your path clears and
you emerge into the bright open. What was forest floor a few
steps back is now a sharp granite cliff with smooth darkness below.
The darkness is still. No wind can reach it to disturb its mirrored surface.
Leaves skirt across the reflected sky as if blowing in the slowest breeze.
Presenting itself as a monument to an ancient civilization
it stands in defiance of the advances of the forest.
You sit on the edge of the granite cliff,
hang your feet over the edge and
look deep into the cold, false sky.*

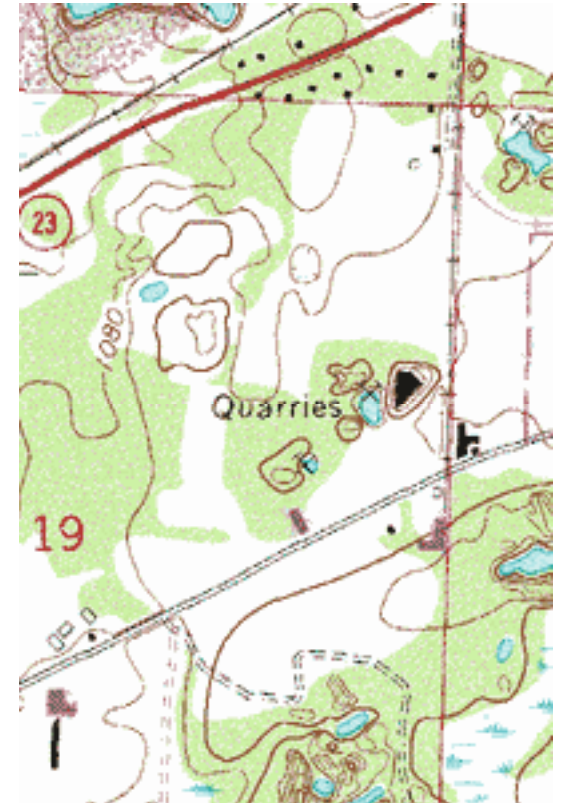
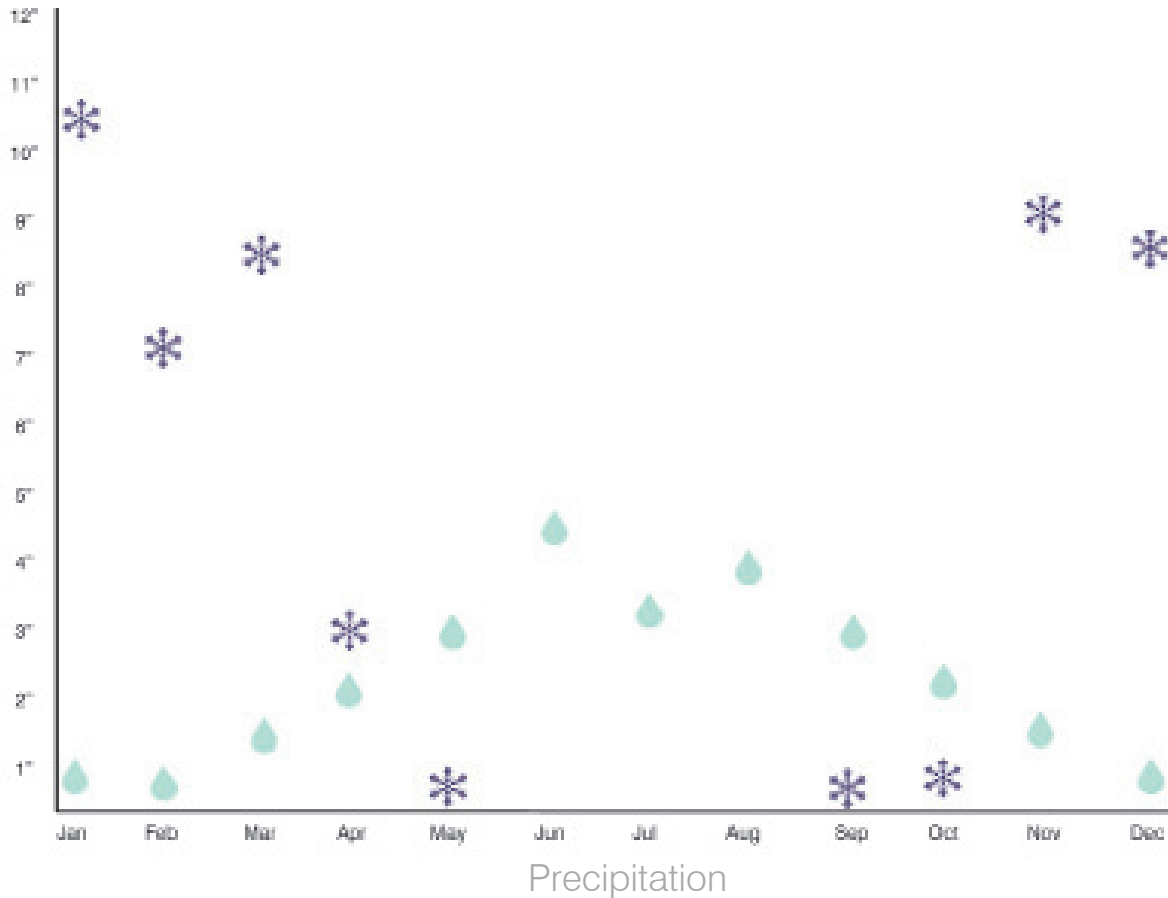




There are several areas of standing water on the site. The most visible is the shallow drainage pond near the highway and Northeast perimeter. It has been known to dry out during draughts. The others are the water filled quarries located near the South perimeter. The water table, as shown in the graphics below, is more than six feet, six inches below the surface across most of the site.

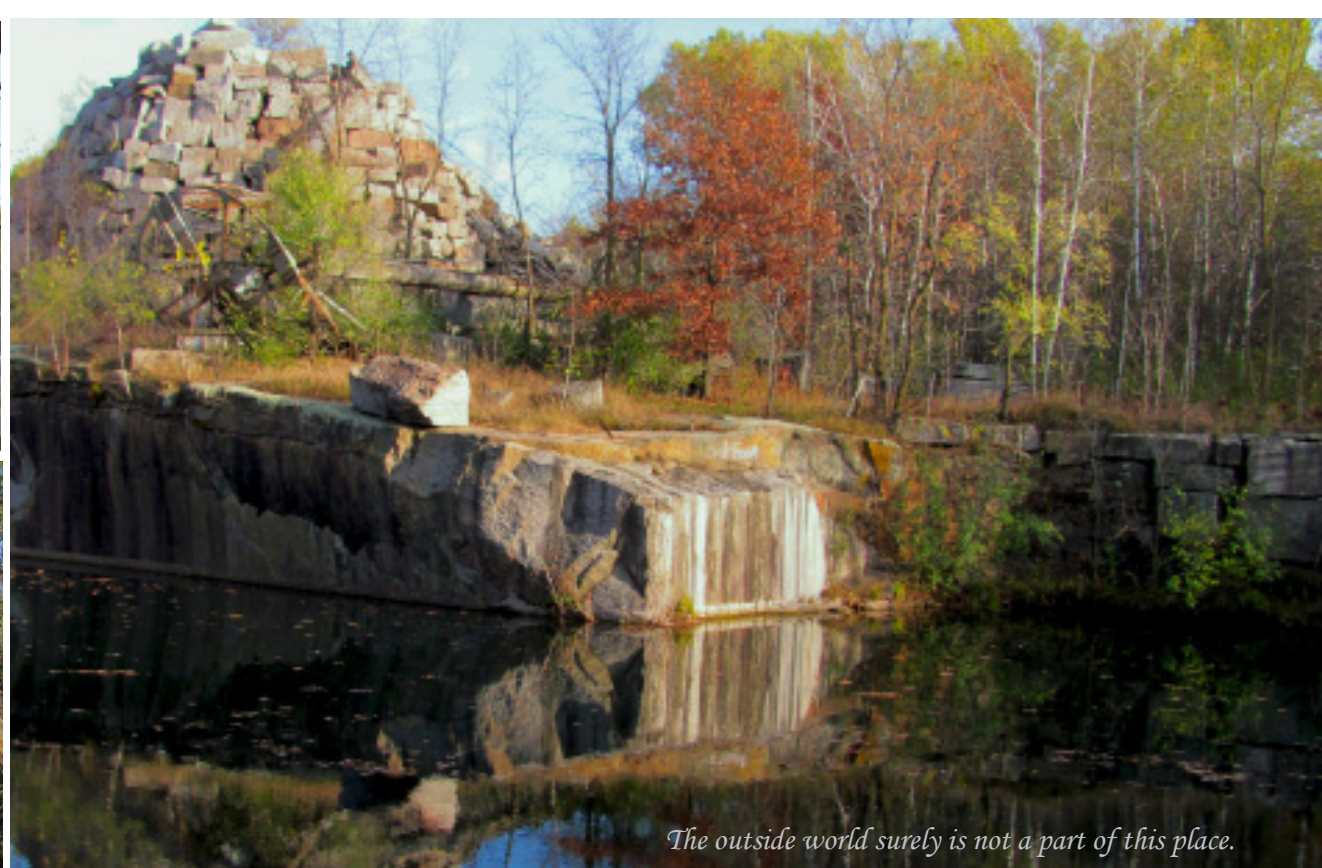
Map unit symbol	Map unit name	Rating (centimeters)
181	Litchfield loamy sand	76
281	Darfur coarse sandy loam	15
327B	Dickman sandy loam, 2 to 6 percent slopes	>200
1029	Pits, gravel	>200
1055	Histosols and Haplaquolls, ponded	0
1064	Rock outcrop-Lithic Eutrochrepts complex	>200

Topography: In general the site is perceived as flat with only a few periodic changes in elevation. For example, there is a steep but small rise on the Northwest section of the property which acted as a buffer for the sunken in residence but even this is too small to affect the vast majority of the site. Additional areas of considerable slope are located around the ponds. In general the slope of the land is less than 10% and slopes down to the North and Northwest.





There is a calm here that was only alluded to in the field. The quarry had not been used for more than half a century. Seemingly abandoned after lunch hour some work day the equipment still stands, now in ruin, the scrap pile mountain seemingly erected to look over the quarry. Cables drape lazily in and out of the water, relaxing after their taxing working life. The water, despite its crisp clarity, shrouds the cables' ends in its pressing depths. Surely, a mystery lies at the bottom, but it will never be found.



The outside world surely is not a part of this place.





Plant Cover

Large elm and oak trees are present on the land. The past resident had planted a few fruiting trees, maple trees and decorative evergreen shrubs in the 'yard' portion of the site but left the remaining land relatively unchanged. The south end of the lot includes dense deciduous forest including oak, elm, birch, maple and poplar trees. The fallow farmland has gone back to mostly native grasses but is still periodically cut for hay although never tilled, planted or fertilized. Near the pond's edges there are groups of fast growing trees like poplar as well as dense reed cover, accounting for the large population of water fowl.



Site Maps

-  utility access
-  existing structure
-  permanent pond
-  shallow seasonal pond
-  reeds & rushes
-  dense tree cover
-  grass/farm field
-  quarry pond
-  granite outcropping







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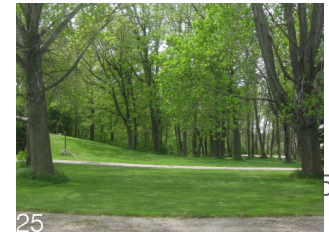
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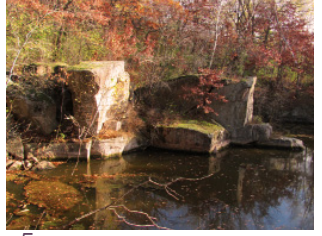
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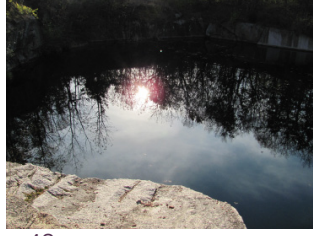
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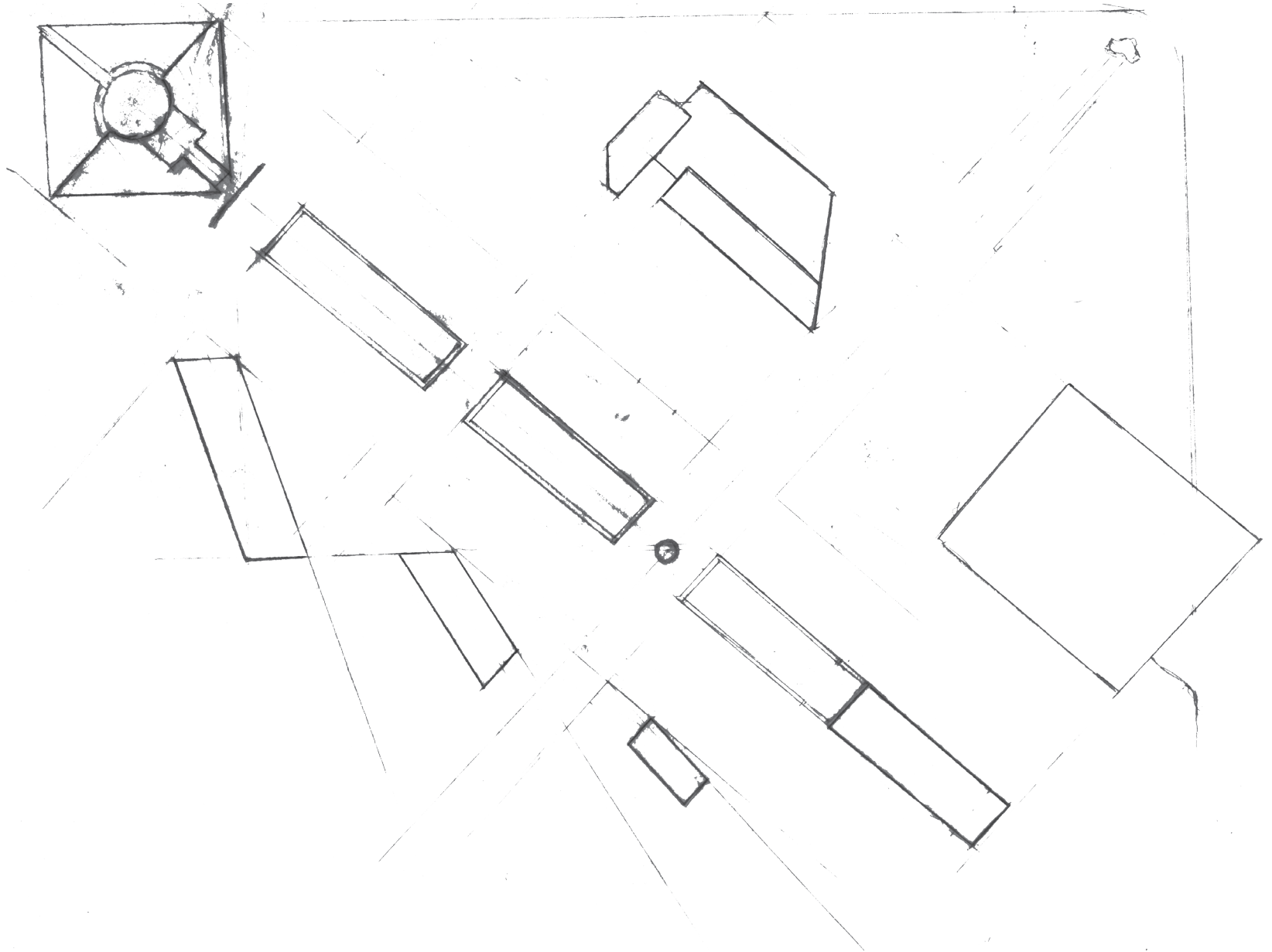
41



42



43



This project will explore a correctional facility design that lowers the opportunities for violence both from prisoners and guards. A lowering in violence will result in an overall improvement in the atmosphere of the facility, heightening safety and security. The second emphasis will be the improved rehabilitation of inmates before their release, and how the prison and its design can promote that.

PROJECT EMPHASIS

PLAN FOR PROCEEDING

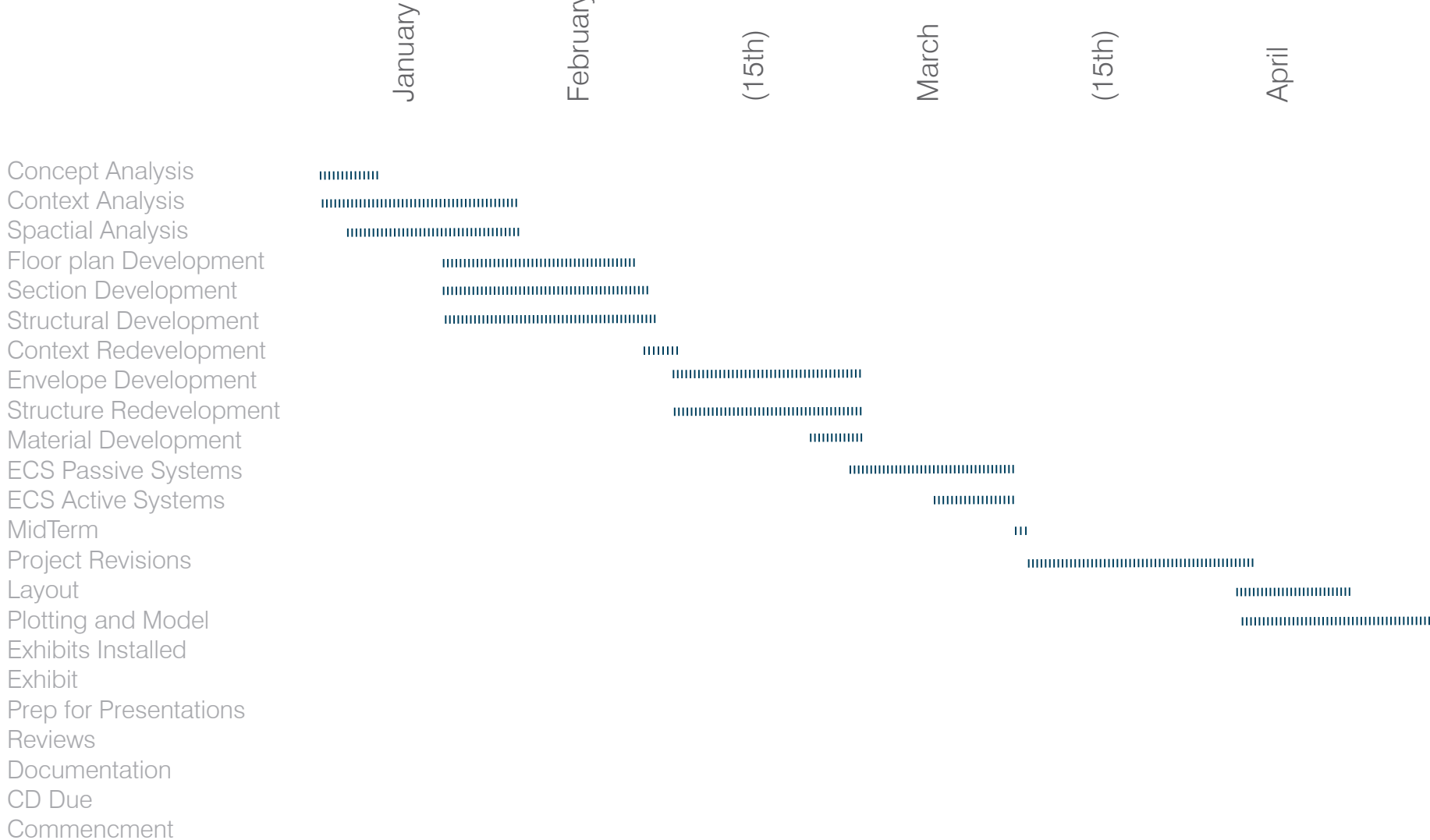
'Keep calm and carry on.' -Winston Churchill

Research will be directed to explore the theoretical premises and further define the project typology as well as develop knowledge of the historical context, site analysis and programmatic requirements for the project.

Methods for this research will be mixed, qualitative and quantitative, collected and analyzed concurrently. The theoretical premise will be the guide for the research.

There will be a mix of sources for this information such as experimental reports, archival research, as well as personal observations and interviews.

The final compilation of graphical and textual information, including the final design, will be preserved in the digital library of North Dakota State University.



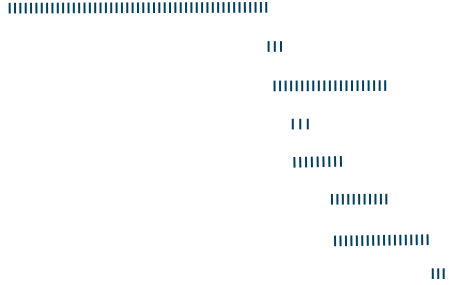
SCHEDULE

‘Keep calm and carry on.’ -Winston Churchill

(15th)

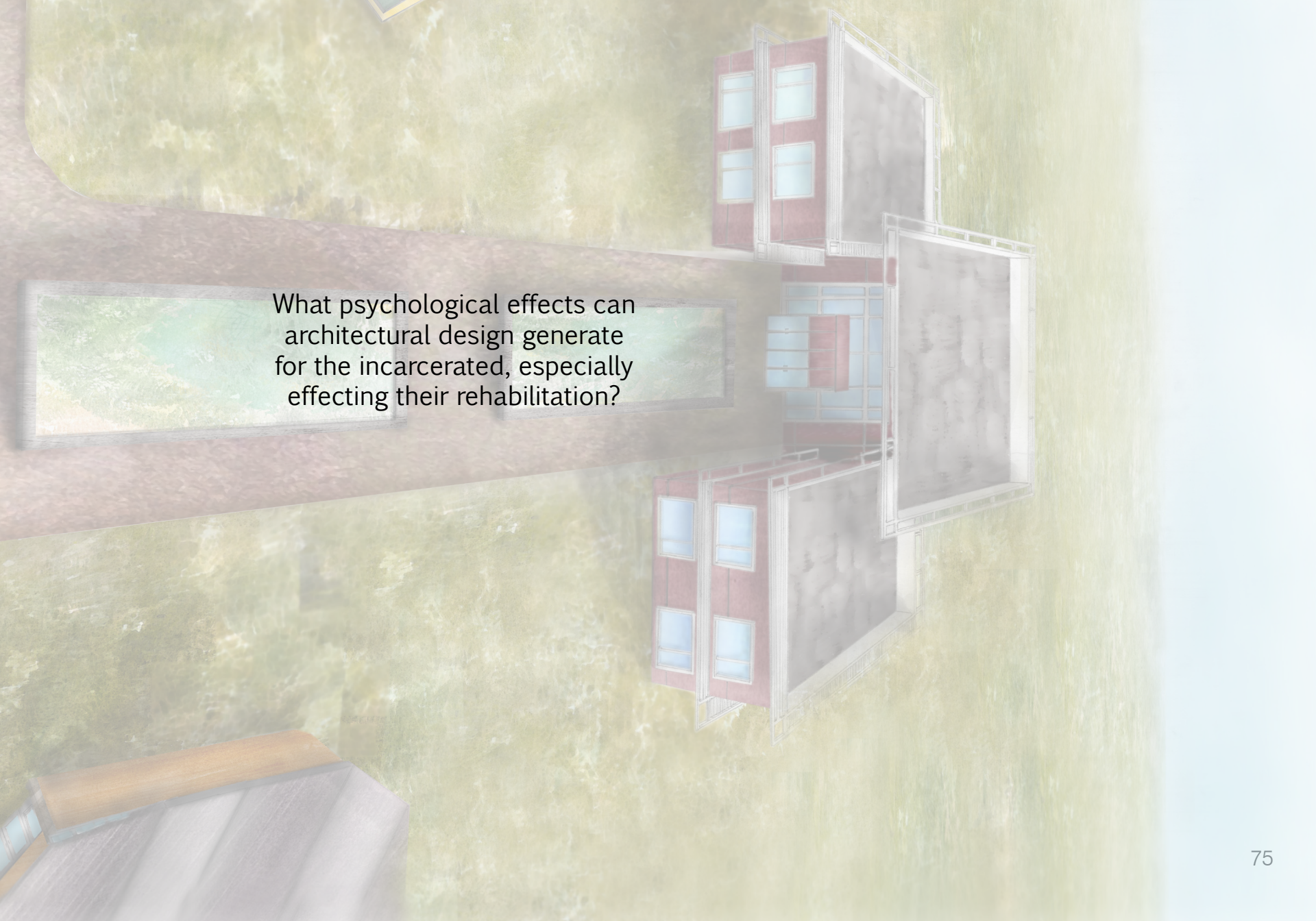
May

(15th)

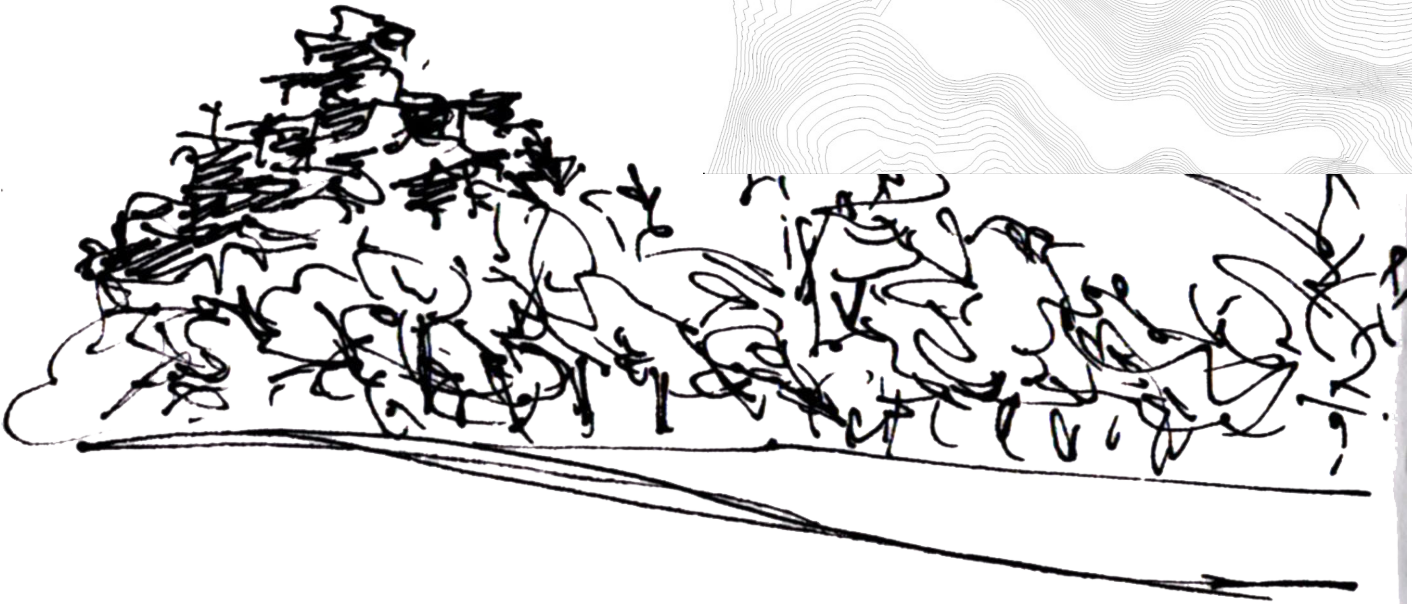
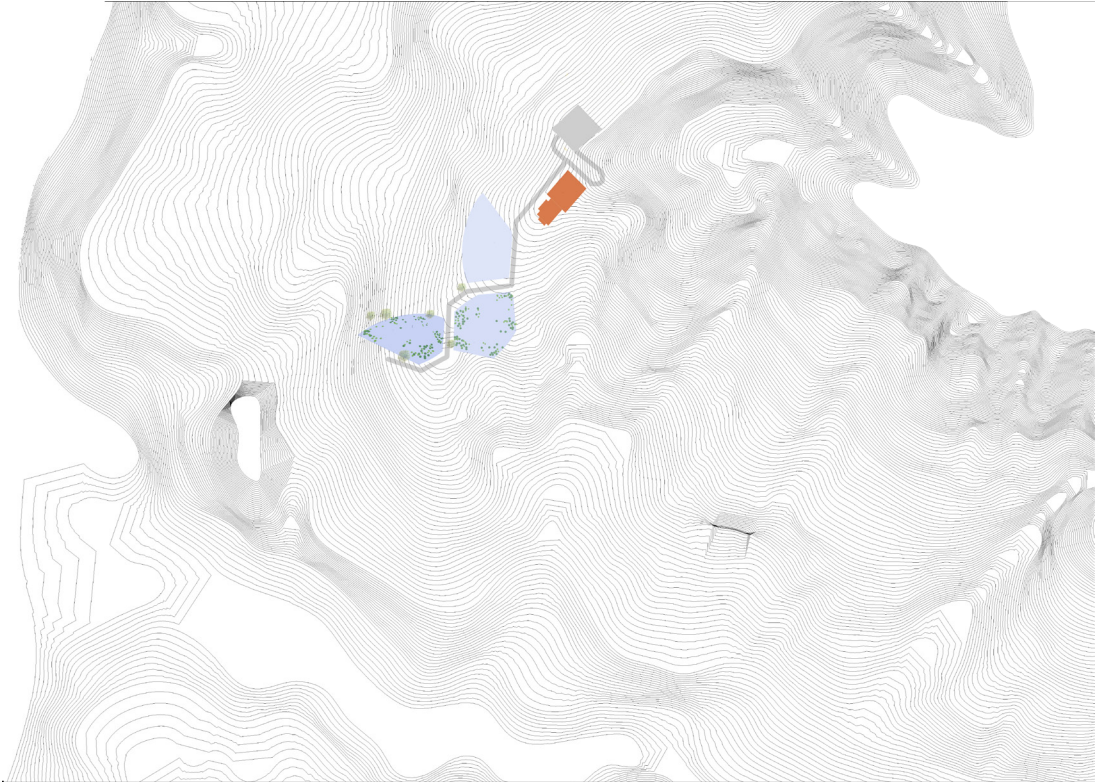
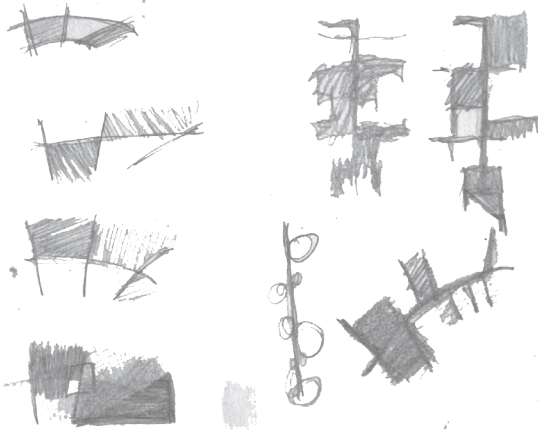


INVESTIGATING HUMANITY





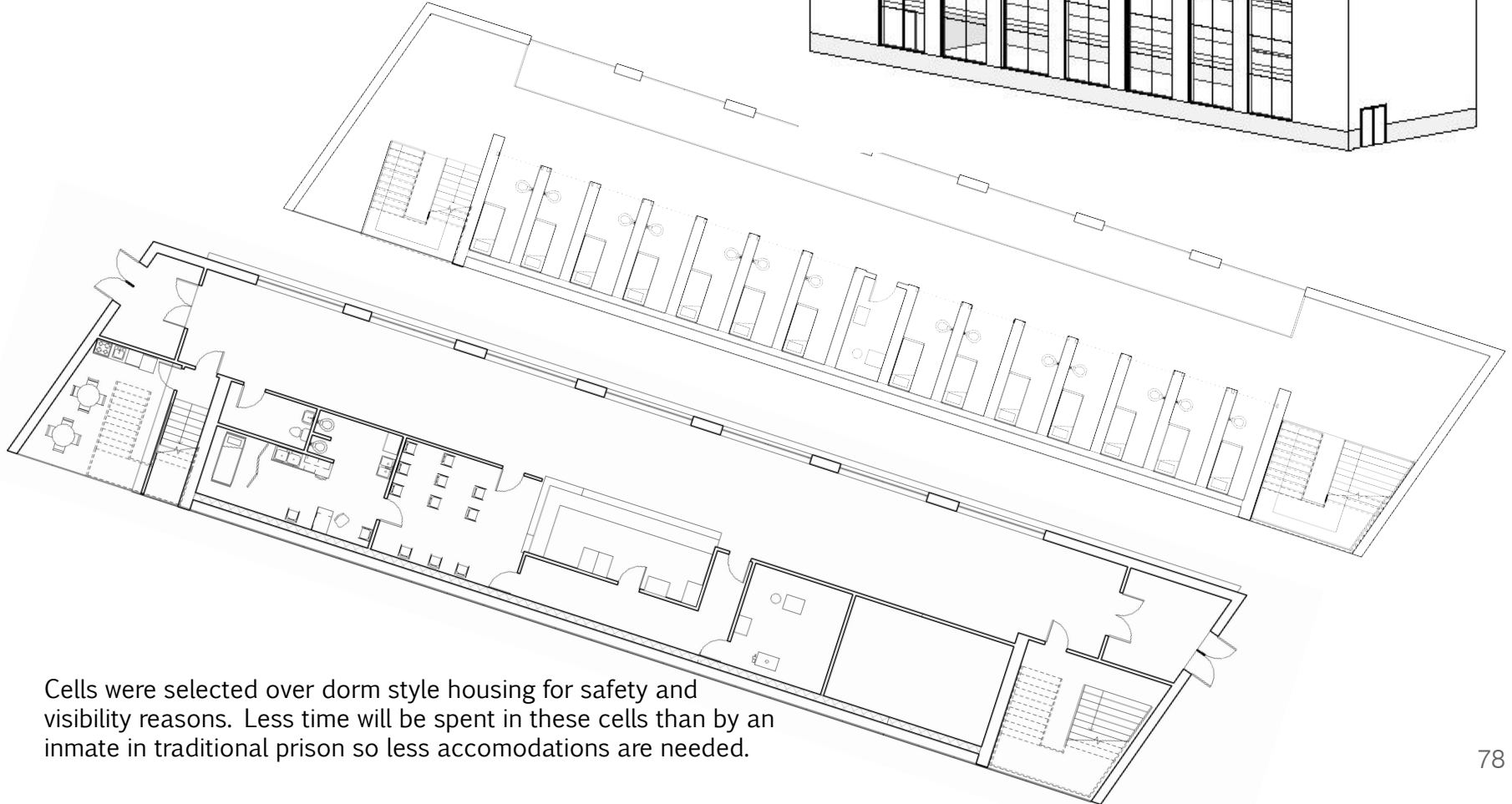
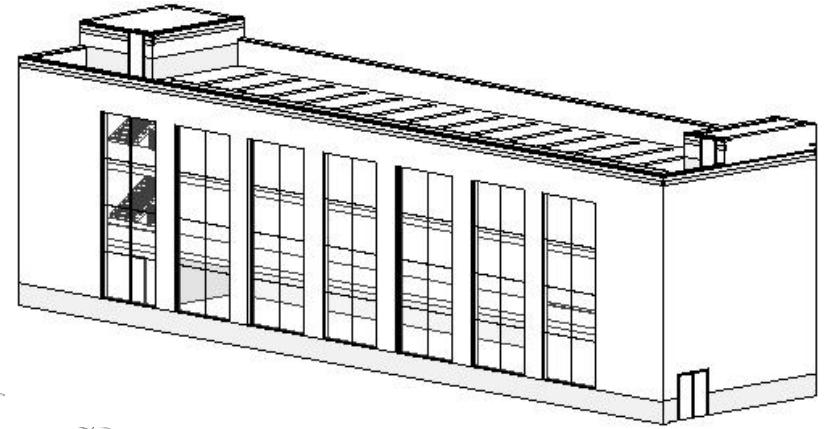
What psychological effects can architectural design generate for the incarcerated, especially effecting their rehabilitation?





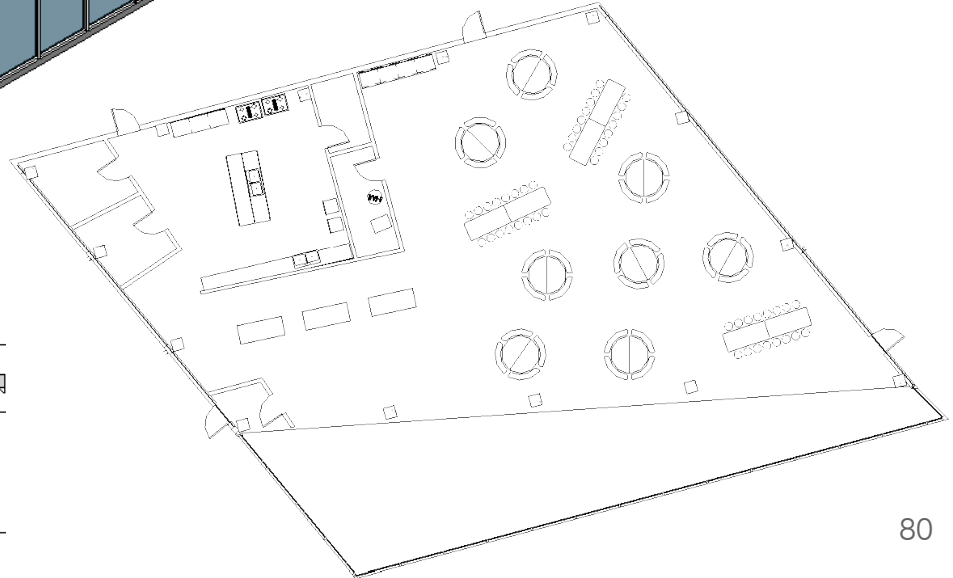
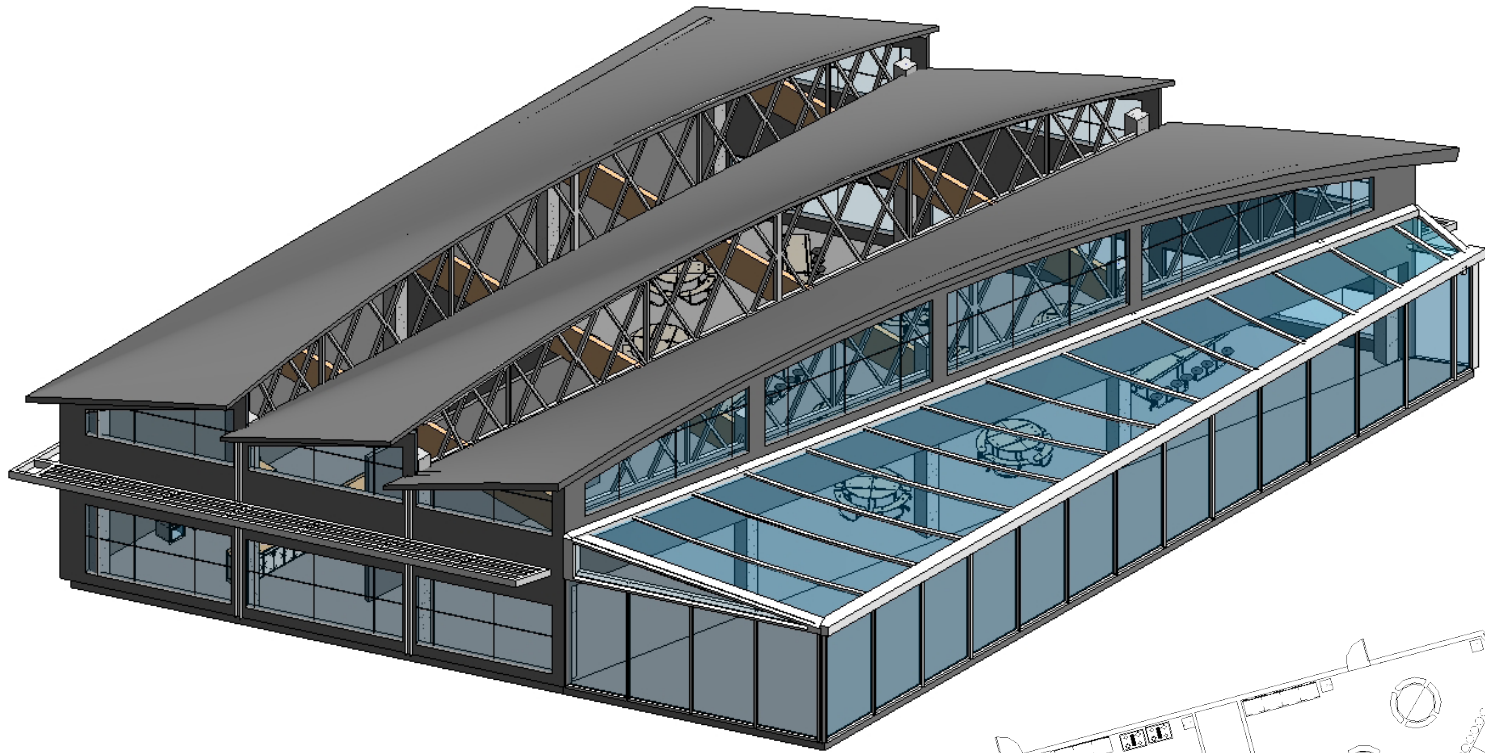
Final Site Map

This design shares light, sound and views between all the cell block floors. This helps further the sense of community. The views provided are strategic. They direct inmates to view the heart of the campus, overseeing the results of the physical labor they have put into the landscaping and vegetable gardens, reinforcing that hardwork can have positive results and their time here is resulting in something.



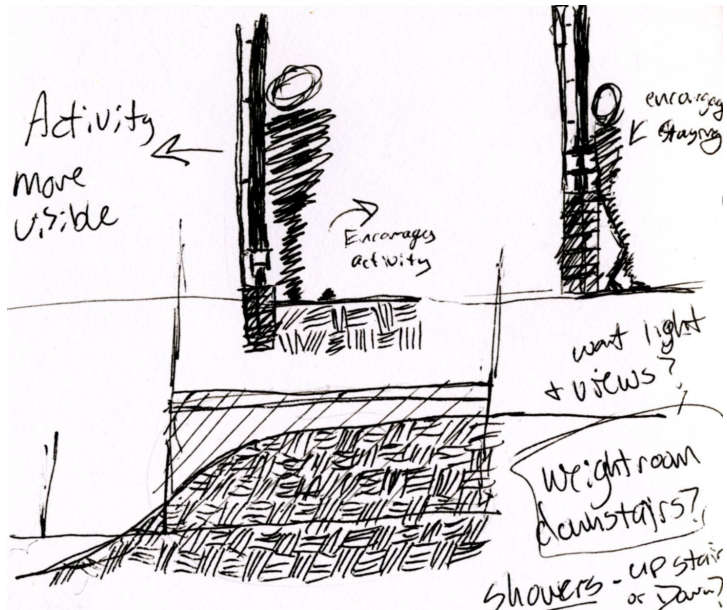
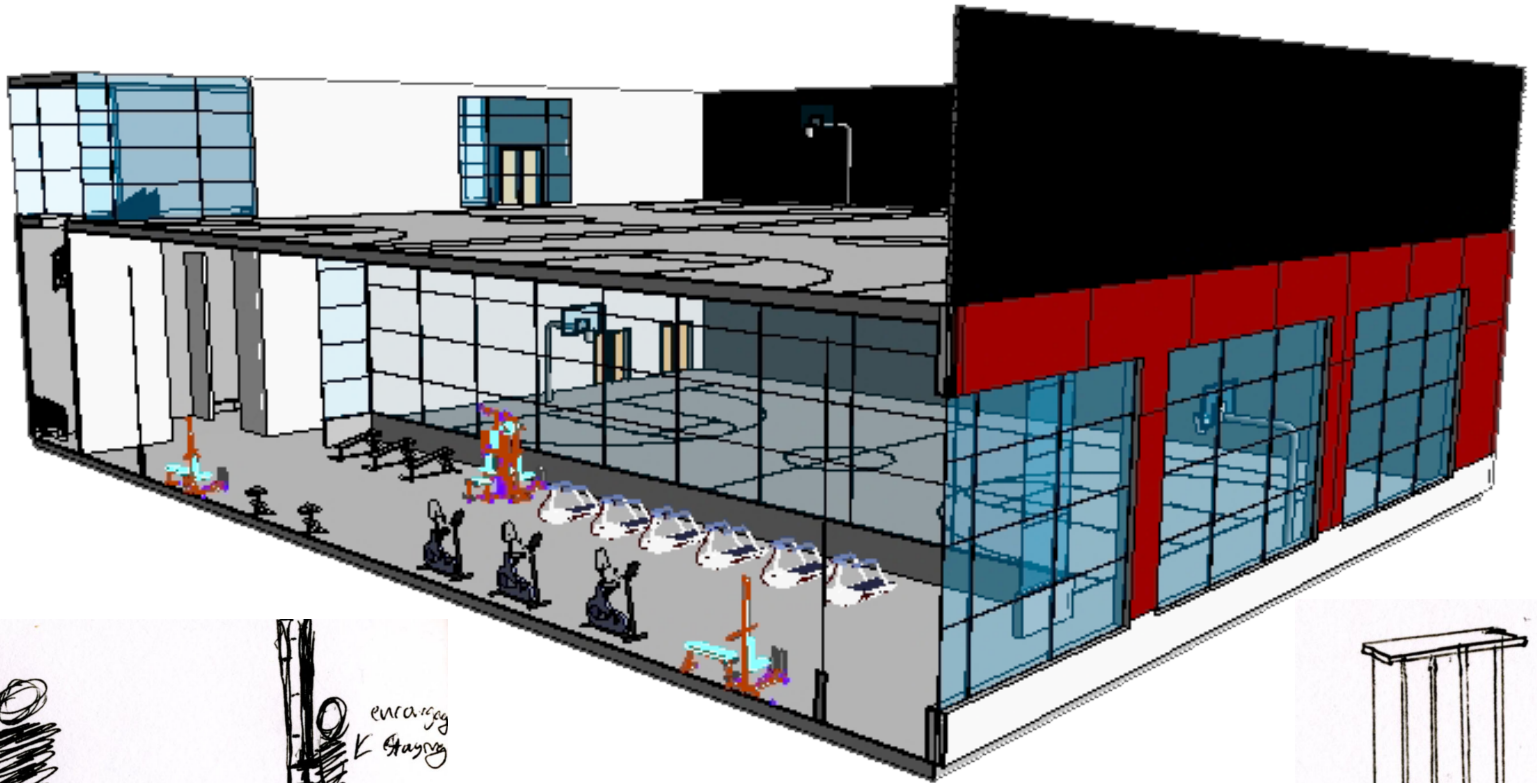
Cells were selected over dorm style housing for safety and visibility reasons. Less time will be spent in these cells than by an inmate in traditional prison so less accommodations are needed.



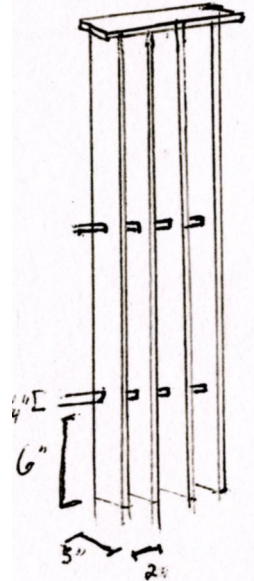


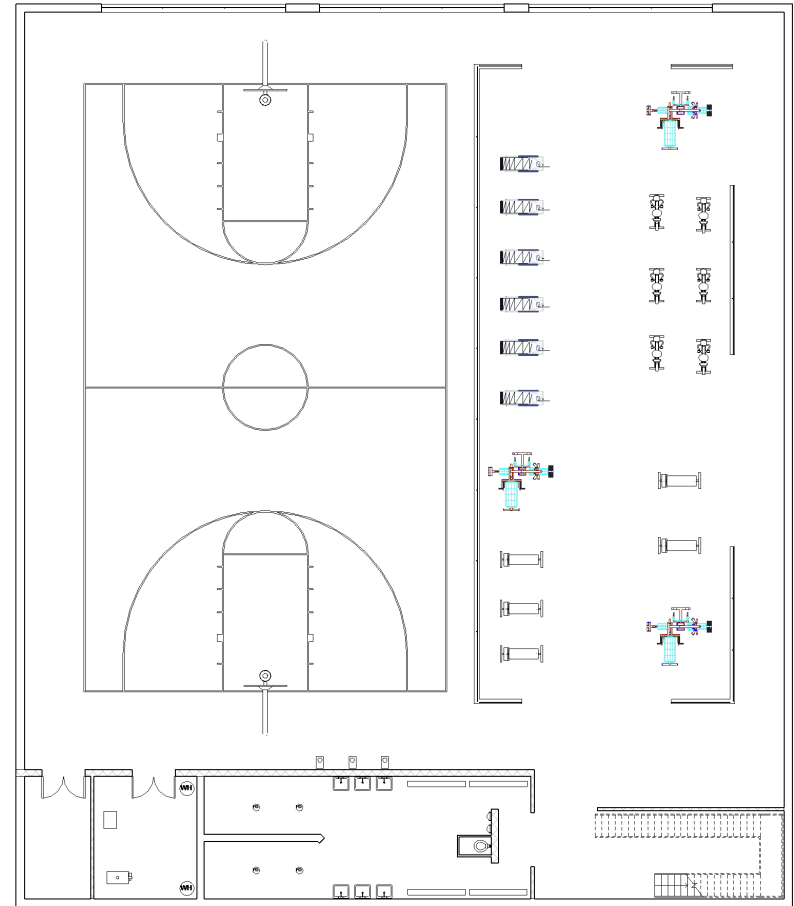
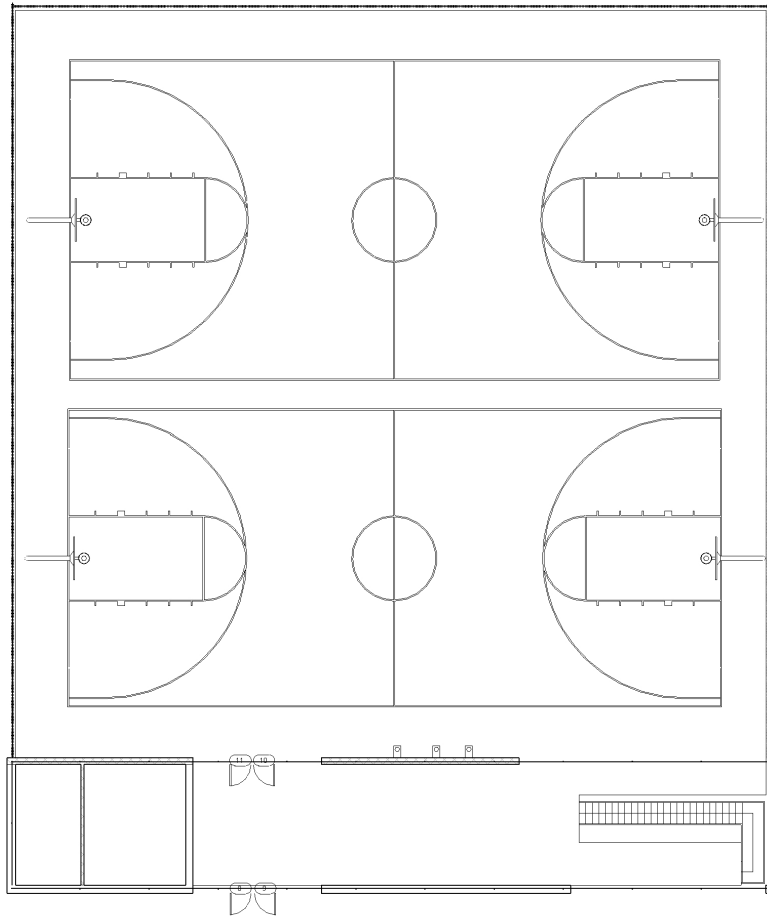


The cafeteria is where the inmates truly experience the fruits of their labor. With the attached greenhouse and surrounding crop gardens the visual connection is constant between their efforts and rewards. This is also promoting a more sustainable approach to food and the environment. Equipped with a full kitchen for food preparation.



The grate detail that goes around the two outdoor basketball courts acts as a security and safety feature but beyond that it also allows for a view of the inmates as they go about their day. The grate, more so than a chain link fence, allows views to be muted resulting in the inmates appearing as generic people, not a specific race, age or other stereotype.



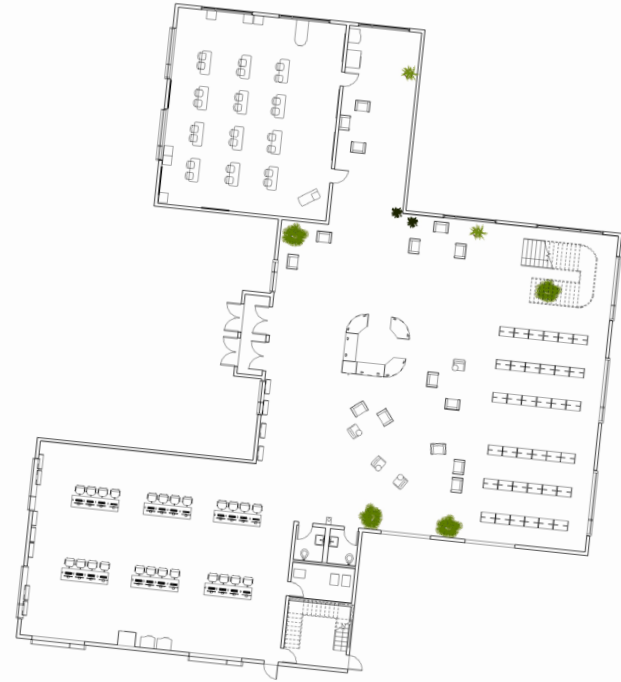


Physical activity is a part of everyday life on the campus. This building houses an indoor gym and weight room, a basketball court, walk/running track, full shower and locker room facilities and two outdoor basketball courts. It was important to not let this building hide views into the rest of the campus so it was sunk into the hillside.



The library offers the most opportunities for inmates' self improvement and learning of skills to help them be successful after returning to regular society.

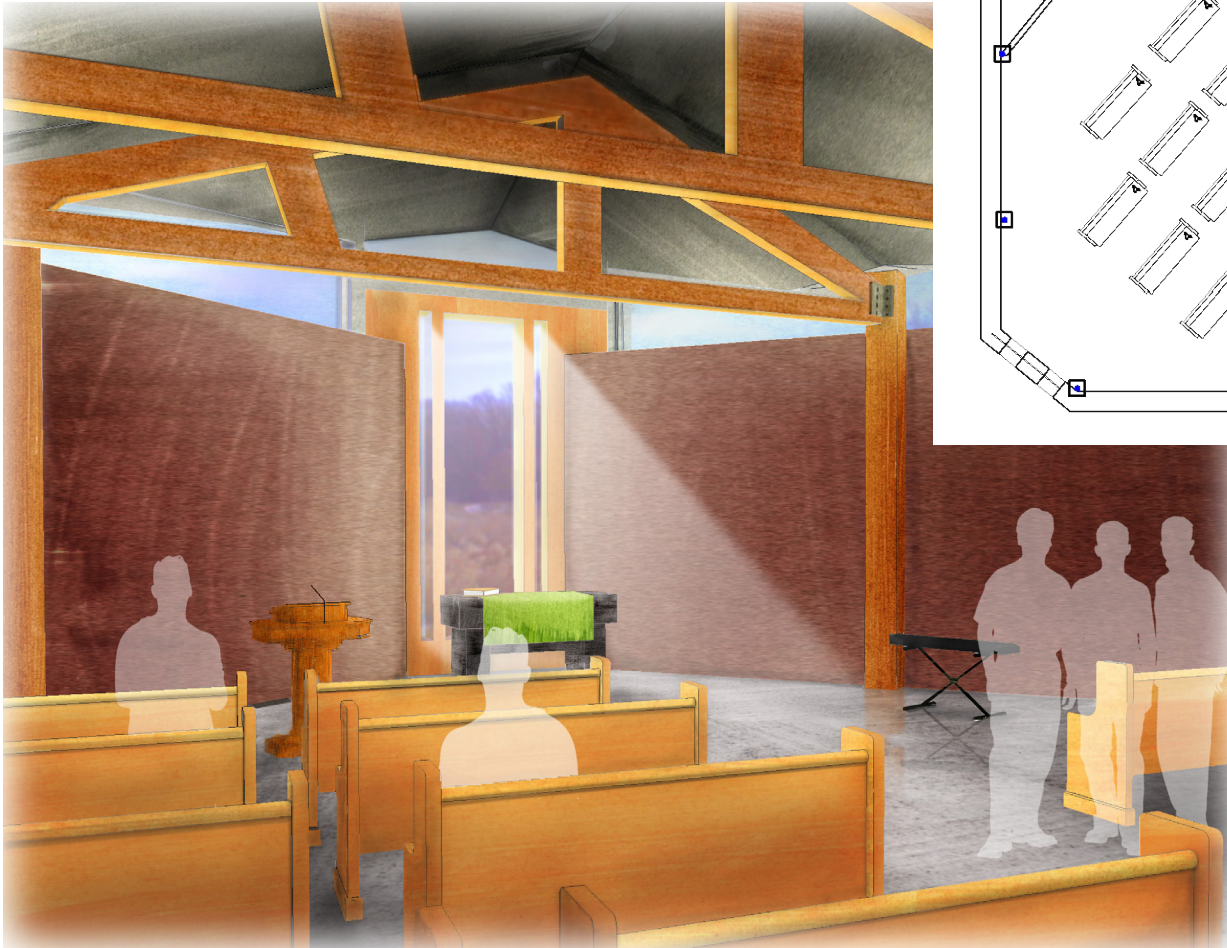
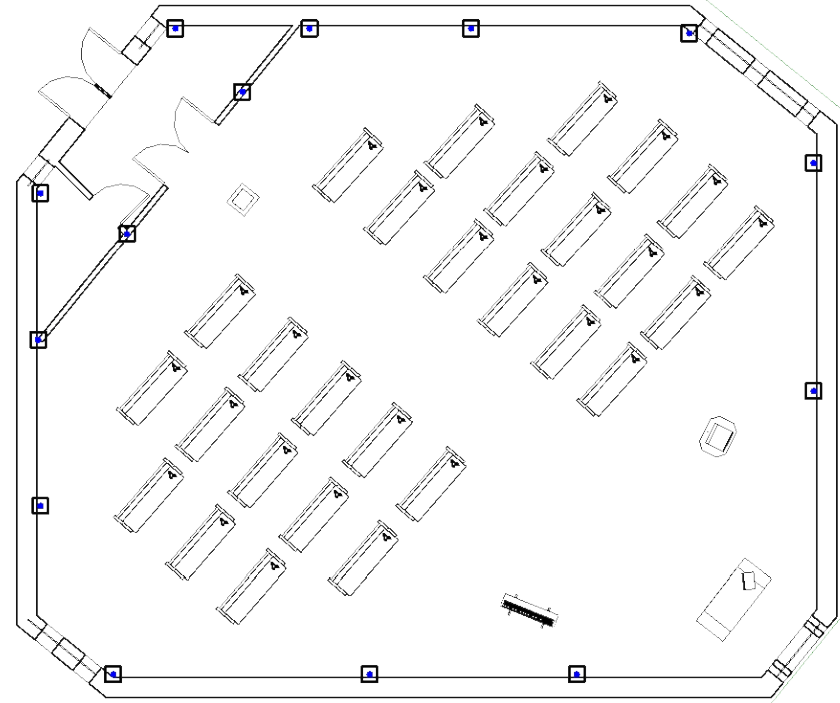
Classrooms are designed for both digital/virtual and traditional classes. The computer and physical media resources are linked to comfortable seating and work spaces for groups and individuals. With so much activity security becomes a consideration. The floorplan is laid out as such to keep the most visual connection between guards.





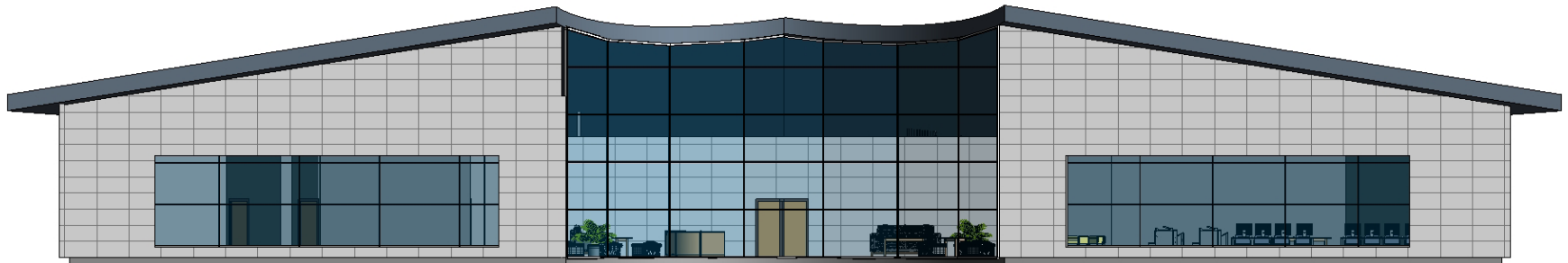
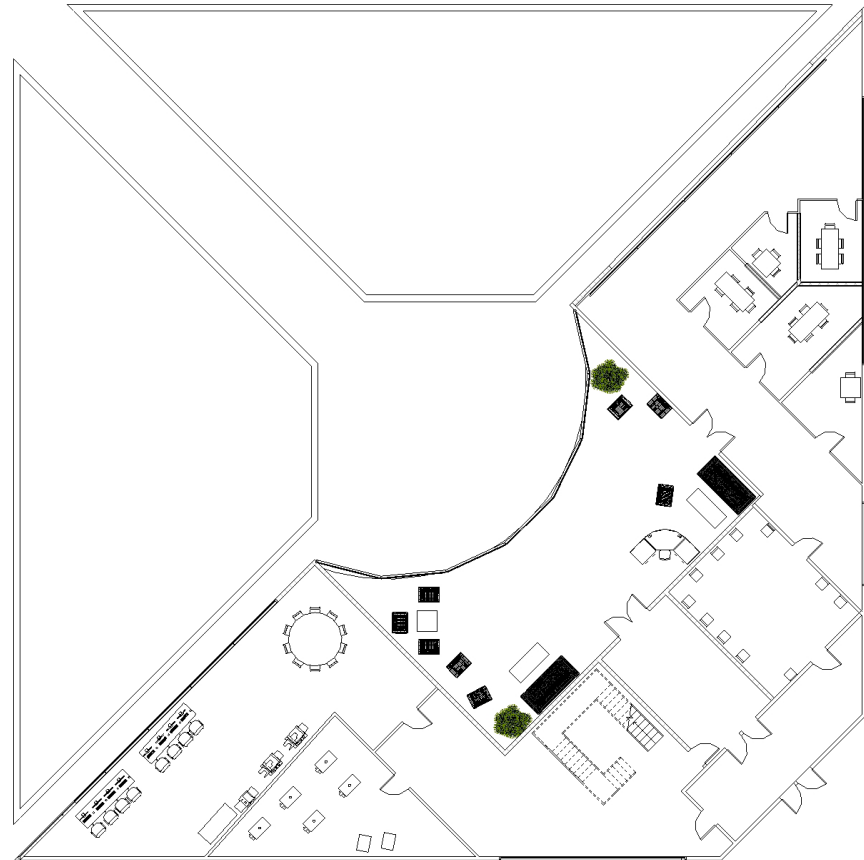
Other visual consideration was given to the inmates and outside society. For the rest of society inmates are seen with weary, fearful eyes. The placement of the classrooms provides views for the inmates of the life going on outside of the compound, a sort of goal to keep in mind. More so these views are to show the outside world the positive things these inmates are doing to improve their lives. They should not be seen with fear, but compassion and respect.

Considerations for numerous denominations went into this space. Due to the limited amount of time the inmates will spend here, and the open, high visibility floorplan, there is little risk of vandalism. This led to a selection of warmer materials such as wood framing and textured walls.



There is flexible space in the floorplan for a variety of prayer services and the front is directed towards Mecca.

Inmates arrive at the facility by going directly to the housing buildings. They only time they will enter this building is to visit with family or legal council until the day of graduation. At that point they will be allowed to walk free through the main doors, back into the outside world, hopefully never to return. There was special consideration given to this progression. It needed to be ceremonial without becoming mundane, or excessive. The sketch below depicts design exploration looking for the ideal form of this entry and final exit space.



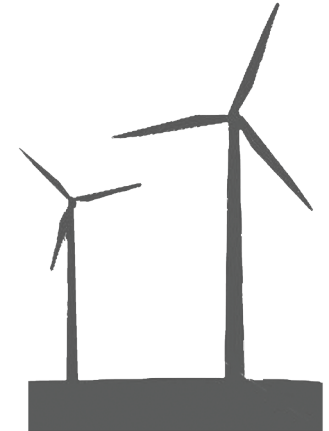




Solar energy will account for 17% of the energy needed for the facility. Panels will be located on the roofs of the administration, library and housing buildings. With a total of 12,000 square feet (600 modules) produces an estimated 162,000 kW annually at roughly \$.08 per kW.



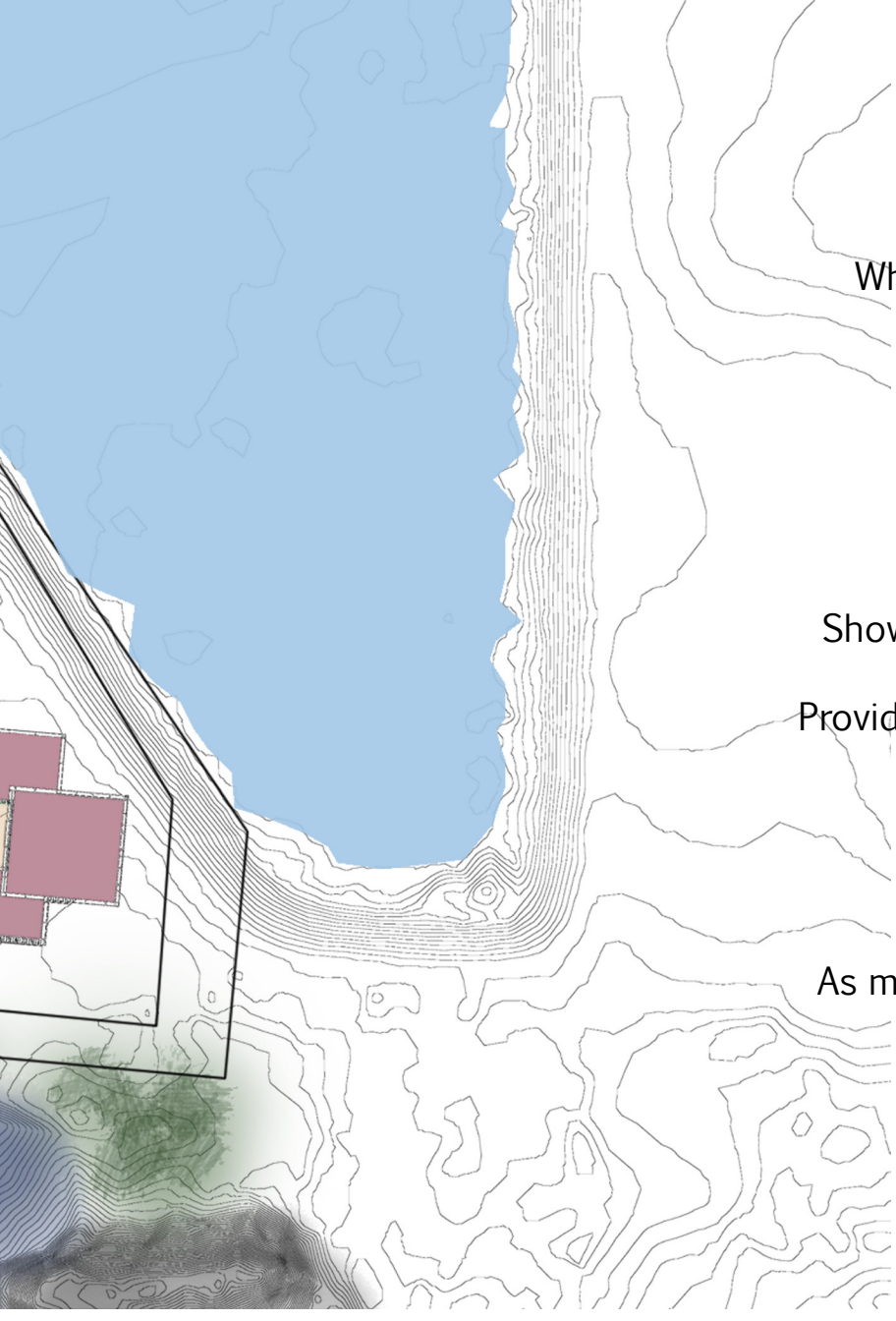
Wind Energy will account for an additional 20% of total energy needs. The three towers will be located on the west of the site. Although a longer payback period than the other energy sources wind energy provides great supplementation to the inconsistency of solar, and vice versa



Direct exchange geothermal was selected because it requires 15-30% less tubing length and half the diameter of water based systems. Due to the granite on the site, the lessened excavation costs were a huge incentive. Every building on the campus utilizes geothermal energy, integrated into either in-floor heat and/or the ventilation system, working to cool or heat the air before conditioning, and distribution so as to drastically lessen the outside energy needed. Payback period of 15-20 years.







What psychological effects can architectural design generate for the incarcerated, especially effecting their rehabilitaion?

Develop a sense of community, not isolation.

Show them structured opportunities, not hopelessness.

Provide views of life beyond the fence and their time here.

Keep them connected.

As much as it is an investment in their future, it is an investment in our own.

FALL '08

tea house.....joan vorderbrueggen

History, traditions, stories all meld together in forming this staple of Japanese cultural heritage. Designed for along the Red river in Moorhead, Minnesota.

boat house.....joan vorderbrueggen

Competitive rowing teams are a growing club sport in the Minneapolis and St.Paul Minnesota area, utilizing the majestic Mississippi river.

SPRING '09

dwelling.....darryl booker

Deeply influenced by the client and the natural beauty of the site.this 480 sq ft dwelling set in Cripple Creek, Colorado was designed as part of an experimental commiunity with a net-zero carbon footprint.

dance studio.....darryl booker

A building devoted to the art of dancing, designed for the North Dakota State University campus in Fargo, North Dakota.

FALL '09

arctic school.....steve martens

Community forms the structure of this kindergarten through senior-high school in Tuktoyaktuck, Canada. This design integrated all the needs of the community.

regional airport.....steve martens

A regional airport for Rochester, Minnesota with a specialized roof structure to embody the energy and elegance of flight.

PREVIOUS STUDIO PROJECTS

SPRING '09

city planning.....cindy urness

The city of Fargo, North Dakota has great potential for becoming a transit oriented city. This project explores those opportunities and proposed several avenues for the city to develop to become more commuter and environmentally friendly.

natatorium.....cindy urness

The sport of swimming exemplifies elegance and strength. This facility was designed for Fargo, North Dakota and housed facilities for both professional and casual use.

FALL '10

high-rise.....don faulkner

43 stories of mixed use development including retail, commercial, cultural, community and residential uses, located in the heart of San Francisco, California.

SPRING '10

boom and bust.....don faulkner & frank kratky

Tioga, North Dakota is facing an economic boom due to oil and natural gas drilling in the Bakken shelf. This unsustainable rapid growth could break the town later if not designed into the city's development plan. This project designed solutions to get Tioga through the bust and healthy going into the future.

FALL '11

water research.....mark barnhouse

Linton, North Dakota lies along the Missouri river and this design brings a research facility to the waters' edge to get a full cycle look at water and how we live with it.

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contact information

cell phone: (320) 249-6978

email: [morgan.fredrickson@gmail](mailto:morgan.fredrickson@gmail.com)

mailing address: 26545 Jade Road
St.Cloud MN, 56301

MORGAN FREDRICKSON

'Don't crash! We don't have time to rebuild the models!'