



REBUILDING THE HUMAN EXPERIENCE



MINDY HART





REBUILDING THE HUMAN EXPERIENCE

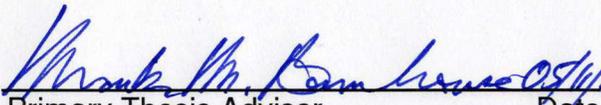
TITLE

A Design Thesis Submitted to the
Department of Architecture and Landscape Architecture
of North Dakota State University

By

Mindy Hart

In Partial Fulfillment of the Requirements
for the Degree of
Master of Architecture


 Primary Thesis Advisor Date


 Thesis Committee Chair Date



May 2011
Fargo, North Dakota



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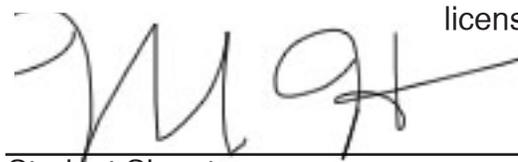
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ABSTRACT



This thesis will create a natural food co-op in a town devastated by natural disaster. The design of this building will utilize a site with an existing structural failure in Greensburg, Kansas, left behind after the rebuilding effort. After a disaster like a tornado, people look for the familiar in their surroundings and lifestyle, and when that cannot be achieved, the only thing left is more emotional devastation. The completed building will provide the community with a place to interact and shop; likewise, the building will be a place for merchants to sell products.



What are the adverse effects that rebuilding a town devastated by natural disaster might have on a community?



PROBLEM STATEMENT





PROJECT TYPOLOGY

This thesis will create a natural food co-op in Greensburg, Kansas, where people can go to buy and sell product in a manner more convenient to their small town agricultural way of life, utilizing an existing structure that has been abandoned.

THE CLAIM

Natural disasters affect people and communities all over the world, but the way people react to them defines what will happen to a place once the rebuilding is over.

SUPPORTING PREMISES

Community consumption habits directly relate to the retail reconstruction of a given place.

The effect of a natural disaster in a given area can't be fully understood without knowing the community affected.

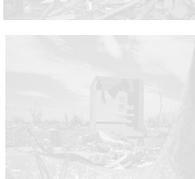
The outcome of a community after a natural disaster must not be evaluated on instant gratification but rather on the outcome for years to come.

CONCLUSION

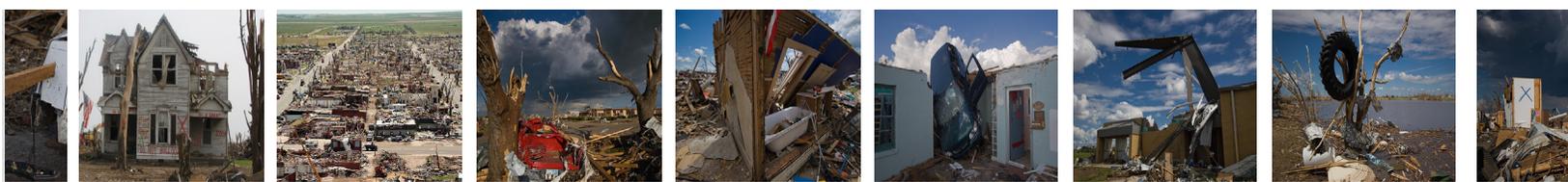
Without a true understanding of the effects disasters cause a community, one cannot attempt to reconstruct the lifestyle and habits of people within any given area.

PROJECT JUSTIFICATION

There are too many places in the world where outside interference has led to negative impacts on the rebuilding of a community after a disaster. In turn, the reconstruction process has the largest effect on any potential for stability for which a community strives.



STATEMENT OF INTENT





PROPOSAL





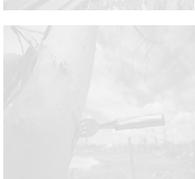


Can a structure be the catalyst to bring a community together after years of negative effects associated with rebuilding following a disaster? Building a natural food co-op in a conservative community set in its agricultural values will allow residents to feel complete and connected to the way of life they are used to. By taking a failed building idea and repurposing it into something of use to a community struggling to function the way it did before, I can dilute some of the negative connotation associated with large amounts of outside interference.

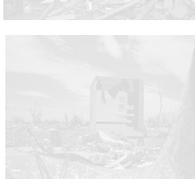


All too often, a region is affected by a major natural disaster. In the years to come, that region is unable to sustain the way of life it was once accustomed to.

Additionally, the loss of population associated with the aftermath leaves the community weak in its abilities to regain that way of life. It is essential to rebuilding that we not only give back lost structures, but understand how they will function once people start to inhabit the area once again.



I have learned from my personal experience in this given area that understanding what the people in the town and surrounding communities are familiar with is vital in knowing how a community can sustain certain building typologies. Rebuilding cannot always be an effort to give a community what it never had, but understanding what it did have, and how that can be enhanced to provide more than it had previously done.



NARRATIVE

USER/CLIENT DESCRIPTION



USER

The co-op situated in the heart of Greensburg, Kansas will be run by the Greensburg Economic Development Board which is part of the Kansas State University research and extension, and therefore will be owned by Kansas State University (Muntz).

COMMUNITY

The target users of the facility will be the people living in and around Kiowa County who are interested in buying and selling healthier foods from local crops and livestock.

PEOPLE AND PEAK USAGE

The co-op will employ between 15-30 people, with any number of them working between the normal business hours of 6 a.m. and 8 p.m. Monday through Saturday and 12 p.m. and 6 p.m. on Sundays. Further, it will accommodate anywhere from 0-60 customers at any given time.

PARKING REQUIREMENTS

Fifteen parking spots will be available for the customers' use. There is also available street parking near the downtown area. There will be space for two large trucks/vehicles to load and unload goods at the back of the building.

PHYSICAL RESTRICTIONS

Few physical restrictions will limit the customers in the building. It will be fully handicap accessible for all users.

HEALTH ISSUES

The nature of the co-op will give people information by providing stations on healthy cooking and eating habits. Additionally, the people who work there will be knowledgeable on healthy consumption, and will also be able to provide insight on picking healthier alternatives.

MAJOR PROJECT ELEMENTS



MARKET

The **market** will be the central focus of the facility. It will house locally grown goods, along with a selection of organically grown and produced foods that are from around the area.

INTERACTIVE DISPLAY STATIONS

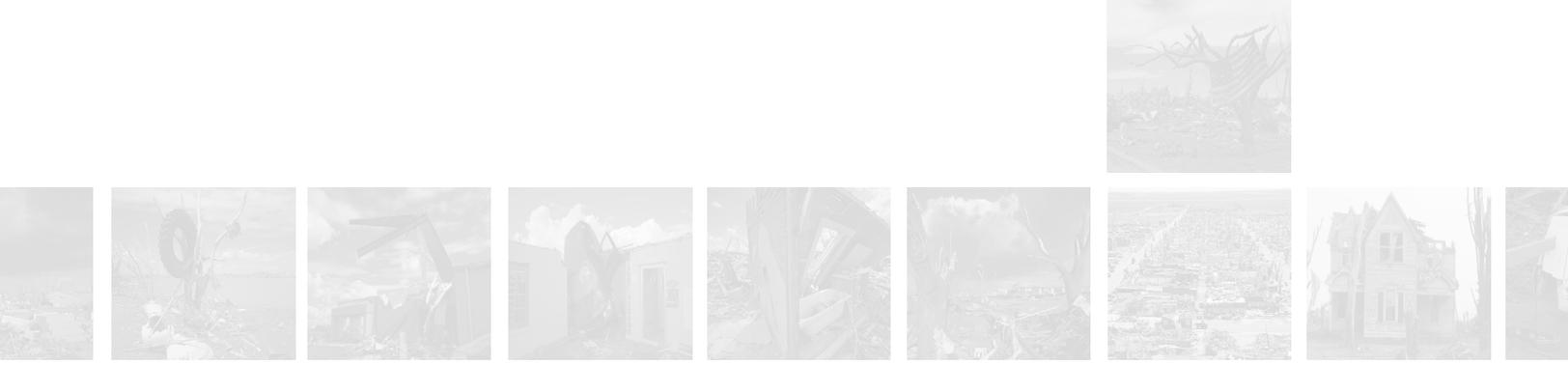
The **interactive stations** will showcase and educate people about particular products as alternatives to consumption habits, by having employees explain how they can be prepared and eaten.

OFFICES

There will be **offices** for the administrative staff within the facility. These will be areas that are conducive for productivity.

BACK ROOM PRODUCT PREPARATION

The **back room** is an area closed off from the public used for merchandising product. It will also serve as a receiving area for local farmers to bring in goods to be sold at the co-op.



SECONDARY SPACES

The project will also consist of these **secondary spaces**: breakroom, restrooms, mechanical/electric space, maintenance areas, circulation, and parking, which will all provide vital roles in the buildings activities throughout the day.

MAJOR PROJECT ELEMENTS

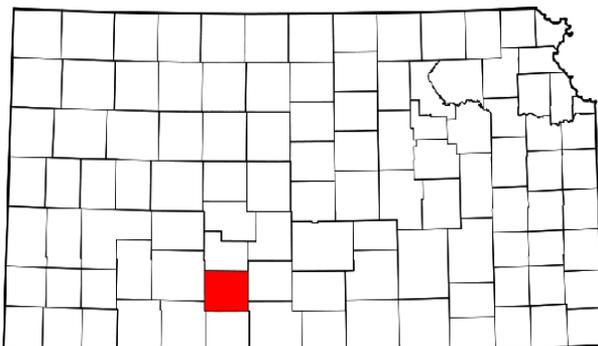


MACRO



Kansas is located in the central midwest. It is named after the Kansas River which runs through it. The state is bordered by Nebraska on the north, Missouri on the east, Oklahoma to the south, and Colorado to the west. The land area of the state consists of 81,815 sq. miles, with a population of 2,744,687.

Greensburg is located in southwest Kansas and is the county seat of Kiowa County. The estimated population is 1,574 people. It is home to the world's largest hand dug well ("Greensburg, Kansas," 2010).

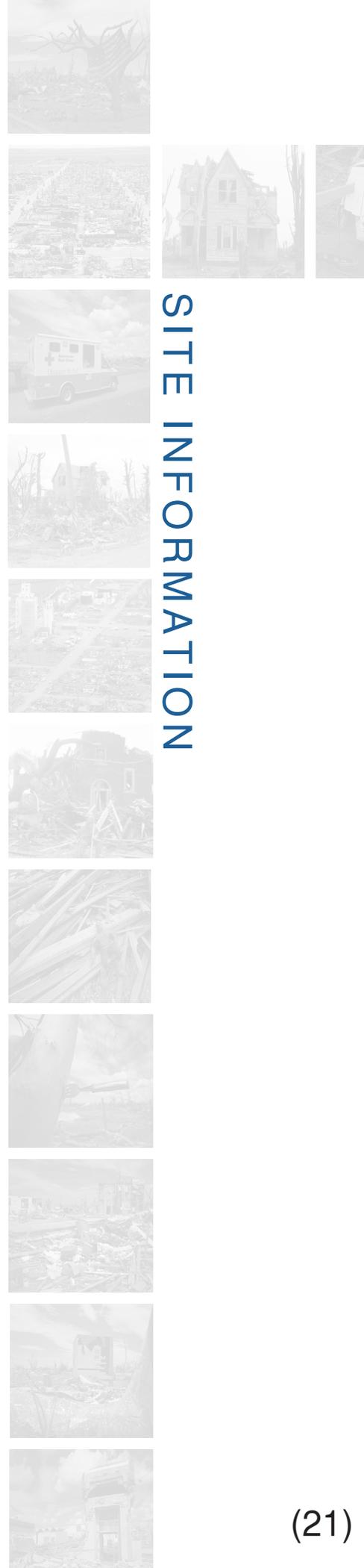
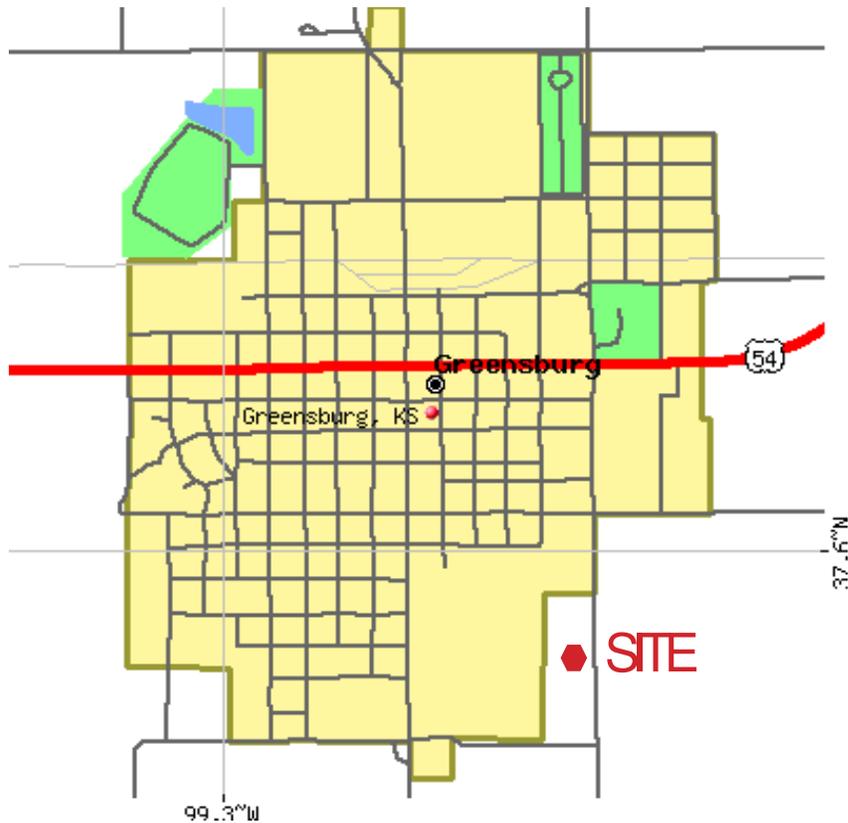


SITE INFORMATION

At 9:45 p.m. on May 4, 2007, Greensburg was hit by an EF5 tornado. The tornado was estimated to be 1.7 miles in width, wider than the city itself, and traveled for nearly 22 miles. Ninety-five percent of the city was confirmed destroyed, with the other five percent severely damaged. The National Weather Service estimated winds of the tornado reached 205 mph ("Greensburg greentown," 2007).

After the tornado, the city council passed a resolution stating that all city buildings would be built to LEED platinum standards, making it the first city in the nation to do so. Greensburg is rebuilding as a "green" town, with the help of Greensburg GreenTown, a non-profit organization created to help the residents learn about and implement the green living initiative ("The story of Greensburg," 2008).

The city's power will be supplied by ten 1.25 MW wind-turbines. Carbon offsets generated from the turbines are being managed by NativeEnergy, and have been purchased by charter supporters including Ben & Jerry's, Clif Bar, Green Mountain Coffee Roasters, and Stonyfield Farm ("Greensburg charter supporters," 2008).



MICRO



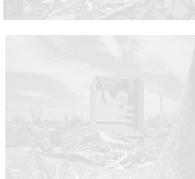
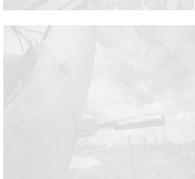


This site was chosen to utilize the abandoned structure to the left but will now use only the existing land that the structure occupied. It is a clear representation of the adverse effects that rebuilding can cause after a natural disaster.

The said building was going to be an example of how to build sustainably utilizing a new kind of insulation construction. It was being administered by The Learning Channel(TLC) television network, and was abandoned after the realization that it had been improperly reinforced. The structure has been sitting, half built, in the city for nearly three years, and is considered an eyesore to everyone in the community.

This structure is located south-east of downtown on Olive Street. Directly to the north and south there are a few homes and some newer construction happening. Further south of the site is where "FEMA Town" and the new tornado shelters for the town are located. Additionally, to the west and east there are open fields.

The site is close to all major roadways within the city. It is five blocks east of Main Street, and four blocks south of Highway 400/54, which runs directly through the town.



SITE INFORMATION

PROJECT EMPHASIS



The main goal of this project is to learn how we can better accommodate communities after a natural disaster. There will always be outside intervention when it comes to rebuilding a town. The key to properly rebuilding is understanding the habits of the community and transferring those ideas into architecture that can sustain a community.

I will focus on how architecture in a given place can alter the well-being of a community, and how that well-being is directly related to the productivity of a small agricultural town like this one.



This thesis will utilize an in-depth, mixed method quantitative/qualitative research approach. Research will be done regarding the theoretical premise, project typology, historical context, site analysis, and programmatic requirements. Quantitative information will be gathered by experiencing the site and surrounding areas, and visiting the site and similar sites of natural disasters around the area. Qualitative data will be collected from books, archives, city/government documents, interviews, and journals. All data will be analyzed in the thesis and presented graphically and/or written.

I plan to make this happen by utilizing a completion date for certain categories. At the same time, information that is gathered during the course of the thesis will be evaluated and presented at the time it was reviewed. The research will be directed by the theoretical premise/unifying idea.

Documentation will be done in incremental phases throughout the research and design process. This includes but is not limited to photography, scanned images, sketches, models, and digital drawings. All process work will inform the design, and be filtered by relevance and how the project relates to the site.



A PLAN FOR PROCEEDING...





SECOND YEAR FALL 2007

Mike Christenson
Tea House, Fargo, North Dakota
Boat House, Minneapolis, Minnesota



SECOND YEAR SPRING 2008

Stephen Wischer
House for Neurotic, Fargo, North Dakota



THIRD YEAR FALL 2008

Ronald Ramsey
Eero Saarinen Office Complex,
Hypothetical Agincourt, Iowa
Library, Moorhead, Minnesota



THIRD YEAR SPRING 2009

David Crutchfield
Performing Arts Center, Austin, Texas
Boutique Hotel, New Mexico



FOURTH YEAR FALL 2009

Bakr Aly Ahmed
High Rise, San Francisco, California
Musical Instrument (KKE)



FOURTH YEAR SPRING 2010

Frank Kratky, Darryl Booker, Paul Glys
Urban Slum Master Plan,
Santo Domingo, Dominican Republic
Sustainable School (Marvin Windows),
Tanzania, Africa



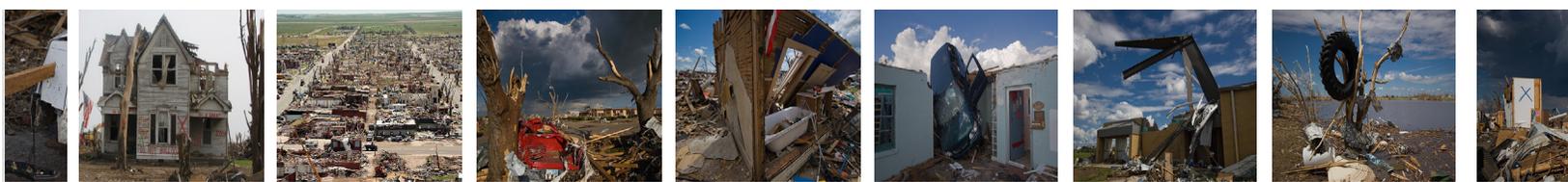
FIFTH YEAR FALL 2010

Mark Barnhouse
Water Research Facility,
Linton, North Dakota



PREVIOUS STUDIO EXPERIENCE







PROGRAM



THEORETICAL PREMISE RESEARCH





Without a true understanding of the effects disasters have on a community, one cannot attempt to reconstruct the way of life and habits of the people affected.



INTRO

After researching the theoretical premise of the project, stated above, I realized the need to consider what specific effects cause people and communities the most distress and how to we can minimize that stress by taking the proper steps when rebuilding. Of that, the psychological and economic effects seem to cause the most damage. The study of the psychological effects caused by natural disasters has been ongoing for decades because of the sometimes lingering and severe effects. Economic effects of natural disasters have been reviewed in all contexts large and small throughout history, allowing people to know in advance the sequence of events that in most cases will happen regarding economics. This research will also include the ways communities rebuild after disaster and the process associated with rebuilding. I will present the effects from a clinical and economic standpoint with a look into past disasters and their future outcomes.

Natural disasters cause many long-term effects on people and communities, and without a proper study of these particular effects we cannot attempt to take the proper steps to rebuilding the moral and built spaces of a community.

THEORETICAL PREMISE RESEARCH



Natural disasters can cause more than just physical damage. The emotional trauma that can be experienced during and after a natural disaster can linger long after the storm is over. The nature of a natural disaster and the way it is dealt with can also lead to long-term problems. The mental and emotional effects of natural disasters may not be apparent at first. This is because the first reaction is to take care of the physical damage. In a state of emergency, people need to be rescued and their physical safety is of first concern. Efforts are focused on cleaning up, rebuilding and providing shelter. Because there are so many things that need to be taken care of, many people have to put their emotions on the back burner while they deal with the physical damage. Once the houses are rebuilt and the destruction is cleaned up, emotional trauma begins to emerge.

Psychiatrists who have studied the mental health effects of disasters have noticed an apparent pattern. The first experience is shock and terror. Then there is a feeling of euphoria that one has survived. Soon after, this feeling melts away into depression and anxiety and the realization of what has happened and what could have happened. Some people appear to be unaffected by the natural disaster until symptoms start to emerge months later. Changes in behavior can include depression, guilt, insomnia, anger and withdrawal from family and friends.

PSYCHOLOGICAL EFFECTS

A lot of emotional distress from a natural disaster can be due to a sense of loss. This can be the most extreme loss, like the death of a friend or family member, but can also stem from the loss of seemingly less important things. When someone's home is destroyed, it might feel like a part of them has been taken away. Most people put a lot of work into their homes and have many memories. For most people, their home is the one place where they have a sense of security and privacy. Some of the hardest personal items to lose are photographs. Though they are just material objects, they hold memories and clues to a person's past.

People who have emotional trauma should not be expected to just get over it and can benefit from psychological therapy. Many of these people are diagnosed with post-traumatic stress disorder. According to the U.S. Department of Veterans Affairs, one of the most important aids for recovery is having a strong network of social support. This can be fellow survivors, friends and family.

Health organizations are taking this issue seriously. In the 1980s, the National Institute of Mental Health formed the Center for Mental Health Studies of Emergencies. Researching the effects of disasters and educating aid workers and other mental health professionals is essential. The more aid workers and health professionals know about the effects of natural disasters, the better chance there is of being able to counsel people before it gets worse (King, 2010).

THEORETICAL PREMISE RESEARCH



INTRO

Natural disasters are destructive, often tragic events that harm people, the environment, and economies. They affect not only the region but the national and global order as well. Storms reshape the movement of goods and services, world prices for energy, food, and building materials, individual spending choices, and company profits.

Natural disasters always alter the building block of economic production. Personal tragedy through injury or death decreases the quality of the labor force. Damage to the buildings and machinery increases the amount of capital needed to provide goods and services. Disasters often contaminate air and water, killing wildlife and damaging other natural resources.

SUPPORT FOR DISASTER RECOVERY

In all economies individual households, businesses, and governments are responsible for spending. Due to its vast resources, the U.S. government has taken the primary responsibility for the rebuilding efforts at a national and global level.

Massive private sector support is usually provided by individuals and businesses. Organizations such as the Red Cross and the Salvation Army respond quickly with medicine, food, and supplies for people. Volunteers provide much of the staffing and financial support for these organizations.

In the context of the tornado in Greensburg, Kansas, families have contributed money and supplies to relief agencies. Funds have been raised through schools, religious institutions, and civic associations. Businesses have sought contributions from their employees and customers. This is a direct contribution to relief because they are donating a portion of the profits and goods the individual companies produce.

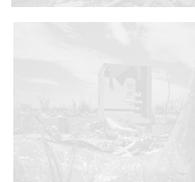
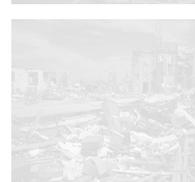
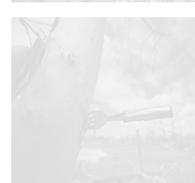


EFFECT ON CAPITOL AND REVENUE

Natural disasters can have important implications for public expenditure. Disasters are likely to result in additional expenditure or the partial reallocation of already committed financial resources to meet the costs of repair and rehabilitation of public property and to provide support to the victims. These actions may lead to the postponement or abandonment of planned investments, reductions in the provision of public services, and deferment of wage and salary increases. Implementation of ongoing projects may be delayed, increasing their ultimate cost. Such problems can cause additional pressures on administrative capacity in the aftermath of a disaster.

Public revenue may also be affected. Disasters can cause government revenue to fall, since lower levels of economic activity, including possible declines in imports and exports, imply reduced direct and indirect tax revenue. Although such losses may be partly offset by increased flows of official external assistance, they are unlikely to be entirely compensated for. Publicly owned enterprises may experience disaster-related losses, placing an additional burden on government resources.

ECONOMIC EFFECTS



THEORETICAL PREMISE RESEARCH



ECONOMIC ASSISTANCE

It is widely believed that the international community responds to disasters by increasing assistance, particularly in the form of emergency relief and food aid. This has given rise to concerns about moral hazard, in the sense that provision of post-disaster assistance creates disincentives for the region to ensure the physical protection of their assets through disaster prevention and mitigation measures (Freeman and others, 2002).

The response by donors to a particular disaster needs to be seen in the context of their normal noncrisis activity. Aid typically provides support for development, including investment and elements of recurrent spending associated with projects. In some policy contexts, donors and international financial institutions provide broader programmatic and budgetary support. When the shock of disaster puts pressure on the region's public finances and creates foreign exchange difficulties, an appropriate crisis response is low-cost, rapidly disbursing, additional financial aid that is focused on meeting the direct costs of disaster response and counteracting the recessionary effects of the shock. The appropriate balance of aid, including food aid and other relief supplies, depends on the precise nature of the shock and the circumstances of the affected place (Benson & Clay, 2004).



INTRO

Natural disasters such as tornados, floods, hurricanes, and earthquakes have long been part of the human experience. U.S. cities have experienced a full range of these disasters in recent years. The challenge to preparing for disasters is withstanding their impact. Rebuilding communities requires strategic responses by different levels of government in partnership with the private sector and the public. Rebuilding entails making choices, shaped by government regulations, as well as economic, political, geographic, and cultural considerations. Different people all have diverse views about the places they hope to reconstruct.

NEGOTIATE THE NEW TERRAIN

The first step to understanding what to do after a disaster is to expand perception of the new landscape. After disasters, people make distinctions of what is supposed to be in a certain place, but they must realize that all has changed. By doing this the person can open up new possibilities for a new landscape.

RESPONDING TO THE NEEDS OF THE DISPLACED

In responding to the needs of the newly homeless and possibly injured people, we must remember the underlying social and cultural attitudes of the region. New shelter and basic needs must be reestablished. The length of displacement must be considered when deciding on possible designs for temporary housing. The possibility of additional disasters happening in the future must be evaluated, giving the inhabitants some sort of protection. After shelter, what are the basic needs? Do the people need food and/or possibly clothing? Many people may think that food should come before shelter, but without the installation of a place to live, food cannot be administered to the public properly, if there is not place to go where will they go for food.

STEPS TO REBUILDING



THEORETICAL PREMISE RESEARCH



RETURNING A PLACE TO ECONOMIC VIABILITY

After the disaster the economy must be restarted. There are six main guidelines for doing so; they are as follows: supply short-term income and other financial assistance to distressed households, revive the regional economy's disrupted export oriented business, provide financial, legal and regulatory forbearance, reconstruct public infrastructure and institutions, implement tax incentives for housing and business development, and facilitate a well functioning insurance market.

REBUILD TRANSPORTATION

In a city, the transportation infrastructure serves as both the nervous and circulatory system, and without it a city cannot service itself. Doing so is among the most critical activities. Because the relationship between transportation and the life of the city is spatially complex, the manner of its restoration has immediate and long-term implications that are fully interdependent. The restoration must reestablish order while not disabling future positive economic and social outcomes.

The disaster recovery response happens within three primary time frames: immediate/permanent, immediate/temporary, and long-term. Each frame has a different set of issues and actions associated with it. Actions associated with the first two frames are well established in concept and in practice, while the third is less established. Transportation's restoration may seem complex but it is quite simple; it allows the opportunities for the appropriate long-term outcome



RESTORE URBAN VIABILITY

It is not only difficult to rebuild a place after a disaster, it is also difficult to evaluate when rebuilding has occurred. This is true because the act of rebuilding can be defined literally, or can be a metaphorical judgement about the broader pattern of recovery or human resilience, issues that are much harder to measure. It is difficult to know at what point in time it is okay to measure the quality or quantity of rebuilding that has occurred. The issues of rebuilding not associated with reconstruction of structures cannot be measured in weeks or months but rather years and decades. Because of this it is harder to know if we have been successful in rebuilding.



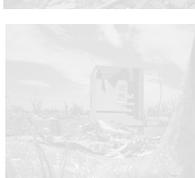
RECREATE A SENSE OF PLACE

Recreating a sense of place can be done by promoting cultural preservation. This allows people to feel a sense of belonging within a given place. These things are often overlooked after a disaster and contribute largely to population losses. When people no longer feel a connection to a place they will move on to find another. Many argue that cultural preservation is the core to post disaster rebuilding.



UNDERSTAND THE ARCHITECTURAL ECOLOGY

The future of a given place must include the historic architecture and cultural landscape; without a known past a place can not move into the future successfully. Even though damage often occurs to the vital architecture of a region, it is important to reestablish these buildings in the historical context of the place.



STEPS TO REBUILDING

THEORETICAL PREMISE RESEARCH



There are numerous psychological and economic effects that can lead to the decline of a particular place after a disaster. If we can understand the necessary steps that need to be taken in the process of rebuilding, the result can be an outcome of possibly greater success for the community and the people living in the disaster affected area.

Over that past few decades areas of psychological research into the minds of people affected by disasters of every kind have led to a greater understanding of trauma resulting in post traumatic stress disorder. Health organizations have created centers for research for the mental health studies of emergencies to better help with understanding. The way emotional trauma is handled after a disaster is very important to the psychological outcome of the affected individual, and can lead to the prevention of long-term problems. The apparent signs of such trauma may not always be visible because they may not show up until long after the disaster has taken place. It is important to remember that the effects of such problems are likely to cause just as many problems as the disaster itself.



Along with the psychological effects, the economic effects have also been studied in their relation to natural disasters at all levels. Economies can suffer greatly after a disaster, and it is important to understand the effects and quickly develop a plan for recovery. Support from all levels, including government, private sector, and individuals, are crucial to the recovery of a place after a disaster. Effects can most often be seen in the large scale contest of capital and revenue. This means that there is most often additional expenditure and reallocation of funds to help rebuild public land after a disaster. Public revenue may also fall proceeding a disaster because of the lower levels of economic activity in the given region. There is hope in all this though; people have a greater understanding of these effects while communities and governments can make smarter decisions on how to deal with the economic downfall that may come after a disaster.

As we learn to understand the effects associated with natural disasters, we must also educate ourselves about the most logical way of rebuilding a community. Negotiating through a new terrain is the first step to recovery. We must look at a place in the context of what it is now and what has happened, and not what it was before the disaster as it will never be the same. Second, the needs of the displaced must be addressed: what will they do and where will they go? After this, we can start to understand the economics of it all while trying to rebuild main functions of the city such as transportation routes. Finally, it is important to understand the people and the place where the disaster happened. A sense of place must be created in the new environment while understanding the architectural ecology of the place. When these things happen it is easier to develop an accurate timeline for the rebuilding process not only structurally, and economically, but emotionally as well.

SUMMARY



TYOPOLOGICAL RESEARCH



Shopping Center Interspar

Vienna, Austria(2004)

Architect: ATP-Achammer-Tritthart & Partner

The Spar Supermarket in Vienna is the first of the chain to be designed with a new corporate vision in mind. It is also the first to be designed in accordance with new design restrictions, in the center of a densely populated city. The market, which occupies 37,000 square feet, displays the products in accordance with new arrangements that are more coherent with a user-friendly shopping center.

The glass facade designed in response to the market's location allows a lot of natural light into the building, along with a view through the interior. The interior of the center's visual lightness and transparency are maintained to prevent the sensation of being totally enclosed. At the center of the market, customers come across a 33-foot atrium space and 720 square feet of multimedia screens, giving the space a theatrical feel. The ceiling is comprised of 11,000 square feet of cedar laminates, while the floor is composed of 37,000 square feet of natural stone. There are two escalators that transport customers to the upper level, offering a bird's eye view of the lower level from the glass balconies.



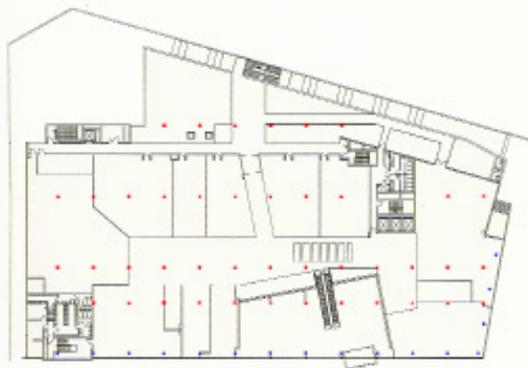
CASE STUDY ONE

SPACES

The structure is set up in a shopping mall format, providing the market on the ground floor with an area for additional shopping on the second level. The ground floor provides entrances on two sides for customers to enter the market. The middle of the ground level is comprised of the open market area, with offices and secondary spaces at the back. At the front, the escalators are located near the main entrance. Once upstairs, additional shopping and seating can be found for patrons, along with a large amount of circulation.



GROUND FLOOR PLAN



FIRST FLOOR PLAN



TYPOTOLOGICAL RESEARCH



ANALYSIS

In floor plan view, the gridded structure of the building can be seen with the placement of circular tube columns at set intervals at the perimeter of the building and square columns on the interior. The glass facade of the building runs along two sides of the building, providing natural light along with a number of views to the interior and views of the city from inside. Circulation through the building is very straight forward, providing a clear path through and around the perimeter of the market.

The lightness of the building can be seen in the section and elevation view. Also seen in section is the placement of parking within the structure underneath the main market area. The light rectangular massing of the structure shows a vertical grid running on three facades of the building. The rectangular shape of the repetitive mullion and glass placement show a grid on the north and east elevations. The rectangular massing of the building gives the illusion of symmetry, but the interval placement of the structural columns is a clue to the dynamic placement of spaces going on in the interior.

CONCLUSION

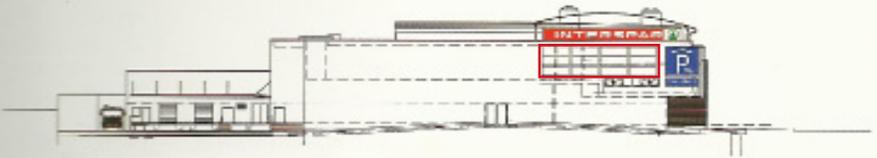
The design's reaction to what is already going on in the city is a good example of how to build for a particular place and community. The use of a chain market utilizing corporate direction to react to a particular site shows that change is possible within a given area if the response utilizes the existing habits of a community.



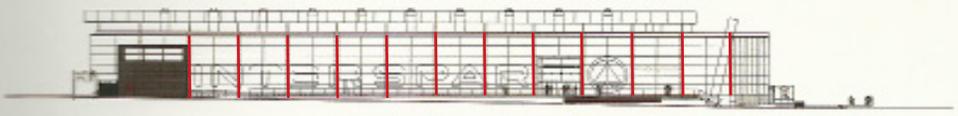
CASE STUDY ONE



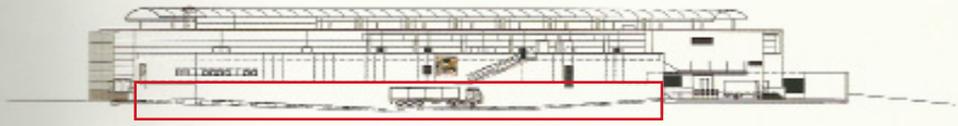
NORTHELEVATION



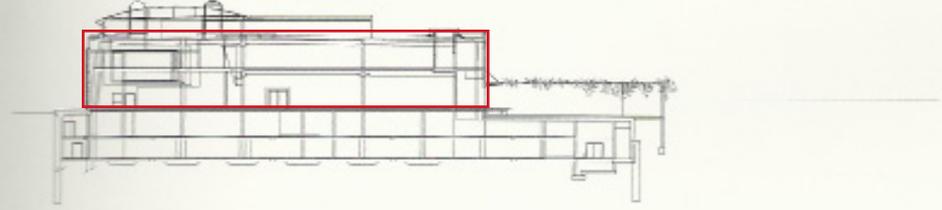
SOUTHELEVATION



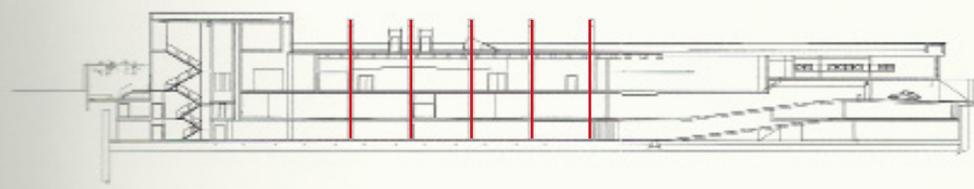
EASTELEVATION



WESTELEVATION



CROSS SECTION



LONGITUDINAL SECTION

TYPOTOLOGICAL RESEARCH

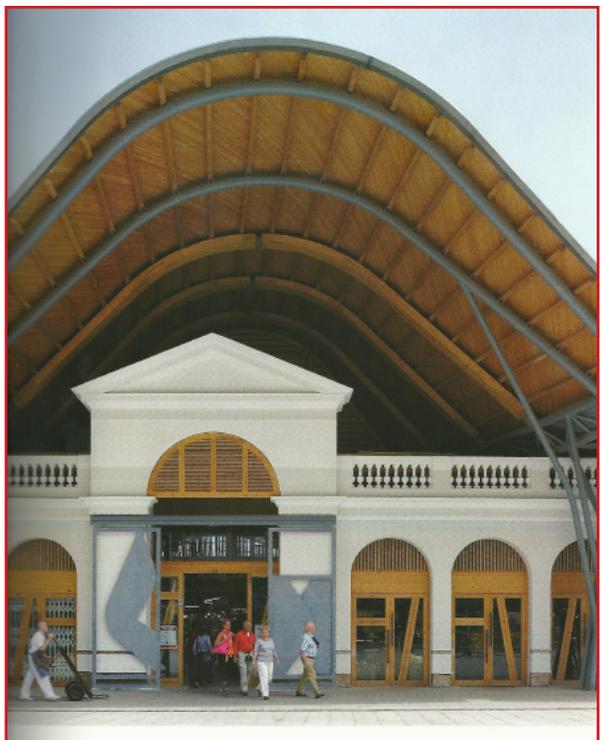
Santa Caterina Market

Barcelona, Spain(2005)

Architect: **Enric Miralles and Benedetta Tagliabue**

Santa Caterina is a reconstruction of a market, originally built in 1845, in one of the worst slums of Barcelona's Gothic Quarter. The restoration of the traditional market is comprised of five separate sections: underground parking, an automatic garbage collection center, an organization of archaeological remains from the Santa Caterina convent, the shopping area, and apartment buildings. The total surface area is 225,300 square feet, on a plot of almost 23,000 square feet. After being renovated, the market has become the center of Barcelona's newest fashionable neighborhood.

Three of the original market facades have been preserved and unified by the building's roof. The central area of the original market has been demolished, and the original perimeter has been reconstructed. The distinctive features are the original wooden supports, which, together with the structure of columns and metal girders, hold up the wooden roof. The brightly colored ceramic roof, visible from the streets and plazas, advertises the market like a horizontal billboard. The market interior utilizes the same pavers used on the city streets to let people know that it is a public space.

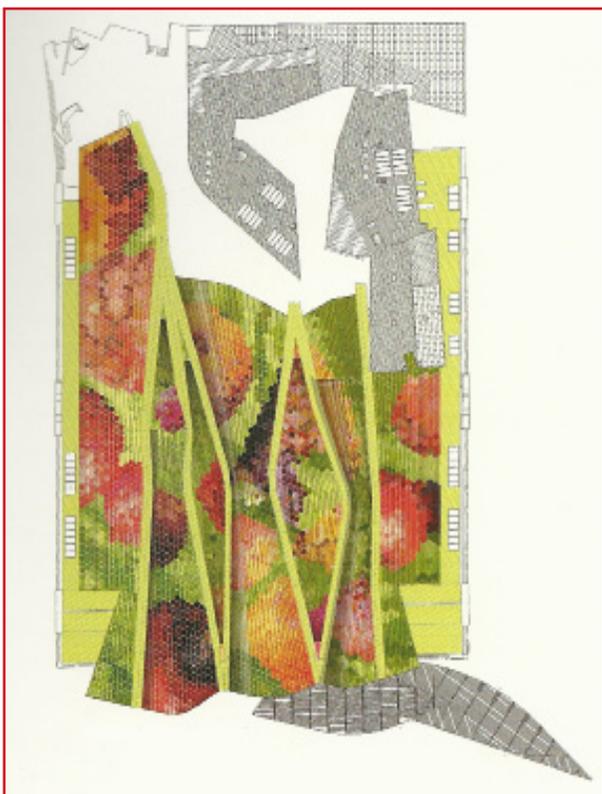


CASE STUDY TWO

SPACES

On the back side of the market, new, white stucco public housing nestles into the roof.

The housing was intended for elderly residents displaced by local urban-renewal projects. The main section of the building comprises mainly the market and its adjacent spaces. Since the market did not need to be as large as the existing structure, the architects cut into the back to create an intimate plaza. The inside of the market comprises 60 vendors' stalls, shops, cafes, a supermarket, a restaurant, and community services. Below the market one can find underground parking and a pneumatic garbage collection system. Underneath that, archeological remains can be found, which halted the construction of the building for nearly two years after their discovery.



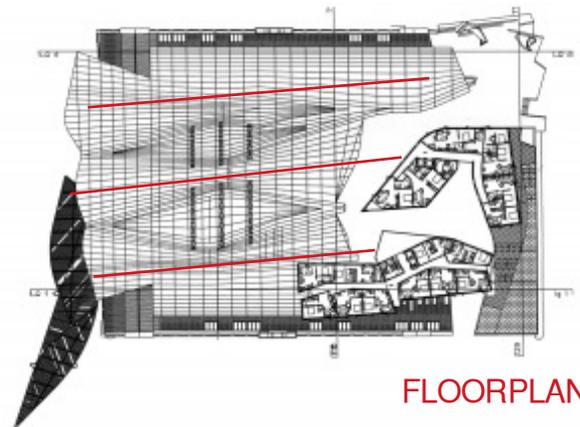
TYPOLOGICAL RESEARCH



ANALYSIS

The structure of the building and the roof gives the impression of a heavy, dimly-lit building, but upon entering the market one can see it has a very light and airy feeling with a lot of natural light. The structure of the roof creates a balance inside the market with its symmetrical curving geometries. At the rear of the building a break from symmetry can be seen, with the new construction of some additive, less organic forms.

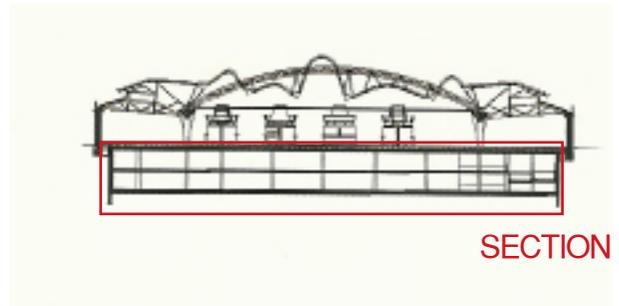
the plan view shows an organic configuration of spaces as circulation moves through in all directions. The plan shows no signs of regular geometries placed on any sort of grid. Section and elevation show more of a geometrical relationship of masses, with the organic form of the roof on top and the rectangular mass of the bottom half. The housing section of the structure shows much more of a geometrical relationship with a grid. The simple additive massing of the almost square forms is a break from the rest of the market. The white stucco of the housing directs the eye away from it and back down to the colorful tiled roof.



FLOORPLAN



ELEVATION

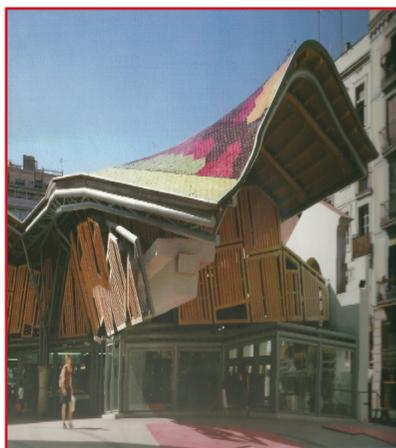


SECTION

CONCLUSION

The Santa Caterina Market is a prime example of building reuse and renovation in an area struggling to maintain itself and its community. It shows that providing a community with designed public space can create an atmosphere for change.

CASE STUDY TWO



TYPHOLOGICAL RESEARCH



People's Organic Food Market

Ocean Beach, California(2002)

Architect: [Hanna Gabriel Wells](#)

Ocean Beach People's Organic Food Market is a member-owned vegetarian consumer co-op that has been serving the community since 1971. Originally a worker's collective, the cooperative has grown to include 6,000 feet of retail space and more than 11,500 member/owners. The co-op offers an extensive selection of organic produce, grocery, dairy, and bulk foods and herbs, as well as vitamins and homeopathics, cruelty-free bodycare, and a full service sit-down deli featuring a selection of home-style vegetarian and vegan entrees, salads, sandwiches, freshly prepared baked goods, desserts, and more.

The marketplace, completed in 2002, is constructed with a steel and timber frame. The detail elements of the building were built with sustainability in mind, featuring rooftop photovoltaics, rooftop solar water, and shading. The structural system of the building is composed of a column free marketplace, a decision that proved successful in the end.

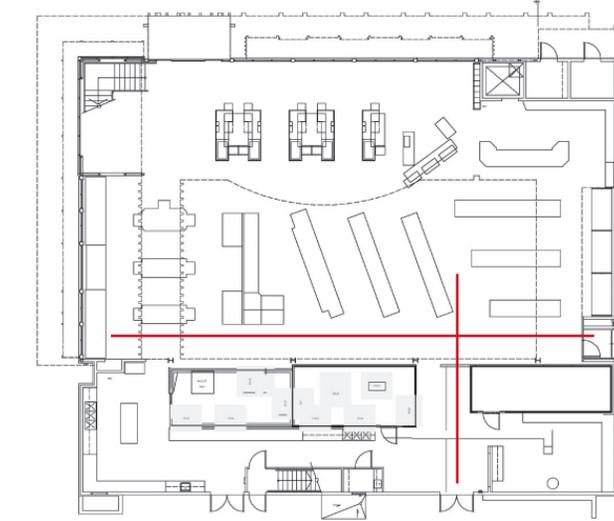


CASE STUDY THREE

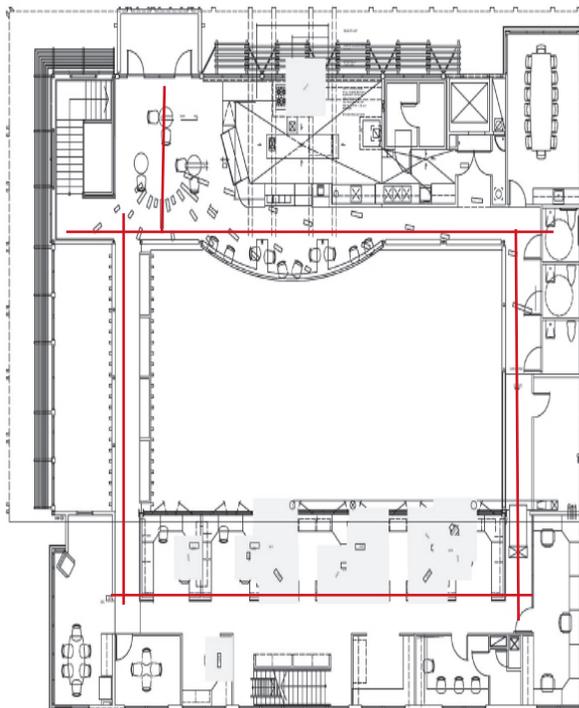
SPACES

The building is set up with the market in the middle on the main level, with the smaller and secondary spaces around the perimeter of the market. The main level contains all the public market space along with the main entry and the point of sale cashwrap. The second level is open in the middle to the market space below with the offices and meeting rooms for members/employees on the south and the deli/seating area to the north-north west.

To the east are bathrooms for private and public use. Running parallel north-south on the west side is a catwalk over the main level market.



GROUND FLOOR PLAN



FIRST FLOOR PLAN

TYPHOLOGICAL RESEARCH



ANALYSIS

The co-op has a very light feeling to it with a lot of natural light pouring in from all sides of the low-E insulated glass. The structure of the exposed roof has a very natural feel, providing the interior spaces with an open atmosphere.

The plan view shows a somewhat organized pattern of spaces, more so on the upper level with the spaces set around the balcony overlooking the market. The elevations show a vertical and horizontal grid pattern of squares with the windows on the front side as they vanish to the back on the east and west side. The elevations show a very simple massing to the structure comprising mostly of squares and rectangles.

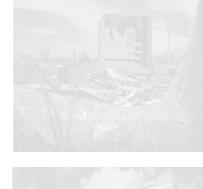
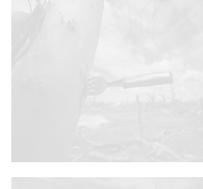
CONCLUSION

The People's Organic Food Market is an example of what the co-op stands for: simple, natural, organic living. The co-op shows how a structure can represent the attitude of the building's users without limiting the types of consumers who will shop and participate in the organization.





CASE STUDY THREE



TYPHOLOGICAL RESEARCH



Recently we have seen a shift toward a more designed marketplace; one that is meant to fit its environment. All types of marketplaces have become more and more innovative, creating a more pleasant shopping atmosphere and a more integrated built environment with its community. Each individual case study is different, but they all show that a single building can bring people together and help integrate people back into their community.

The study shows that not all markets need to be big and not all have to be part of large chains to succeed. Small markets can thrive in all areas. In large cities we are seeing a shift toward the smaller, natural grocery and farmers' market, but it seems that smaller towns are shifting away from this to larger chains. The idea of integrating a market with its community needs to shift back into small communities, giving people outlets for buying and selling produce and other natural and local food product.

The design of this particular thesis will not fall into a typical building type. It will not be classified as a supermarket, co-op, or farmers market, but will be a hybrid of all these typologies. It will be a well rounded, more intergraded typology for this particular site. The building will also include an educational factor that most other market typologies do not include in their description.



The case studies show how good design can be included in the market and food retail building construction. They show that there is not a particular size or organization of spaces that works better than the another. The design of my thesis will be relatively smaller than the first two studies, and comparative in size with the last study. Although being relatively small, the building will include a varied organization and number of spaces, just as the first study does. Natural light and open space play a large role in the design of all the studies just as it will in my design, although the focus of mine will be centered on integrating outdoor space with interior areas which is unlike the studies.

The circulation in all the studies varies greatly. The first has a very free flowing, varied path of circulation while the second is more linear around the structure, and the third has very distinct vertical circulation connecting multiple parts of the market. The best plan for my design will be a very open plan with free flowing circulation to integrate the educational sections with the retail area of the market. Circulation in the building will include paths to the outside and possibly some vertical design to integrate a partial second level. The design will be integrated with its site and the community with paths of circulation allowing movement, integrating all the typologies of the design.

SUMMARY



HISTORICAL CONTEXT





GREENSBURG, KANSAS

The historical context will begin with a history of Greensburg, Kansas. Greensburg was established in 1886 and named for stagecoach driver D.R. Green. In 1886, Governor John Martin organized Kiowa County and named it after the native Indians of the area. D.R. Green was instrumental in the organization of the city and was named Kiowa County's first representative in the Kansas legislature in 1889.

Greensburg is home to the world's largest hand dug well. Work on the well began in 1887 to provide water for the steam engines of nearby cities. When the well was completed in 1888, it cost about \$45,000. At completion it was 109 feet deep and 32 feet in diameter. The stone used for the well was taken from the Medicine River, 12 miles south of Greensburg. The well was used for the town's water supply until 1932 and in 1939 was opened as a tourist attraction. In 1972 the United States government designated the well as a national museum and in 1974 it was awarded as an American Water Landmark by the Water Works Association.

At 9:45 p.m., on May 4, 2007, Greensburg was hit by an EF5 tornado. After the tornado 95% of the town was destroyed and the remaining 5% was severely damaged. After, Kiowa County was considered a disaster area and was opened up to national and international aid. After the tornado the city council passed a resolution stating that all civic buildings would be built to LEED-platinum standards, making it the first city in the nation to do so. The city is rebuilding with the help of a non-profit organization created to help residents learn about and implement more sustainable living initiatives.

HISTORICAL CONTEXT



A grocery store is a store established primarily for the retailing of food. A grocer, the owner of a grocery store, stocks different kinds of foods from assorted places and cultures, and sells them to customers. Large grocery stores that stock products other than food, such as clothing or household items, are called supermarkets. Small grocery stores that mainly sell fruits and vegetables are known as produce markets, and small grocery stores that predominantly sell snack foods and sandwiches are known as convenience stores or delicatessens.

U.S. grocery stores are descended from trading posts, which sold not only food but clothing, household items, tools, furniture, and other miscellaneous merchandise. These trading posts evolved into larger retail businesses known as general stores. These facilities generally dealt only in dry goods such as flour, dry beans, baking soda, and canned foods. Perishable foods were instead obtained from specialty markets: fresh meat was obtained from a butcher, milk from a local dairy, eggs and vegetables were either produced by families themselves, bartered for with neighbors, or purchased at a farmers market.

Many rural areas still have general stores that sell goods ranging from cigars to imported napkins. Traditionally, general stores offered credit to their customers, a system of payment that worked on trust rather than modern credit cards. This allowed farm families to buy staples until their harvest could be sold.

The first self-service grocery store, Piggly Wiggly, was opened in 1916 in Memphis, Tennessee by Clarence Saunders, an inventor and entrepreneur. Prior to this innovation, customers gave orders to clerks to fill. Saunders' invention allowed a much smaller number of clerks to service the customers, proving successful (Business & finance, 1929).

The U.S. Labor Department has calculated that food purchased at home and in restaurants are 13 percent of household purchases, behind 32 percent for housing and 18 percent for transportation. The average U.S. family spent \$280 per month or \$3,305 per year at grocery stores in 2004. The newsletter DollarStretcher survey found grocery store spending to be \$149 a month for a single person, \$257 for a couple and \$396 for a family of four.

GROCERY STORE

HISTORICAL CONTEXT



Farmers market produce is renowned for being locally grown and very fresh. People argue that farmers markets allow farmers to pick produce at the peak of flavor, preserve the nutritional content of fresh produce, and since locally grown produce does not travel as far to get to the consumer, the difference in mileage saves fossil fuels.

Farmers markets often feature produce grown naturally or organically, meats that are raised humanely on pasture, handmade farmstead cheeses, eggs and poultry from free-range fowl, as well as heirloom produce and heritage breeds of meat and fowl. In many countries with strict food safety laws, farmers markets can be one of the few places beyond the farm gate to purchase raw food, such as raw milk.

Farmers market advocates believe the markets help farmers stay in business as well as preserve natural resources. Wholesale prices farmers get for their produce are very low, often near the cost of production. Farmers who sell direct to the public without going through a middle man get a better price. It has been shown that the preservation of farmland is important for the health of the environment and water supply. According to the American Farmland Trust, sustainable and managed farms conserve soil and clean water and provide a habitat for wildlife. Moreover, modern farmers markets help maintain important social ties, linking rural and urban populations and even close neighbors in mutually rewarding exchange (Robinson, 2007).



FARMERS MARKET

Farmers markets are a traditional way of selling agricultural and home manufactured products. A weekly market day is a part of normal life in villages and town squares throughout the world. A good way for a traveler to sample local foods and learn about local culture is to attend a market day, especially when it coincides with a festival, such as the fiestas in many towns in Latin America. In France and other European countries, there exist street markets, as well as covered marketplaces, where farmers and purveyors sell product. Farmers markets are also starting to appear online.

In the U.S. and Canada, due in part to an increased interest in healthier foods, a greater desire to preserve local types of cultivars or livestock (some of which may not be up to commercial shipping or yield standards) and an increased understanding of the importance of maintaining small, sustainable farms on the fringe of urban environments, farmers markets in the US have grown from 1,755 in 1994 to 4,385 in 2006 to 5,274 in 2009. New markets appear regularly, and existing markets, some well over a century old, are seeing renewed growth in both North America and Europe (USDA, 2010).

Some farmers markets have wholesale operations, sometimes limited to specific days or hours.

Farmers markets may also supply buyers from produce stands, restaurants, and garden stores with fresh fruits and vegetables, plants, seedlings and nursery stock, honey, and other agricultural products. This is on the decline, however in part due to the growth of chain stores that desire national distribution networks and cheap wholesales prices driven down by the low cost of imported produce.

HISTORICAL CONTEXT



A food cooperative or food co-op is a grocery store organized as a cooperative. Food cooperatives are usually consumers' cooperatives and are owned by their members. Food cooperatives follow the **Seven Cooperative Principles**: democratic member control, member economic participation, voluntary and open membership, autonomy and independence, education, training, and information; cooperation among cooperatives, Concern for community.

Since decisions about how to run the cooperative are not made by outside shareholders, cooperatives often exhibit a higher degree of social responsibility than their corporate counterparts (Co-operative principles and, 2005).

The cooperative movement started in the 19th century and the first notable food cooperative was started in Rochdale, England by industrial weavers known as the Rochdale Pioneers. The cooperative movement saw a resurgence in the 1970s when many second wave cooperatives started.

In the United States, the National Cooperative Grocers Association (NCGA) is a cooperative federation that is composed of 146 food cooperatives.

Voluntary and open membership:

The first of the Rochdale Principles states that co-operative societies must have an open and voluntary membership.

Democratic member control:

The second of the Rochdale Principles states that co-operative societies must have democratic member control.

Member economic participation:

Member economic participation is one of the defining features of co-operative societies, and constitutes the third Rochdale Principle in the ICA's Statement on the Co-operative Identity.

Autonomy and independence:

The fourth of the Rochdale Principles states that co-operative societies must be autonomous and independent.

Education, training, and information:

The fifth of the Rochdale Principles states that co-operative societies must provide education and training to their members and the public.

Cooperation among cooperatives:

The sixth of the Rochdale Principles states that co-operatives cooperate with each other.

Concern for community:

The seventh of the Rochdale Principles states that co-operative societies must have concern for their communities.

GOALS FOR THE THESIS PROJECT



- 1** To have a clear concise Theoretical Premise. It will be open to interpretations and changes if needed.
- 2** There will be a large body of knowledge gained from research contributing to the final typology of the building.
- 3** An in-depth analysis of multiple case studies will be done to understand all aspects of design related to the complex typology of the building.
- 4** The research will show a larger understanding of the psychological and economic effects associated with natural disasters, while leading to a better process of design and rebuilding.
- 5** To produce a project that has a higher level of meaning for not only myself, the designer, but all who may come across it.
- 6** To demonstrate a higher level of knowledge relating to the design of a physical model, a digital model, and graphic presentation.



To design a project that has real justification within its context and the larger context of natural disaster rebuilding. **7**

There will be a focus to create something that not only design professionals can understand but that anyone can understand and relate to. **8**

To follow an outlined schedule showing my ability to work independently, stay on task, complete the work before the deadline, and distribute the workload evenly throughout the semester. **9**

To have a well thought out design process contributing to a well-organized and comprehensive program, presentation, and book. The development of the project will utilize physical modeling, digital modeling, and hand sketches to exhibit my design. **10**

There will be a careful regard placed on examining the existing site as well as adding to the already dynamic characteristics present. **11**

It will be a complete representation of my skills as an architecture student as well as a future practitioner of architecture. **12**

GOALS FOR THE THESIS PROJECT



SITE ANALYSIS





The site, situated outside the main business district of Greensburg, features dynamic views from all perspectives. The differing building typologies directly around the site lend to it a prominent distinction between the newer, reconstructed part of town and the older, less damaged part of Greensburg. This distinction seems to lend to the odd placement of the site and the partially built structure. The remainder of what was left behind is surrounded on all sides by private land and two single family homes, and from the outside seems to have no public access.

The location of the partial structure and site is on a relatively flat piece of land in an area with a lot of open plains and rolling hills. Since it is in a relatively open area, with surrounding low lying structures, I suspect that it will be susceptible to all kinds of harsh weather conditions, such as high winds, rain, and snow. These conditions will play a large role in the design of the structure and site.



QUALITATIVE

SITE ANALYSIS





As it stands now, there is only a partially built structure with the beginnings of insulated walls, but with no reinforcements or foundations. On the east side stands the largest portion of built wall standing about 30 feet high with no visible openings, which seems to work at the moment due to the close proximity of a shop building directly next to the structure. The west side has no built walls and is open to the rest of the site and the possibility for the new design. The north and south sides are both partially built but seem to leave no room for additions in either of those directions.

The site has very little vegetation but the dry grasslands associated with this particularly dry part of Kansas. To the north and west of the site there are visible coniferous pines which look to serve as a buffer between plots of land and the sometimes harsh weather of the region. Looking beyond that to the northwest one can also see some of the dead trees left behind after the tornado. Due to the trees' location, they will cast little to no shadow on the structure. The shadows that will be cast will be from the shop directly to the east and possibly a home to the southeast. The new building will be designed with these other structures in mind, careful not to interfere and overpower what is already there.

QUALITATIVE



SITE ANALYSIS



Harney silt loam was adopted on April 12, 1990, as the state soil. Kansas is one of only seven states to have named a state soil. It took five years through a strong grassroots effort to get Harney named. Harney silt loam possesses the ideal qualities of a prairie soil. It has the best combination of physical and chemical characteristics for producing food and fiber. Kansas has more acres of prairie soils than any other state. Harney silt loam covers almost four million acres in 26 west-central Kansas counties. The topsoil is typically dark brown or grayish-brown in color, and extends about 12 inches below the surface, mostly in the western and west-central parts of the state, with the subsoil and parent soil extended down as much as 72 inches below the surface. This soil developed under the prairie grasslands that have covered the state for millennia.

The **Harney** series consists of deep, well drained, moderately slowly permeable soils on uplands. Slopes range from 0 to 3 percent.

Ap-0 to 5 inches: it is grayish brown silt loam with a weak fine granular structure, slightly hard, slightly acidic, and has an abrupt smooth boundary.

AB-5 to 14 inches: dark grayish brown silty clay loam with weak medium granular structure, hard, neutral, and has a clear smooth boundary.

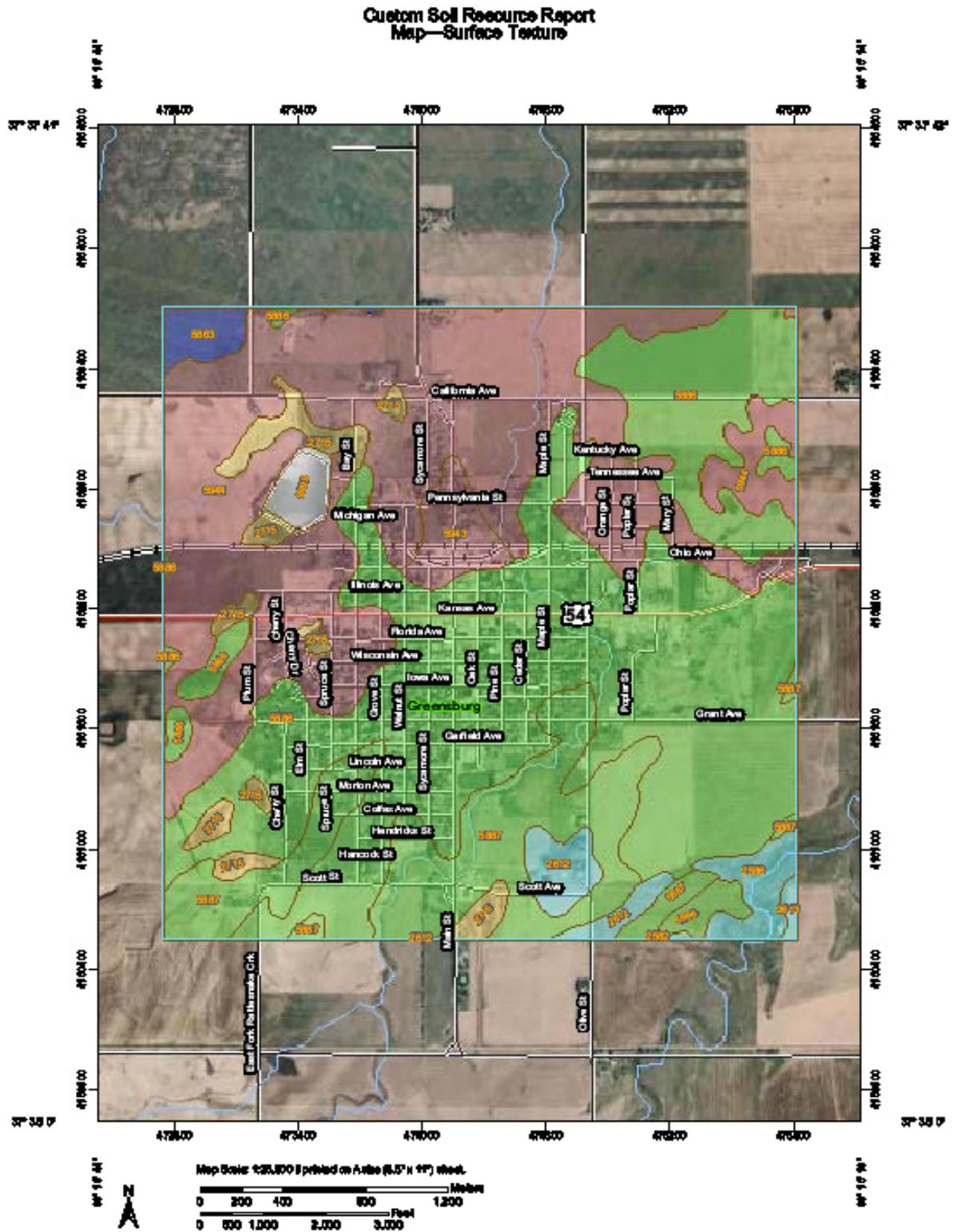
Bt-14 to 28 inches: grayish brown silty clay loam with moist, moderate medium blocky structure, very hard and firm, mildly alkaline with a clear smooth boundary.

Bk-28 to 39 inches: brown silty clay loam with moist, weak medium blocky structure. It has common soft accumulation of lime and small concretions, moderately alkaline with a gradual smooth boundary.

BCk- 39 to 50 inches: yellowish brown silty clay loam with common soft accumulations of lime and a few small concretions and a gradual smooth boundary.

C-50 to 60 inches: yellowish brown silt loam with moist, slightly hard, and moderately alkaline structure.

SITE ANALYSIS



Courtesy of (USDA, 2009)



MAP LEGEND

- Area of Interest (AOI)**
- Area of Interest (AOI)
- Scale**
- Soil Map Units
- Soil Ratings**
- fine sandy loam
 - loam
 - loamy fine sand
 - silt loam
 - silty clay
 - Not rated or not available
- Political Features**
- Cities
- Water Features**
- Ocean
 - Streams and Creeks
- Transportation**
- Rails
 - Interstate Highways
 - US Routes
 - Major Roads
 - Local Roads

MAP INFORMATION

Map Scale: 1:25,000 R printed on A size (8.5" x 11") of

The soil surveys that comprise your AOI were mapped

Please rely on the bar scale on each map sheet for all measurements.

Source of Map: Natural Resources Conservation Service
 Web Soil Survey URL: <http://websoilsurvey.nrcs.usd.gov>
 Coordinate System: UTM Zone 14N NAD83

This product is generated from the USDA-NRCS current (the version date(s) listed below).

Soil Survey Area: Kiowa County, Kansas
 Survey Area Date: Version 12, Dec 2, 2010

Date(s) aerial images were photographed: 8/27/2004

The orthophoto or other base map on which the soil is compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some of map unit boundaries may be evident.

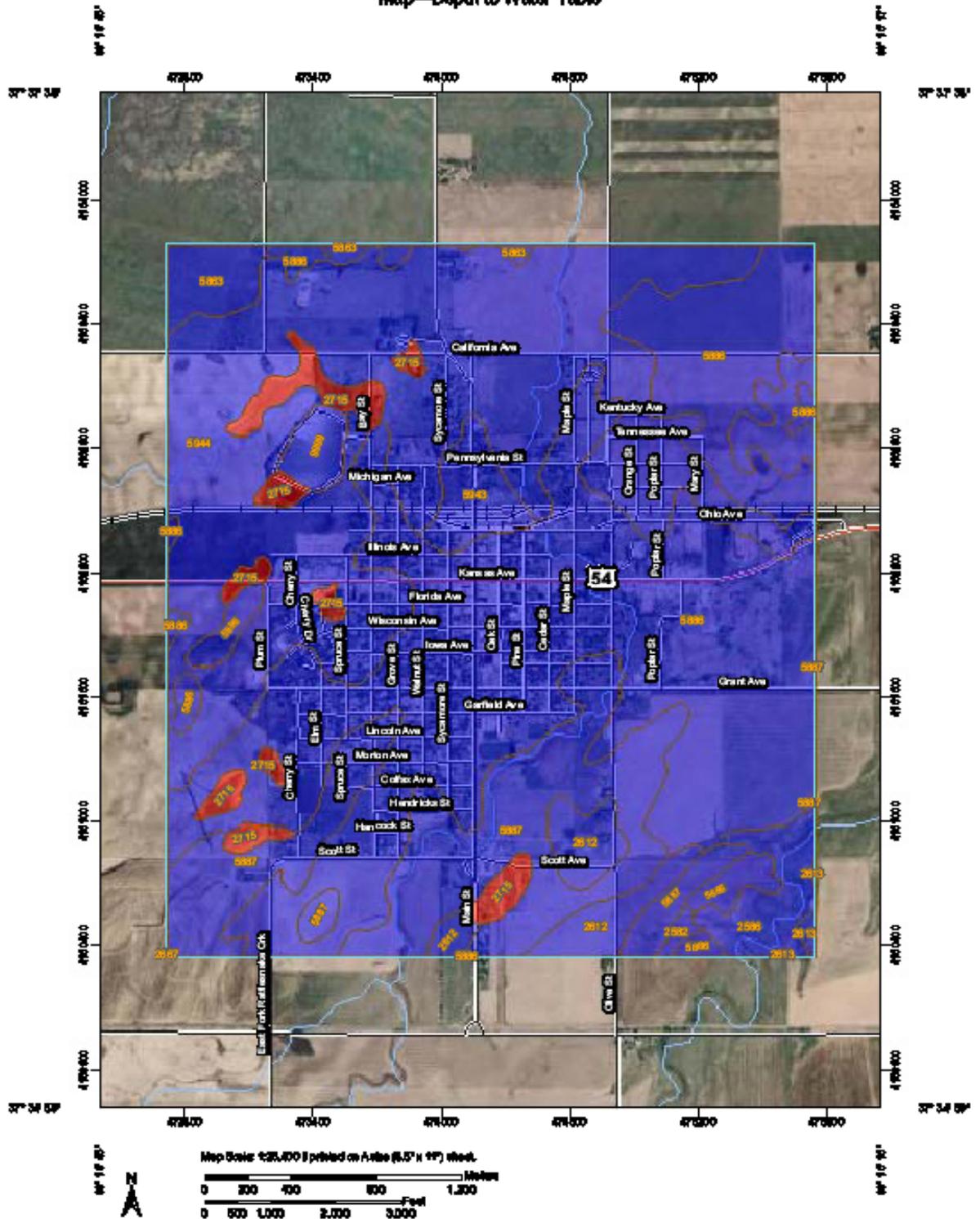


QUANTITATIVE-SOILS

SITE ANALYSIS



Custom Soil Resource Report
Map—Depth to Water Table



Courtesy of (USDA, 2009)

MAP LEGEND

- Area of Interest (AOI)**
-  Area of Interest (AOI)
- Soils**
-  Soil Map Units
- Soil Ratings**
-  0 - 25
 -  25 - 60
 -  60 - 100
 -  100 - 150
 -  150 - 200
 -  > 200
- Political Features**
-  Cities
- Water Features**
-  Canyons
 -  Streams and Creeks
- Transportation**
-  Rails
 -  Interstate Highways
 -  US Routes
 -  Major Roads
 -  Local Roads

MAP INFORMATION

Map Scale: 1:25,400 if printed on A size (8.5" x 11") sheet.

The soil surveys that comprise your AOI were mapped at 1:24,000.

Please rely on the bar scale on each map sheet for accurate map measurements.

Source of Map: Natural Resource Conservation Service
 Web Soil Survey URL: <http://websoilsurvey.nrcs.usda.gov>
 Coordinate System: UTM Zone 14N NAD83

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Nowata County, Kansas
 Survey Area Date: Version 12, Dec 2, 2010

Date(s) aerial images were photographed: 02/7/2006

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map-unit boundaries may be evident.

QUANTITATIVE-WATER TABLE

SITE ANALYSIS



TRANSPORTATION

Transportation to and from the site would consist of mostly vehicle traffic. The proposed master plan for the city consists of multiple paths nearby with the potential for connections to the site. Nearby streets consist of rural dirt and paved roads to the east and south with very little vehicle traffic. To the north and west are two lane streets in city limits with a slightly higher amount of traffic. Because of the tornado there is no clear distinction in zoning areas of town and what is considered business and what is residential.

UTILITIES

Electric, water, and sewer lines are already available on site due to the presence of a shop and single family home. The city of Greensburg does not run any natural gas and therefore that may not be an option. Because there was a planned building already being constructed on site, I suspect that utilities have already been prepared.

SITE ANALYSIS



SITE CHARACTER

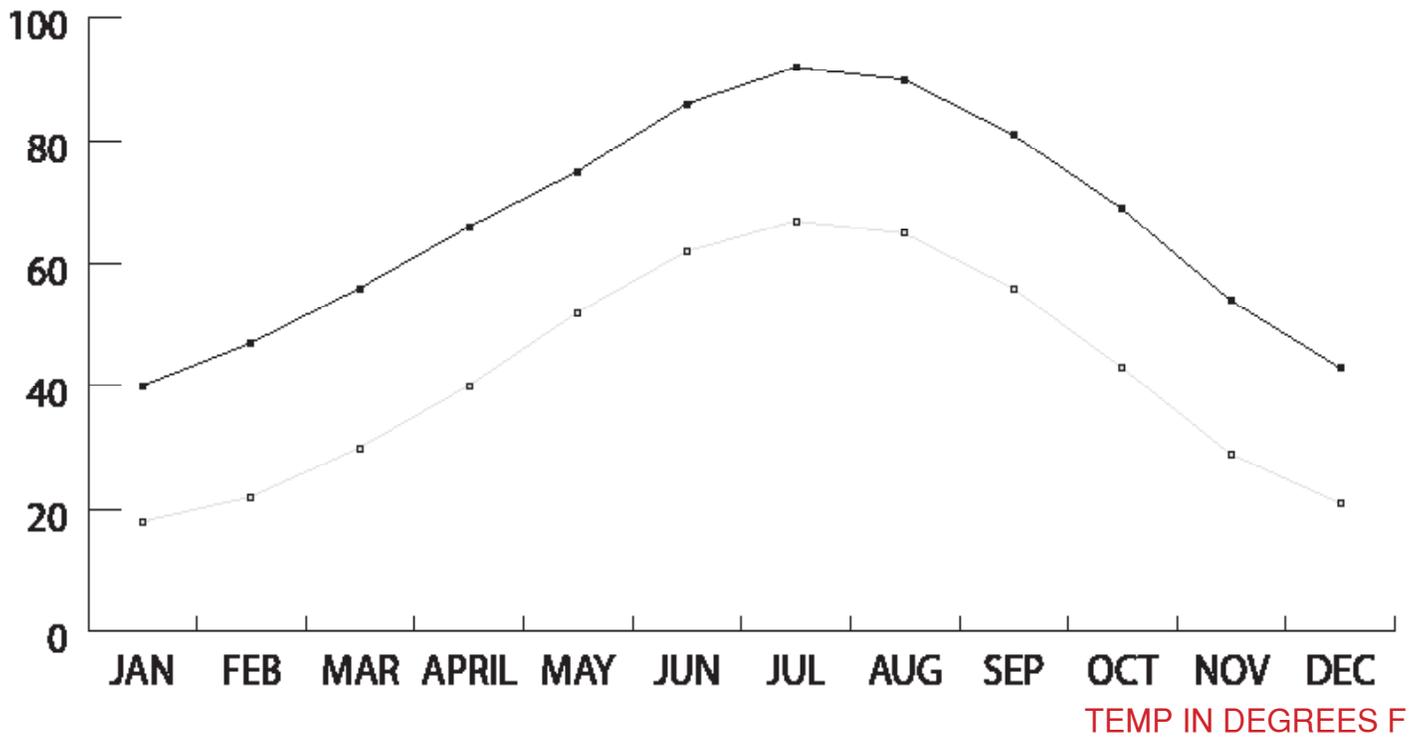
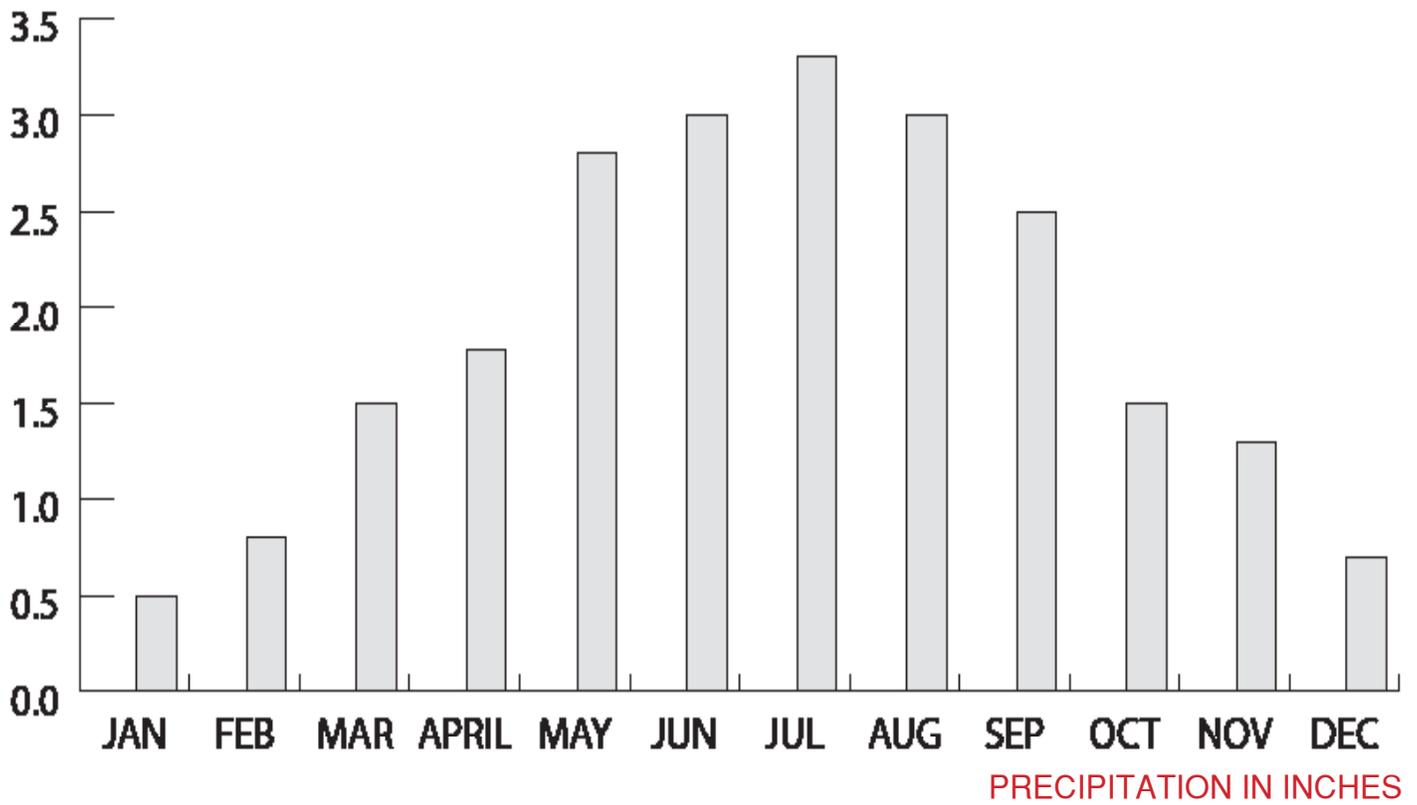
The character of the site and surrounding areas show multiple signs of change. Surrounding areas have locations with standing water with none present on the site. The standing water in most areas accumulated in rundown, undeveloped areas left after the tornado. The town shows multiple signs of distress from the dead trees all over town to the run down empty buildings. Newer development is creeping up to the west of the site, but directly surrounding areas still remain largely undeveloped.

The site currently contains multiple structures, including a large shop, a home with attached garage, a small cabin, and the incomplete structure that will facilitate the design of this thesis.

QUANTITATIVE-SITE CHARACTER

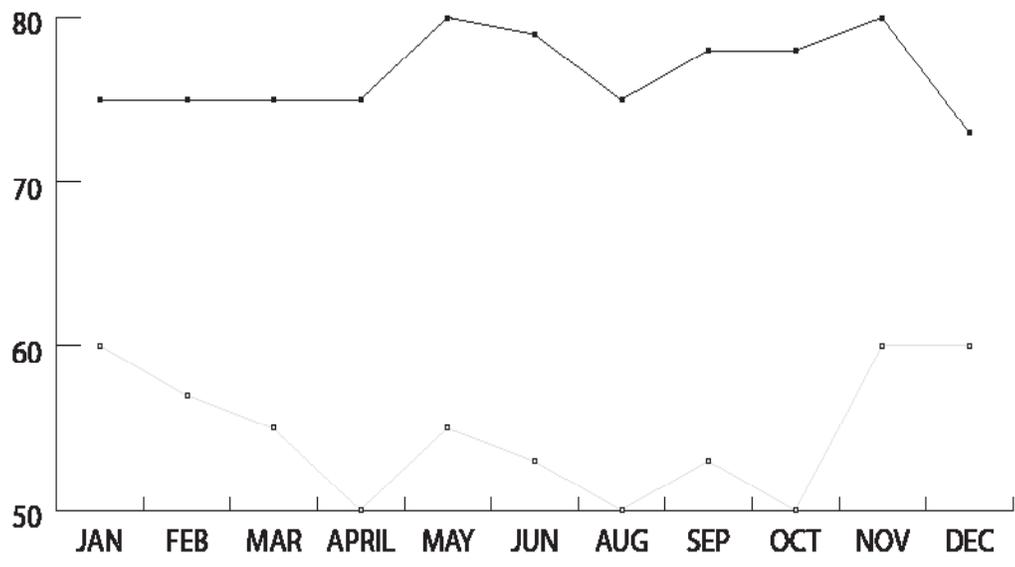


SITE ANALYSIS

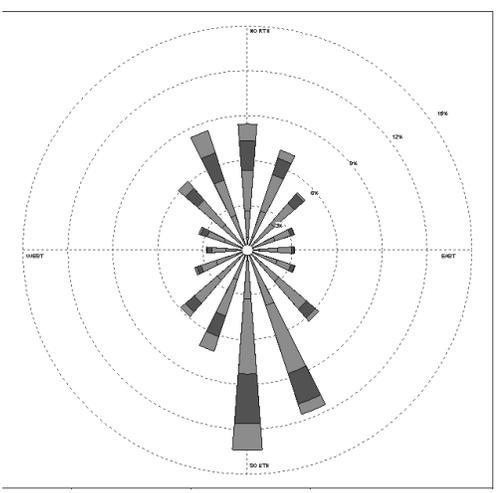




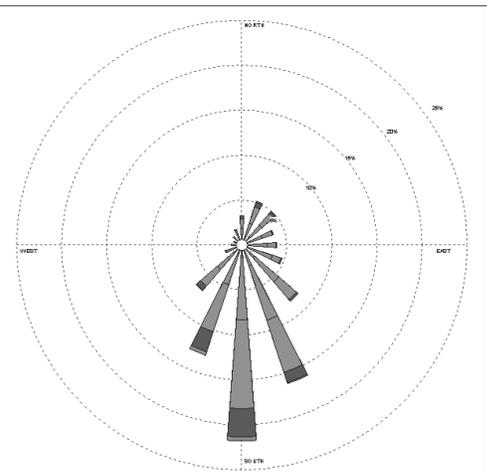
CLIMATE



HUMIDITY IN MORNING AND AFTERNOON



WIND DIRECTION: APRIL



WIND DIRECTION: AUGUST

SITE ANALYSIS





NORTH



SOUTH



EAST



WEST



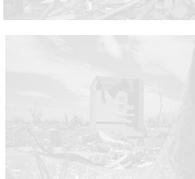
PHOTOGRID

PROGRAMMATIC REQUIREMENTS





- MARKET (10,368 sqf)
- OFFICES (340 sqf)
- MEETING ROOMS (1,107 sqf)
- CLASSROOM (840 sqf)
- LUNCH ROOM (348 sqf)
- MECHANICAL (332 sqf)
- BACKROOM (4,752 sqf)
- BATHROOMS (636 sqf)
- STORAGE (171 sqf)
- CIRCULATION (10% total area)
- OUTDOOR MARKET (19,685 sqf)
- PARKING: 25 cars



PROGRAMMATIC REQUIREMENTS

PROCESS/INSPIRATION

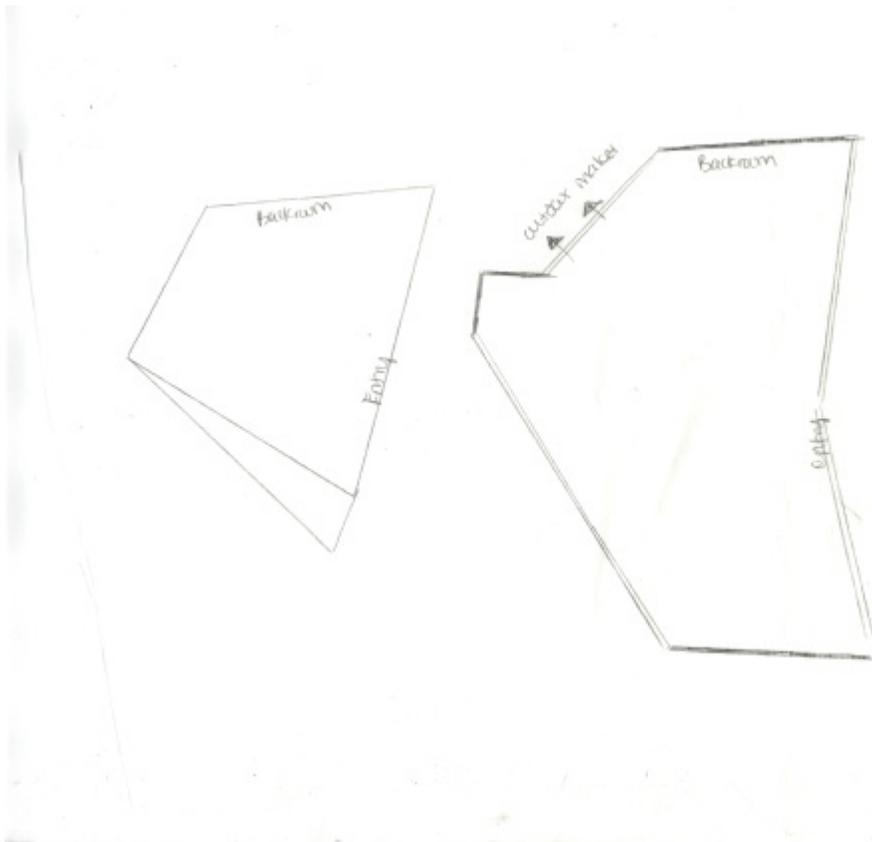
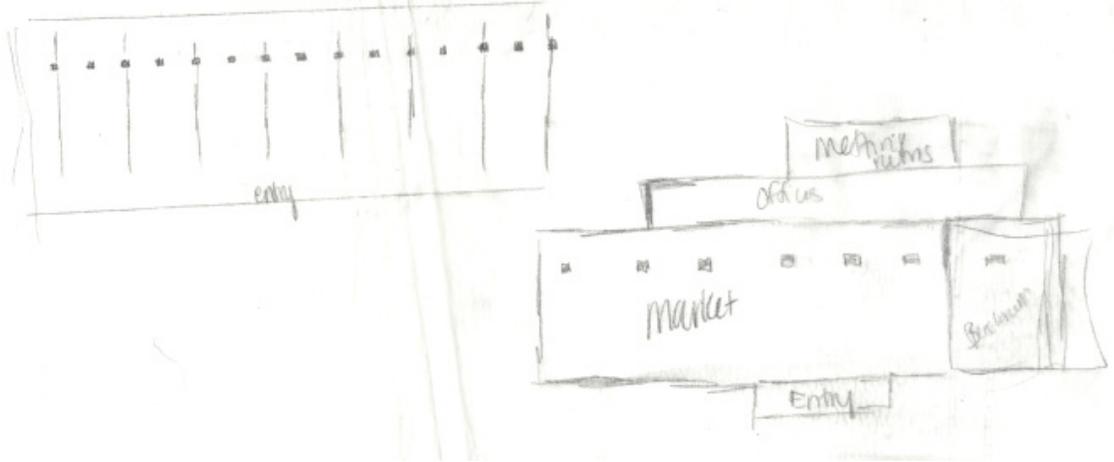


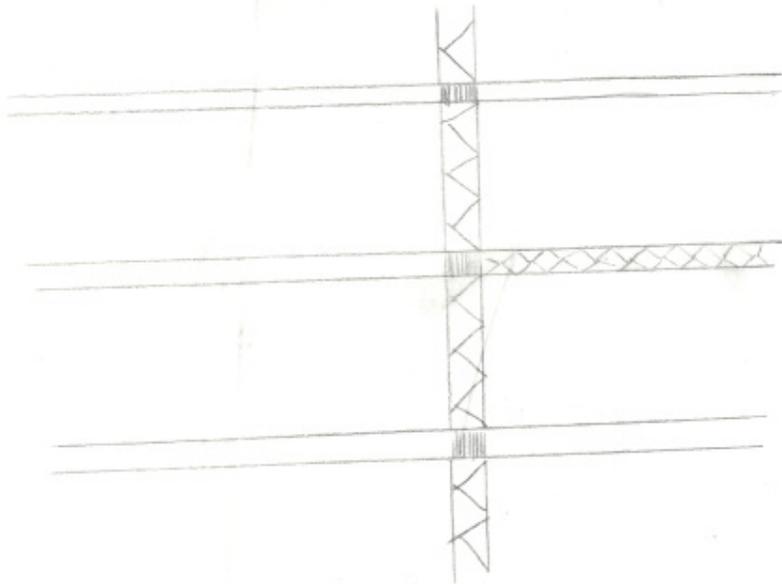
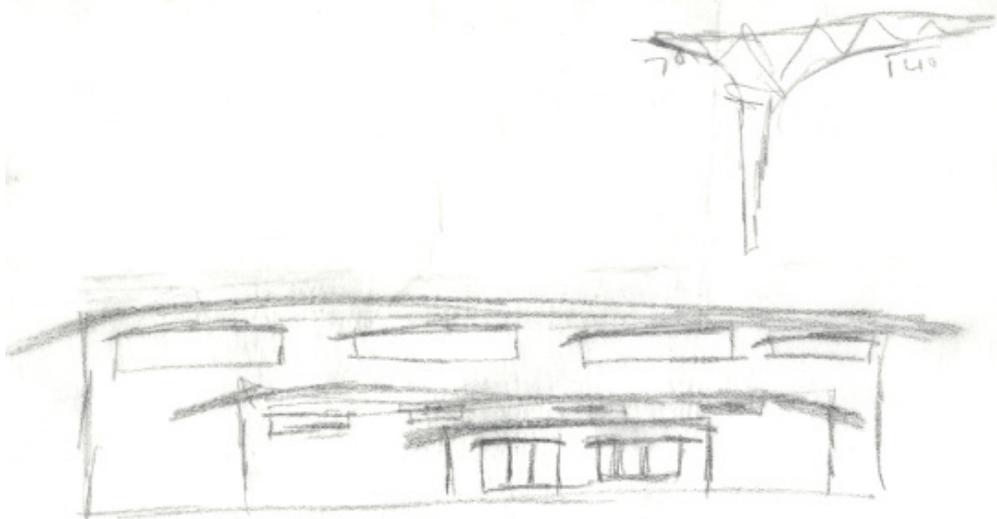


PROCESS/INSPIRATION



PROCESS





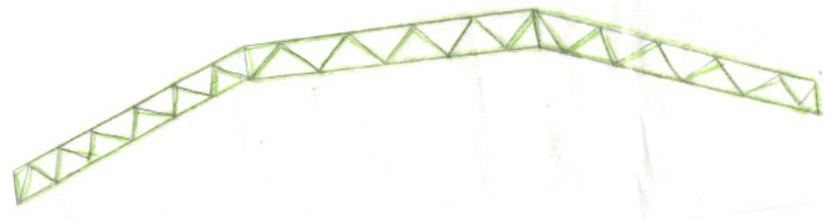
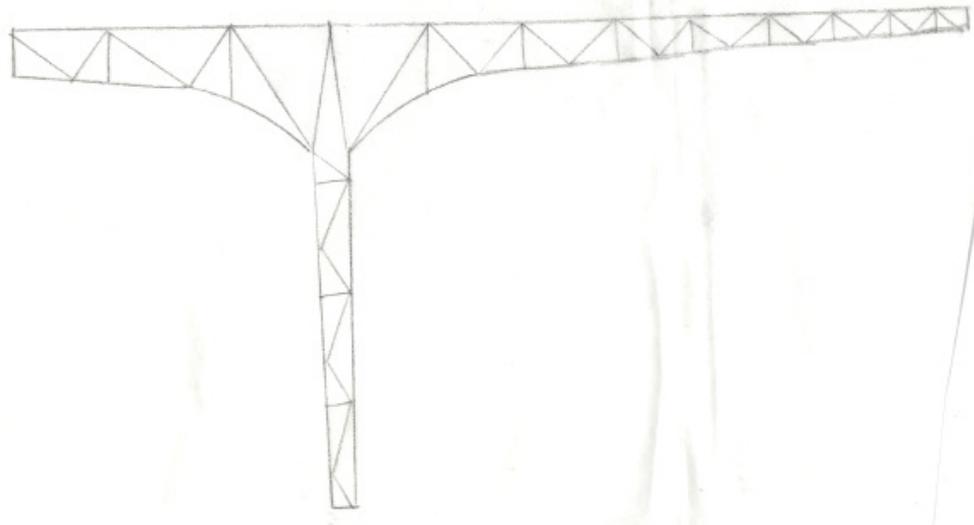
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PROCESS

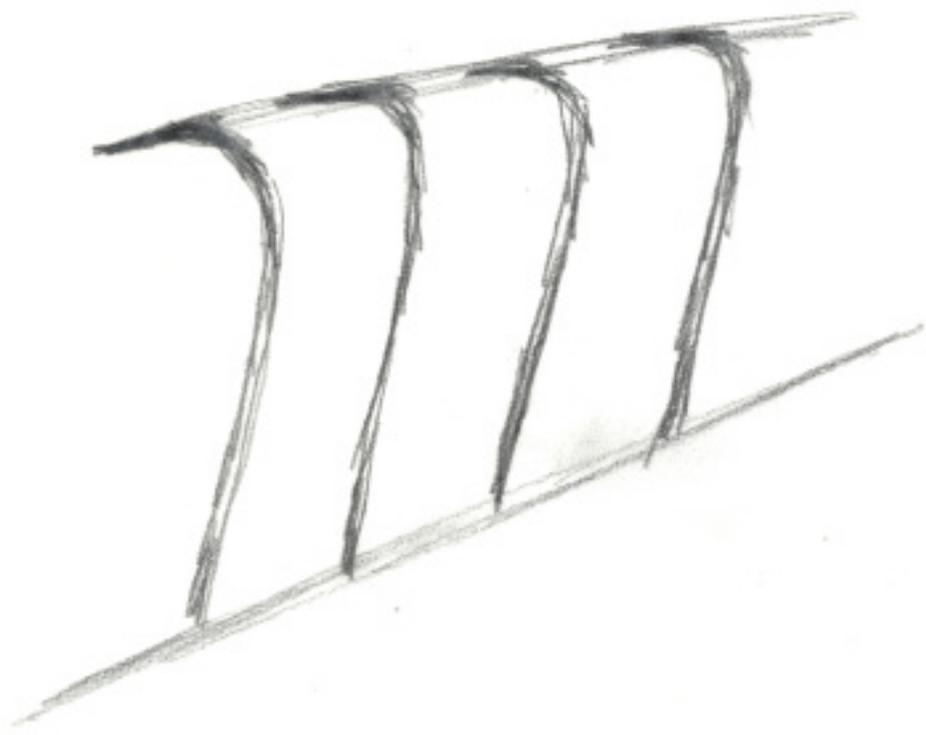
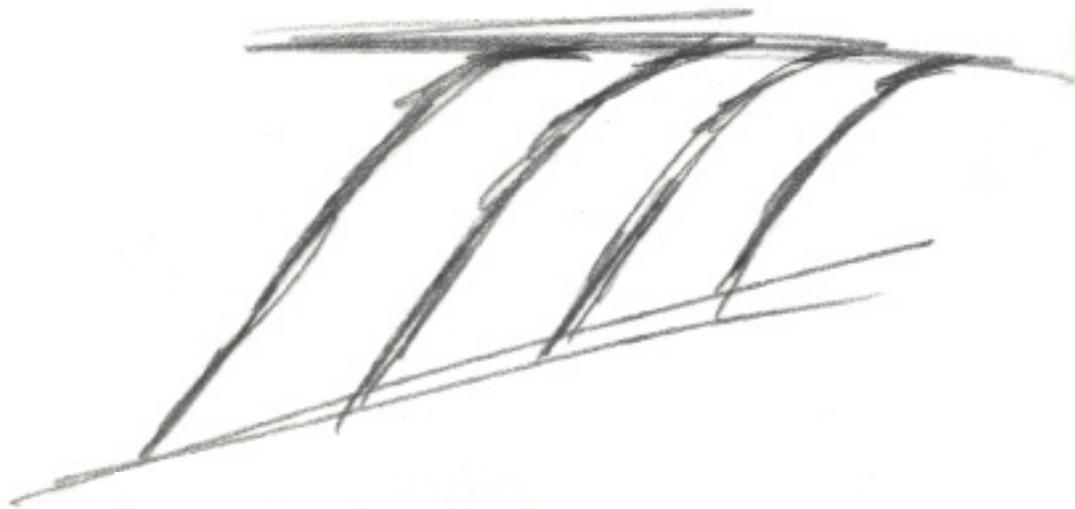




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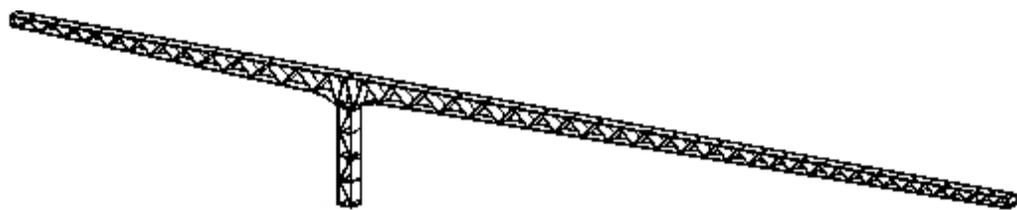
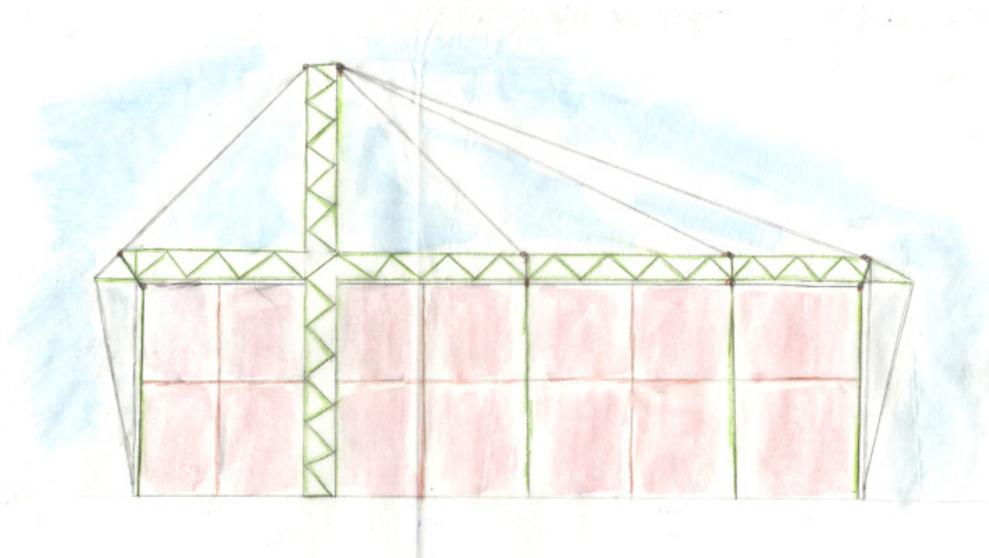


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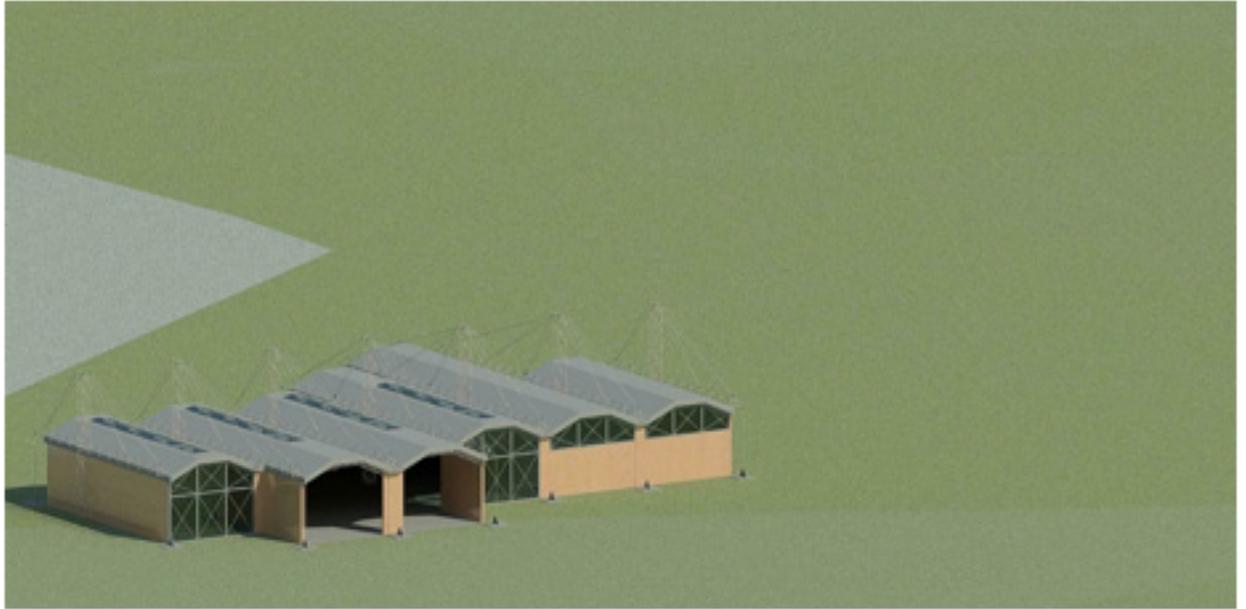




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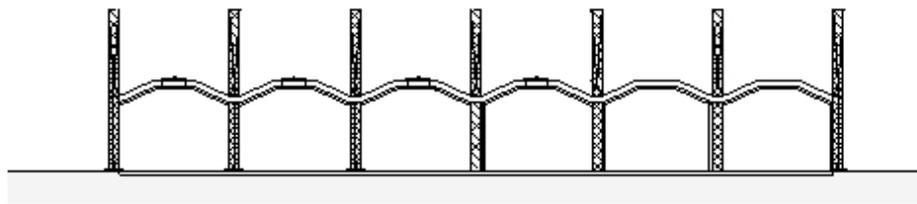
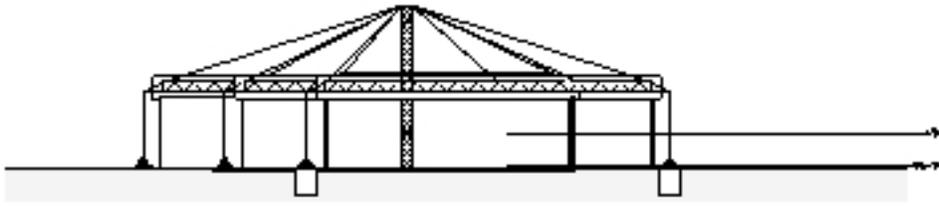


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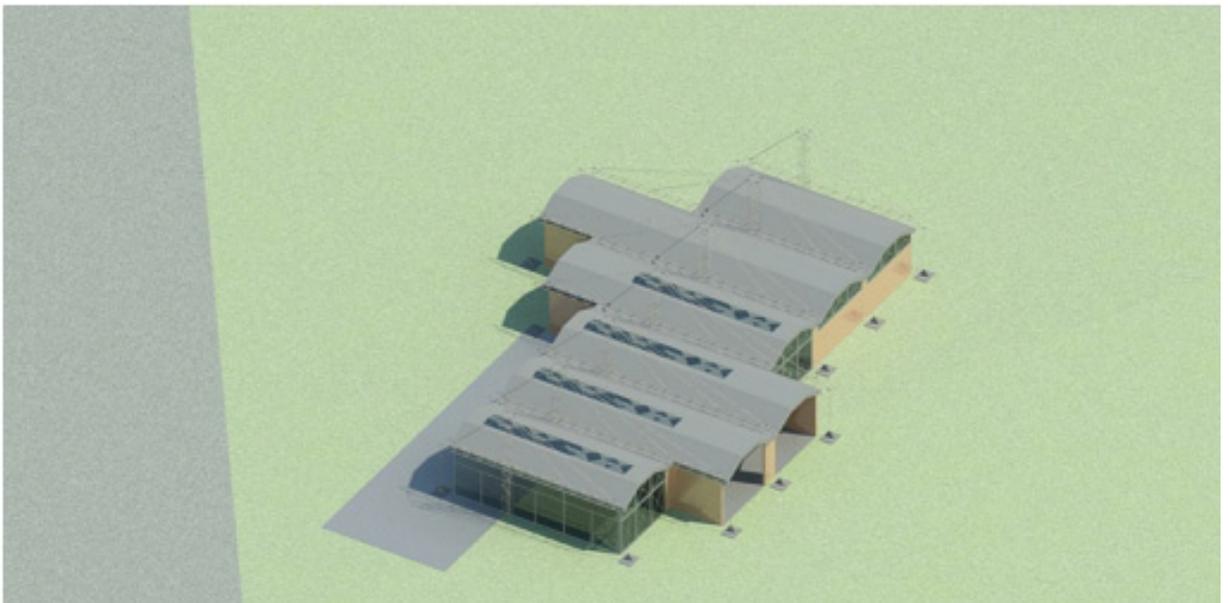
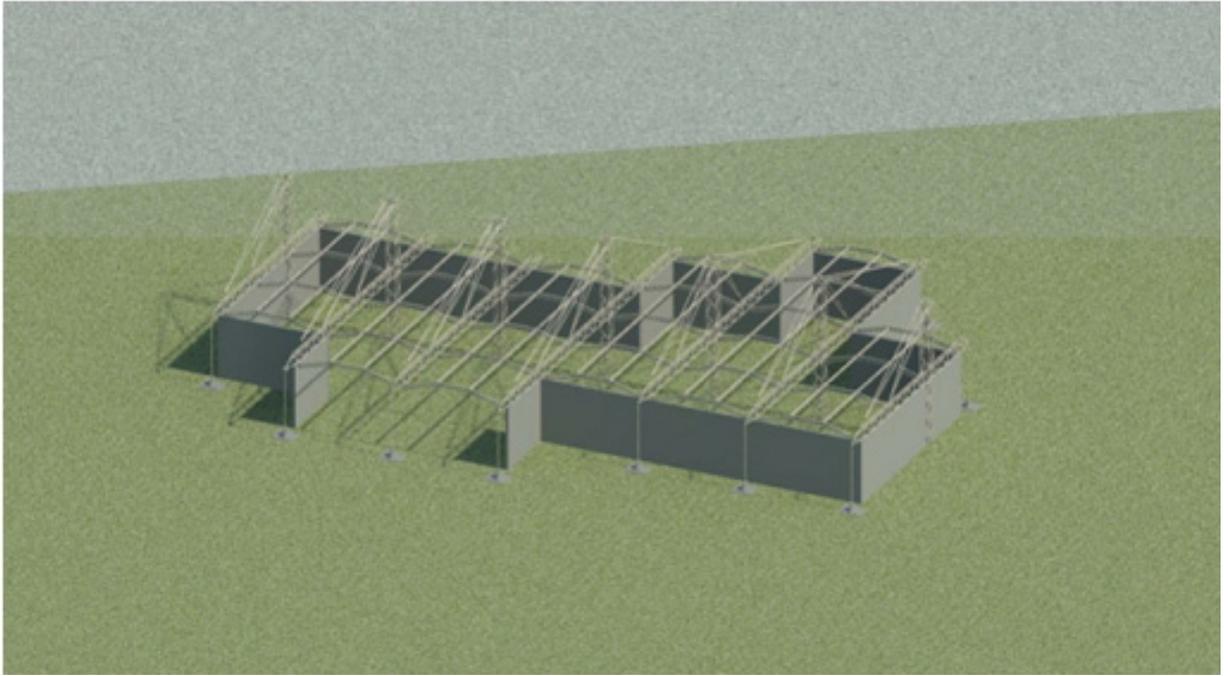


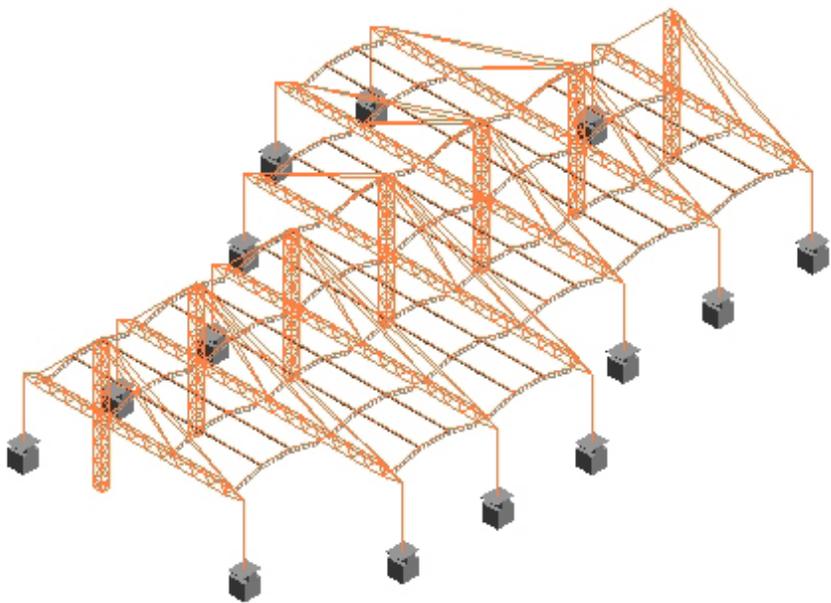


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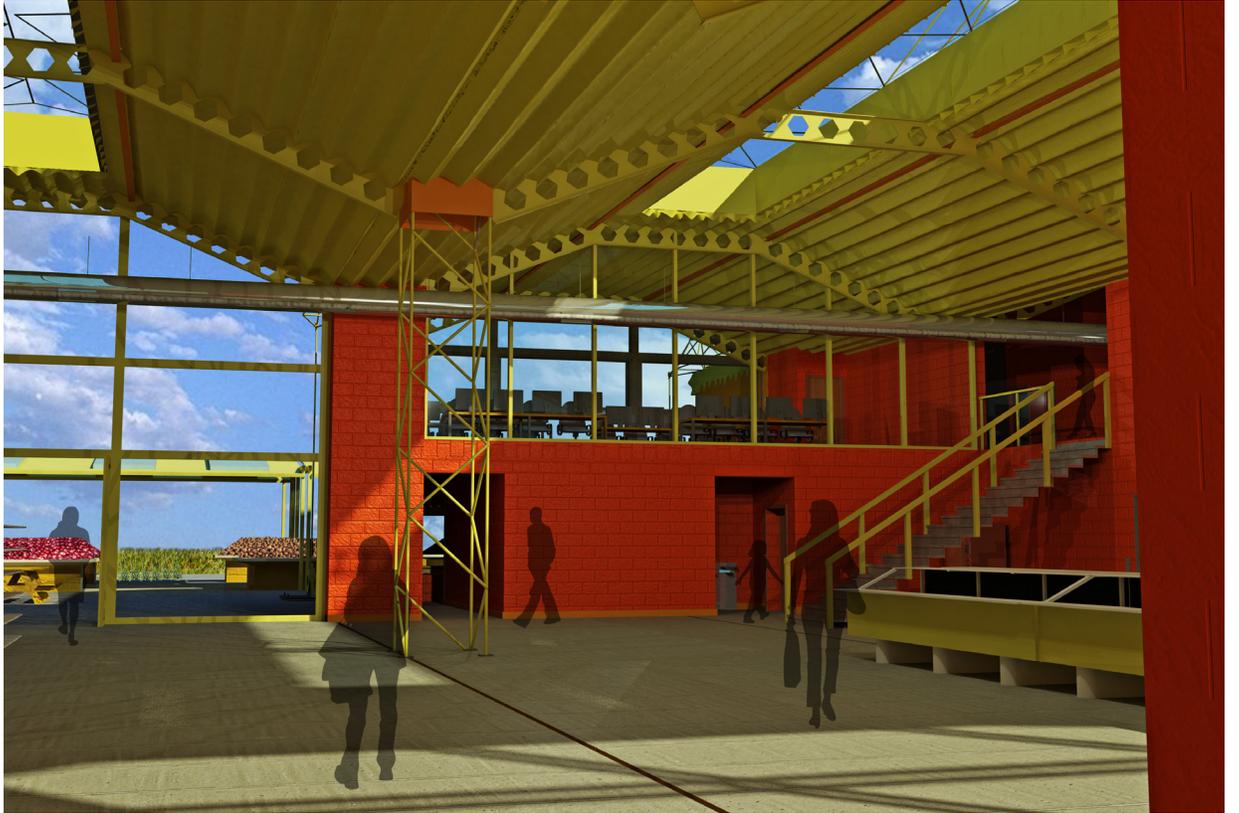
PROCESS





PROCESS

FINAL/INTERIOR

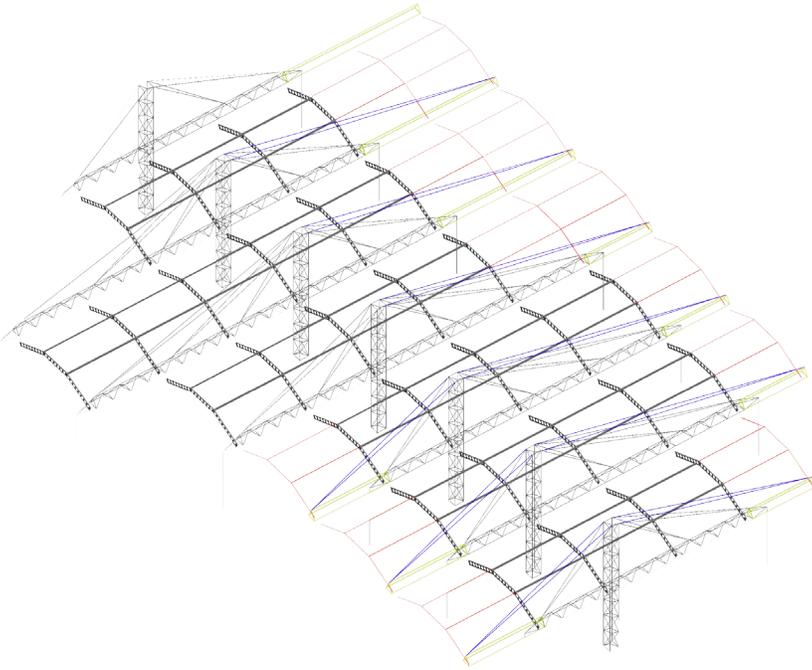
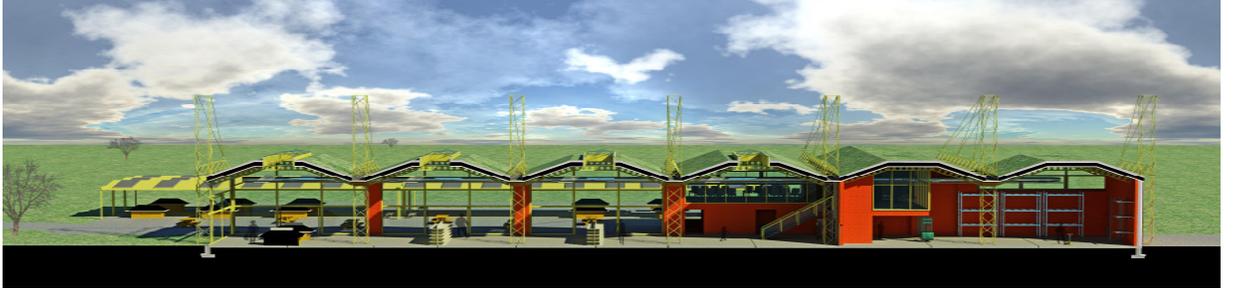




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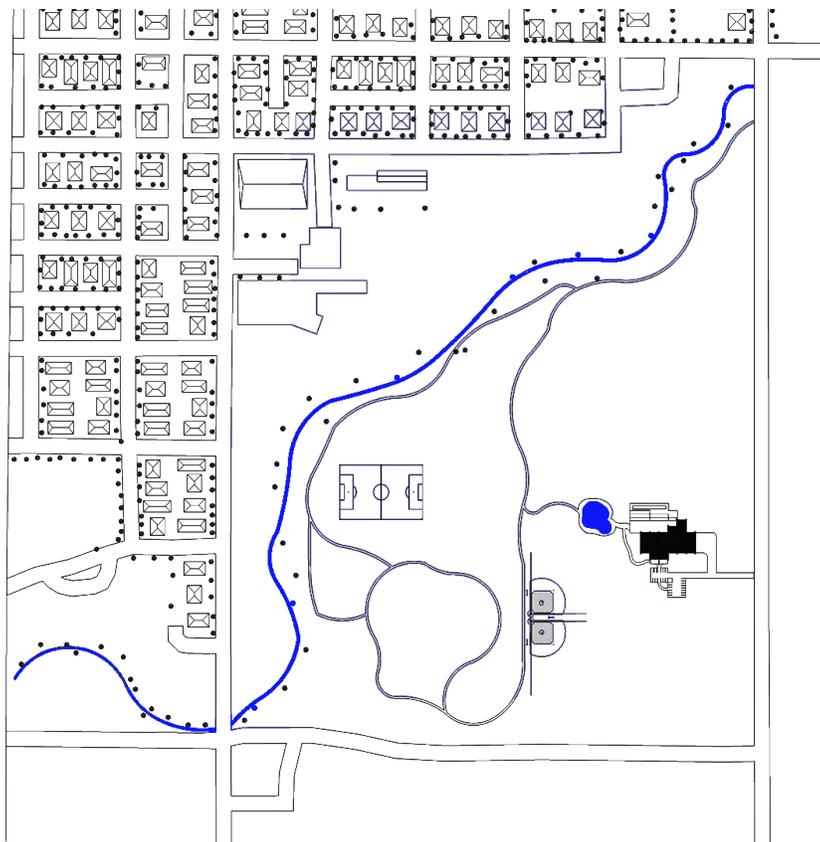


FINAL/STRUCTURE

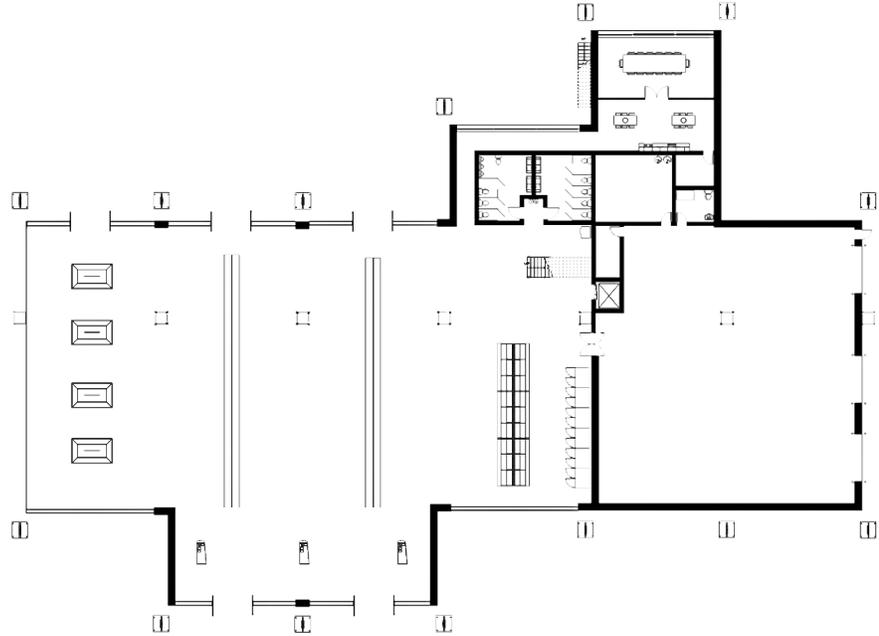


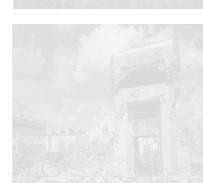
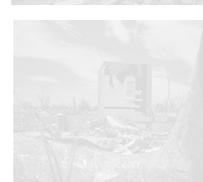
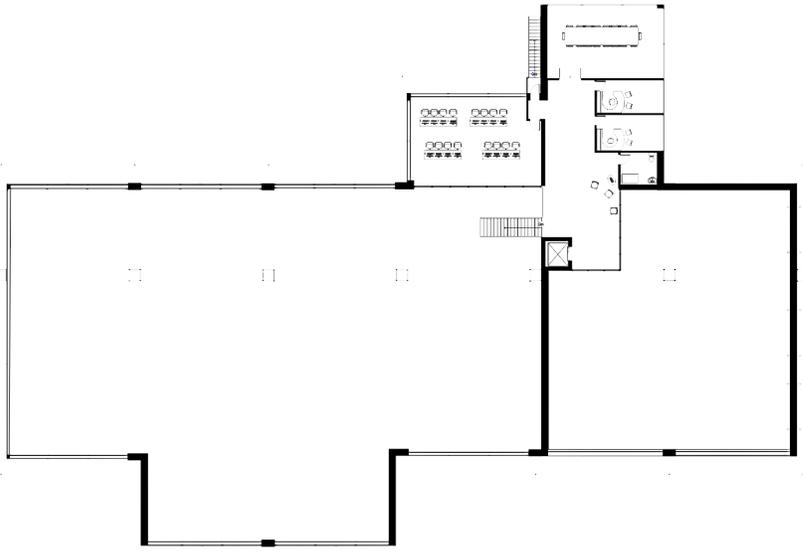


FINAL/SITE



FLOOR PLAN LEVEL 1

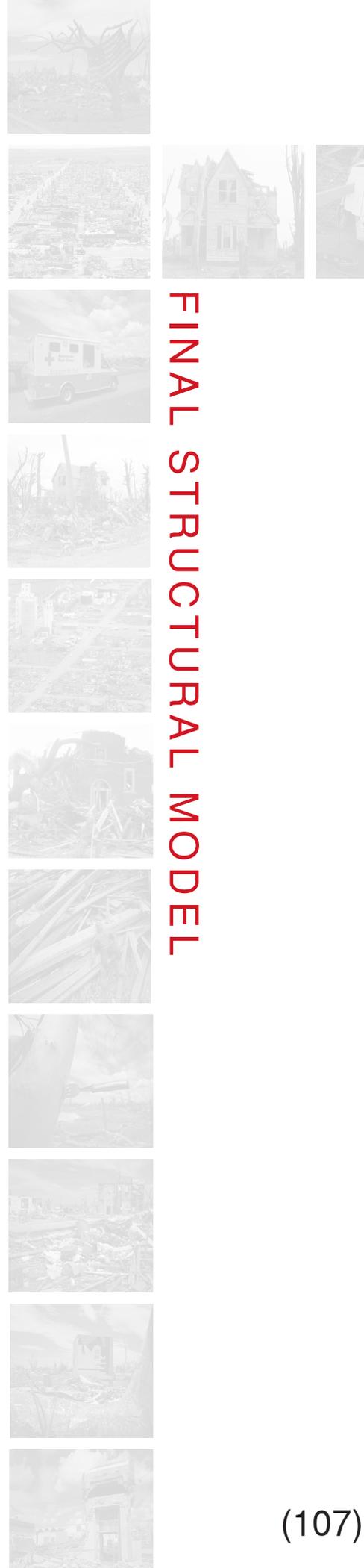




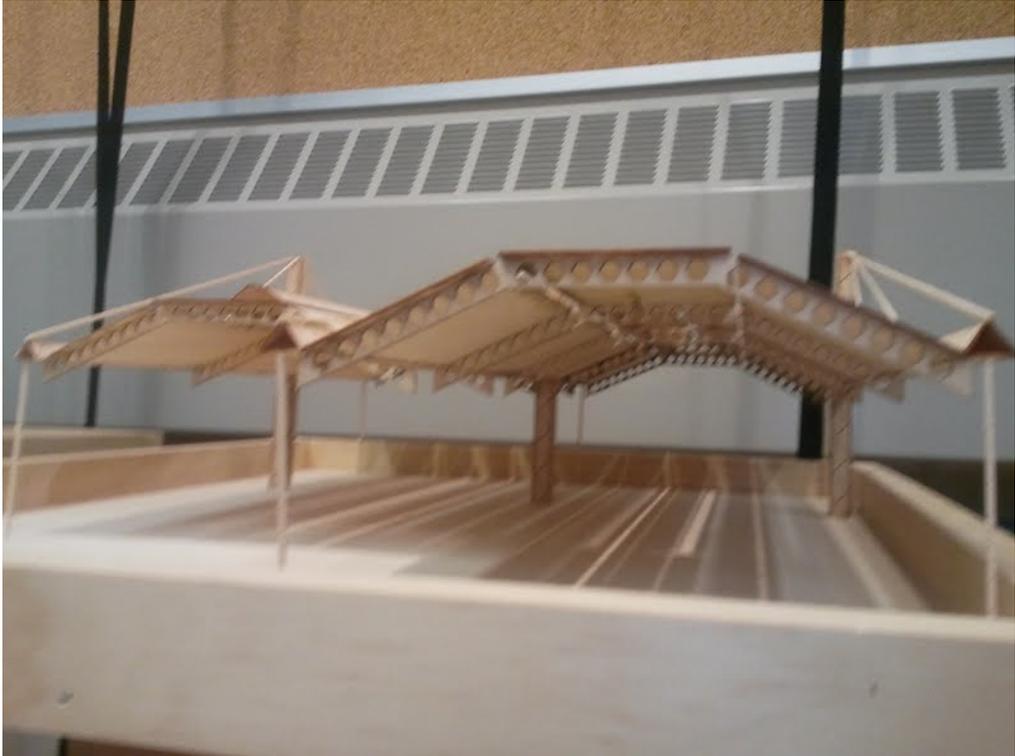
FLOOR PLAN LEVEL 2

FINAL SITE MODEL





FINAL STRUCTURAL MODEL



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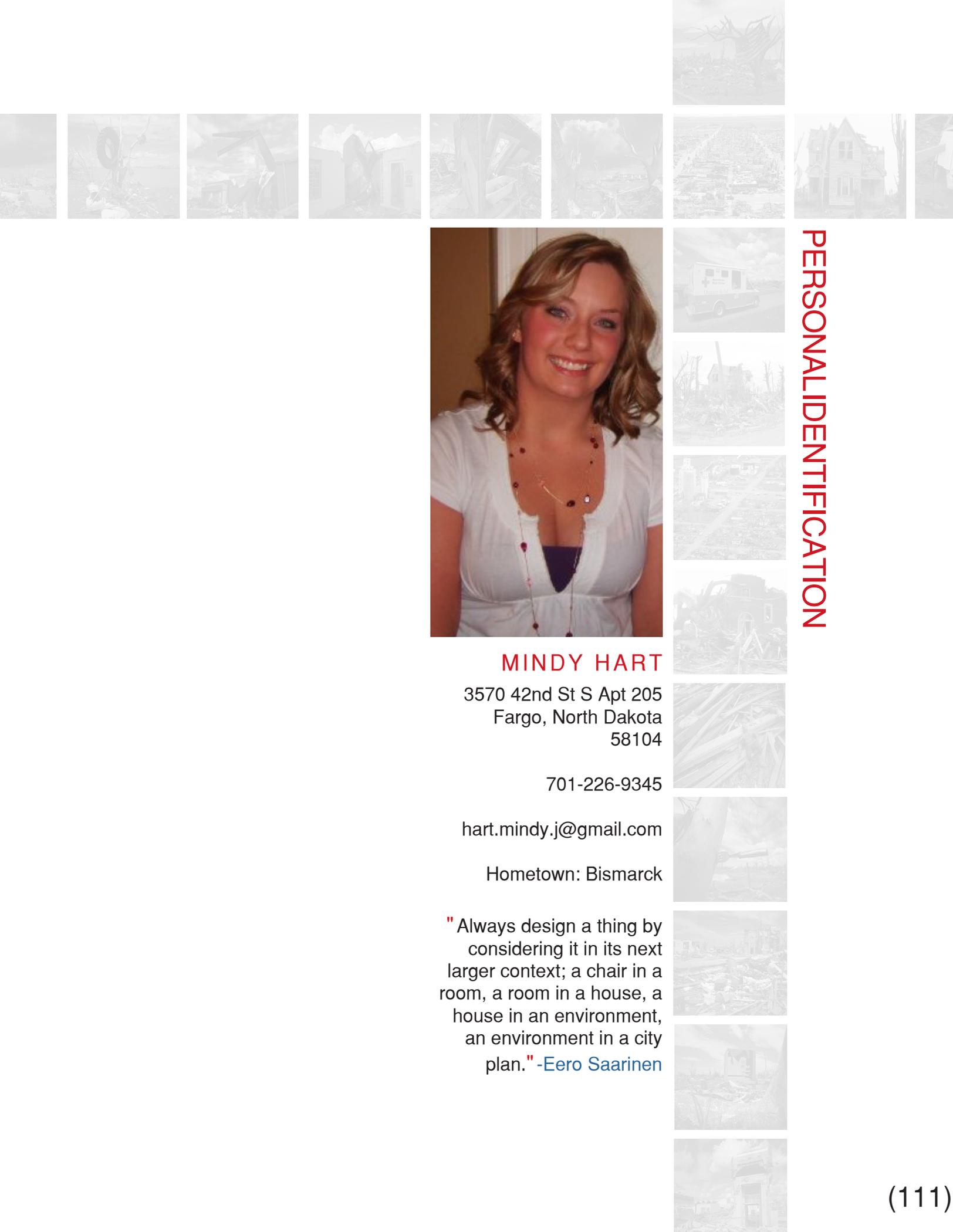
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" Always design a thing by considering it in its next larger context; a chair in a room, a room in a house, a house in an environment, an environment in a city plan." -Eero Saarinen