THESIS PROPOSAL:

SUSTAINABLE CONVENIENCE

PROJECT TITLE & SIGNATURE PAGE

"SUSTAINABLE CONVENIENCE"

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

by

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

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Primary Thesis Advisor

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Thesis Committee Chair

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Figure 1 | Climate Protest | Berlin, Germany
Hannibal Hanchke | *photo credit*

THESIS ABSTRACT

Globally, society is on the cusp of substantial environmental changes. These changes start with insight into the current state of the environment, mindset changes that need to be made, then to the necessary lifestyle changes. Accordingly, this research began with asking why communities haven't been able to start making these changes, questioning what is it that is holding them back? Convenience. Communities have drilled in the concept of "convenience for the consumer" whereas now, there's a dire need to switch to "convenience for the environment". The question then becomes: What is it about convenience that is holding people back from these changes, and **how can architecture jumpstart a community to become more conscious about everyday environmental impacts?** The easiest, or in this context, the most *convenient* place to start changes are at the grocery store, where the bulk of consumerism happens. The most *convenient change for the environment* is producing less waste and focusing on a plant-based diet. These combined, have the possibility of creating convenience in a society for both the consumer and the environment. The research starts with gathering numerous case studies exhibiting the use of zero-waste shopping, then looks into the possibility of creating winterized greenhouses in accordance to the harsh North Dakotan winters.

THE NARRATIVE OF THE THEORETICAL ASPECT OF THE THESIS

> *"The greatest threat to our planet is the belief that someone else will save it."*
> Robert Swan

Since the age of technology, convenience has been one of the biggest influenences on daily life. The idea of running to the nearest store to pick up whatever neatly, *plastic-wrapped,* packaged item needed, has become the norm. The daily routine of tossing whatever meat-of-choice into the oven for dinner, has become the norm. The standard trip to the grocery store where shoppers quickly stop in to grab some greens, oblivious to where they come from, has become the norm.

Consequently, this need for convenience has taken its toll on the environment. Plastic has dominated the packaging industry and marked its territory in our landfills, oceans, and as toxins in our air from burning it. The meat industry releases harmful greenhouse gases into our air and the resources used to own non-local food is irreversible. The idea of convenience itself though, is not the issue. The issue right now in society is that convenience is defined as doing something with little effort *for the consumer.* Meaning that if an item can be readily bought, it is convenient for whomever is buying it. I decided to call this, "convenience of the consumer", whereas the goal we are trying to reach is called "convenience of the environment". While we don't want to tamper with the comfort zone society created within the concept of convenience, we do want to re-define what the word means in terms of sustainability.

Although zero-waste grocery stores do exist, I want to delve deeper into how they can become the one-stop-shop for all things, food and lifestyle alike. These typologies exist within larger metropolitan areas such as Los Angles and New York. So what would need to change to get the attention of a smaller community like Fargo-Moorhead? How can the architecture inspire enough people to *want* to change their comfortable lifestyle?

Along with that, the importance of a plant-based, locally-sourced diet is unfamiliar in this climate-zone. When I speak of plant-based, I am not referring to a vegan or even vegitarian lifestyle, but rather a diet that is focused on unprocessed foods. Diet is perhaps even the wrong word, rather a regular *consumption* of whole grains, fresh fruit and vegetables, legumes, and smaller portions of meat. To get to this degree of sustainability in North Dakota given the harsh winters, commerical winterized greenhouses may be the answer.

The zero-waste retail industry strives to be as package-free as possible. By asking customers to bring their own containers for bulk items, decreasing shipping impacts like packaging and emissions, and carrying products that won't end up in landfills, the industry is making an impression on consumerism. Now the question is, how can we get consumers to chose this approach over the "normal" stores across the street, where they don't need to remember to lug their own containers? I think the answer to this question is the same answer to how customers were influenced to carry reuseable grocery bags everywhere: normalizing the (in)convenience.

In my research I plan to use correlational and experimental strategies to find the relationship between consumer behavior and the convenience factor, in this case in terms of environmental convenience. Consumer behavior is described as how consumers select, buy, use, and dispose of goods to satisfy their needs and wants (Psychology Today). The much-needed environmental changes that individuals have already started making are in a way, miniscle. Society is now at a point where more direction is necessary, where the corporate-level changes should be leading the way in environmentalist lifestyles. Correlational research will provide insight to the relationship where experimental research will focus on establishing causation, testing the hypothesis that corrilational research observes. Case studies will be used to compare existing zero-waste stores, observing what is and isn't working. They will also aid me in designing a year-round commercial greenhouse, noting how they are maintained and any necessary tecniques I'll need to integrate.

Regarding research, I must quesiton historical, social and culture aspects. Historically, asking why these typologies have failed to work in the past. Socially, asking how an environmental change in consumer behavior can effect other businesses. And culturally, asking what the impacts are to a community by making these adjustments, and what the impacts are to the climate by *not* making these lifestyle adjustments.

THE NARRATIVE OF THE THEORETICAL ASPECT OF THE THESIS

The chosen site reflects on convenience and green design. The site is to be conveniently located to influence Fargo, North Dakota and surrounding metropolitan regions, which are hindered to the environmental progress being made in higher density cities. Adaptive reuse then initiates green design by reusing an existing building in Fargo. By adopting the process of reuse, the site eliminates the need for a new construction therefore decreasing embodied energy and reducing waste caused by demolition.

The ultimate goal in this research is to understand the mind of consumers as it relates to environmental choices while recognizing the impact convenience has on these choices. I hope to influence the architecture profession by recognizing adaptive reuse as the future of design and creating a discussion on waste amongst the profession and society. We must remember to reduce, *then* reuse, *then* recycle, as a sequence, not as options.

Next to question is; How can society's comfort zone be disrupt to create a world-wide consciousness for environmental sustainability? Can convenience be shifted from a consumer standpoint to an environmental standpoint?

Figure 2 | Zero-Waste Bistro | New York, NY
Nicholas Calcott | *photo credit*

Figure 3 | Greenhouse Tomato Row | Camarillo, CA
Scripts Media | photo credit

PROJECT TYPOLOGY

The quintessential grocery store is indistinguishable around the planet. Aisle after aisle of pre-packaged food, stands of fruit and vegetables waiting to be tossed into plastic produce bags: this framework set the standard for the everyday corner shop. A zero-waste grocery store removes these details and adds its own. It takes away the need for packaging, as the food is sold in bulk where buyers scoop the amount of desired product into their containers brought from home. Integrated into this store is a greenhouse designed for all four seasons, encouraging a focus on local produce and a lesser focus on meat consumption. Combining the two typologies creates an avant-garde approach to consumerism, with anticipation of sparking environmental conversation and lifestyle changes throughout a community.

Considering the efforts being put forth to curb climate change, it is extremely important that the typology in question must completely represent the values of sustainability. Adaptive reuse of an existing building gives the opportunity to recycle, reuse, and re-purpose a perfectly sound, but neglected structure. This entire process preserves our environment and eliminates any unnecessary waste, indicating to the public how critical saving our planet is even when involving consumerism.

By introducing a discussion on waste, communities are able to come together and present new ideas in an effort towards improving the health of our environment. Without these efforts, an unstable climate is in our forecast, effecting future generations immensely.

MAJOR PROJECT ELEMENTS

1 RETAIL STORE

RETAIL STORE	COMPONENTS
retail space	bulk products, checkout, weigh stations
merchandise storage	extra product storage
supermarket cafe	kitchen, open seating
local farmers market space	indoor vendor booth space
circulation	entrances, shopping space
mechanical	HVAC, passive systems
locading access	garage door entrance for product shipments
offices	manager, custodial
employee break room	employee personal storage, comfortable seating
public restrooms	employee and public

2 GREENHOUSE SPACE

GREENHOUSE SPACE	COMPONENTS
production space	seasonal plant farming
equipment storage	tool storage
mechanical	passive heating system
public production viewing	adjacent to production space: area to view plant growth and learn about greenhouse construction

3 EXTERIOR

EXTERIOR	
parking	cars, bikes | customer, employee, vendor
local farmers market space	outdoor vendor booth space

USER/CLIENT DESCRIPTION

EMPLOYEES

Office	2-3 office
Retail Floor	8-12 retail
Greenhouse	6-8 GH
Cafe	
| Kitchen staff	3-4 kitchen
| Wait staff	5-6 wait

43 TOTAL

CUSTOMER NEEDS

Market Vendors:

In-store & Red River Market

1 | Booth space
2 | Parking
3 | Restroom access

Shoppers

1 | Temporary parking
2 | Simple bulk instructions/weigh station
3 | Purchasable containers
4 | Other form of packaging (people forget, should still have a chance to shop)

Cafe Patrons

1 | Comfortable seating
2 | Access not through store

EMPLOYEE NEEDS

Office:

1 | Parking
2 | Natural lighting (office)
3 | Lunch break space
4 | Easy access to retail floor

Retail Floor:

1 | Parking
2 | Natural Lighting (floor)
3 | Break space
4 | Personal storage
5 | Stations (stocking, floor, cashier)

Greenhouse:

1 | Parking
2 | Quick access to store
3 | Separate break space
4 | Separate personal storage
5 | Office for GH manager

Cafe:

1 | Parking
2 | Break Space (shared with retail floor)
3 | Personal storage (shared with retail floor)
4 | Natural lighting (cafe seating)

Figure 4 | Standard Work Week

Figure 5 | North Dakota Counties

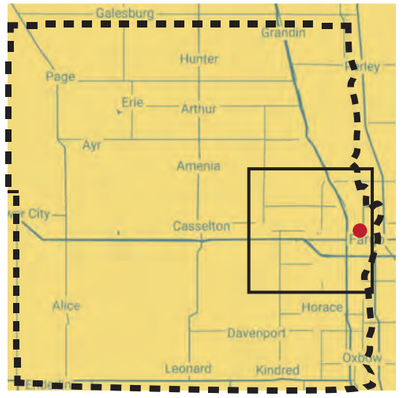


Figure 6 | Cass County

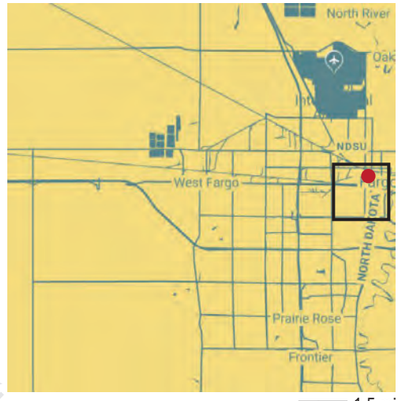


Figure 7 | Fargo, ND

Figure 8 | Downtown Fargo

Figure 9 | Chosen Site

THE SITE
ADAPTIVE REUSE

Figure 10 | Loudon Building | Fargo, ND
Kilbourne Group | photo credit

LOUDON BUILDING

TYPOLOGY: Vacant Commercial
LOCATION: 64 4th St N, Fargo, ND
Reniassance Zone
SIZE: 22, 400 ft^2
Floors 1, 2, & 3: 5,600 ft^2 each
Lower: 1,600 ft^2
YEAR: 1916

DECIDING ELEMENTS

1. Size
2. Historical Importance
3. Renaissance Zone
4. Location of Red River Market
5. Southern exposure space for greenhouse
6. Central Location
7. Open floorplan
8. (Convenient) off-street parking

CHOOSING A SITE

When deciding on a site location, Fargo was always the top choice since zero-waste stores already exist in larger scale metropolitans. North Dakota's climate also makes year-round farming impossible. By creating a zero-waste store-deep winter greenhouse hybrid, the sustainability efforts being made in high-populated cities can be brought to small town North Dakota, starting the conversation on waste. The site itself was especially important in addressing convenience as well as adaptive reuse. Many vacant buildings in Fargo were considered, pros and cons weighed, and ultimately landed on the Loudon Building. Other considered sites, including (but not limited to) K-Mart on south University, the Pawn Shop on 13th Avenue south, a warehouse on Main Avenue, were not chosen for many reason. Either the size was not appropriate, there was no space to build a southern greenhouse, or the location wasn't "convenient". The Loudon building however, checked all these boxes and more. It's the location of the Red River Farmers Market, bringing in more environmentally conscious customers and in the Renaissance Zone. This program encourages development through tax incentives to revitalize downtown Fargo (ND Department of Commerce).

PROJECT EMPHASIS

1 ZERO-WASTE

Decreasing the amount of waste we produce conserves space in our landfills, therefore reducing the need to build more. When we reduce our waste, we are also reducing the amount of air pollution and the possibility of contaminating our soil and water sources.

2 LOCALLY SOURCED

Commonly, when produce is marketed as “local” it’s still coming from 100 or more miles away. By having an on-site greenhouse, consumers have complete transparency of where their produce is coming from. Locally sourced food takes away the need for transport, eliminating harmful emissions.

3 PLANT-BASED

As previously stated, plant-based diets do not imply a vegetarian lifestyle but simply an intake of less meat. During the meat production process, unhealthy methane emissions are released into the air, heightening air pollution. The fishing industry discards billions of plastic nets in the ocean every year. By lowering meat consumption, our air and oceans become cleaner.

Figure 11 | Bar Hoegaarden Greenhouse | Pinheiros, Brazil
Maira Acayaba | photo credit

GOALS OF THE THESIS PROJECT

PHYSICAL:

academic 1. Design a facility upholding the standards of sustainability in a way that is obvious to the public

personal 2. Strive to follow my 3 main emphasis points in my own personal daily life

THEORETICAL:

professional 1. Learn the framework of the skill set it takes to do adaptive reuse projects

academic 2. Can architecture jumpstart a community to become more conscious about everyday environmental impacts?

professional 3. Create a new way to shop, leading the way for the future

SOCIAL:

professional 1. Create discussion about the environment where we can learn from one another

personal 2. Inspire a mindset among others, subconsciously or consciously, about sustainability in everyday life and products

academic 3. Inform others about the state of the planet and what can change right now

"Never doubt that a small group of thoughtful, committed citizens can change the world; indeed, it is the only thing that ever has."
—Margaret Mead

PLAN FOR PROCEEDING

DEFINITIONS OF RESEARCH DIRECTION

THEORETICAL PREMISE

In researching the theoretical premise, “How can architecture jumpstart a community to become more conscious about everyday environmental impacts?”, The relationship between consumer behavior and the convenience factor must be understood. Uncovering how convenience has the possibility to be shifted from a consumer standpoint to an environmental standpoint aids in understanding consumer behavior. Therefore, this relationship is defined from research about the concept of convenience.

PROJECT TYPOLOGY

In order to research project typology, case studies were completed. They were used to identify user needs, community goals, and client values. Two different typologies were researched; some type of zero-waste, organic, or local grocery store, and deep winter greenhouses. After researching these two typologies, adaptive reuse became a focus point and the project emphasizes were solidified.

HISTORICAL CONTEXT

Historical research will take place to understand the history of bulk packaging and why it isn’t widely used today. Other sustainable practices, including plant-based diets and daylighting, will be researched to understand past failures and successes. These failures and successes, similar to the researched case studies, will provide valuable information on the potential success of the proposed typological hybrid.

SITE ANALYSIS

In regarding site, the record of historical preservation practices will provide insight on the many perspectives about the reuse of a historically significant building. An observation of downtown Fargo will allow for the comparison of summer versus winter foot and car traffic and neighborhood grocery stores. The site analysis will also observe winter sunlight patterns to determine the best techniques for the proposed deep winter greenhouse.

PROGRAMMATIC REQUIREMENTS

Building program requirements are suggested through the use of case studies. Also suggested through case studies are community events held at these stores, expanding the typical grocery store program. Identifying the size of an average Fargo grocery store and the program of a typical zero-waste grocery store will provide insight on the best layout of the proposed typology.

PLAN FOR PROCEEDING

DESIGN METHODOLOGY

Design methodology is defined as the process that is used to identify and analyze information about a topic, in this case, the final design. The method that will be used in proceeding in the thesis design will be mixed qualitative and quantitative research through graphic renderings and digital studies. It is guided by the theoretical premise and the unifying idea of convenience.

Qualitative research will be collected through the use of site observations, historic records, and case studies that focus on the two halves of the proposed typology. Quantitative research will be collected through both scientific and statistic data. The numbers will be gathered from historic records and case studies, reiterating the space requirements and consumer habits that qualitative research proposed. These strategies will establish the design decisions, ultimately transforming these decisions into the proposed hybrid typology.

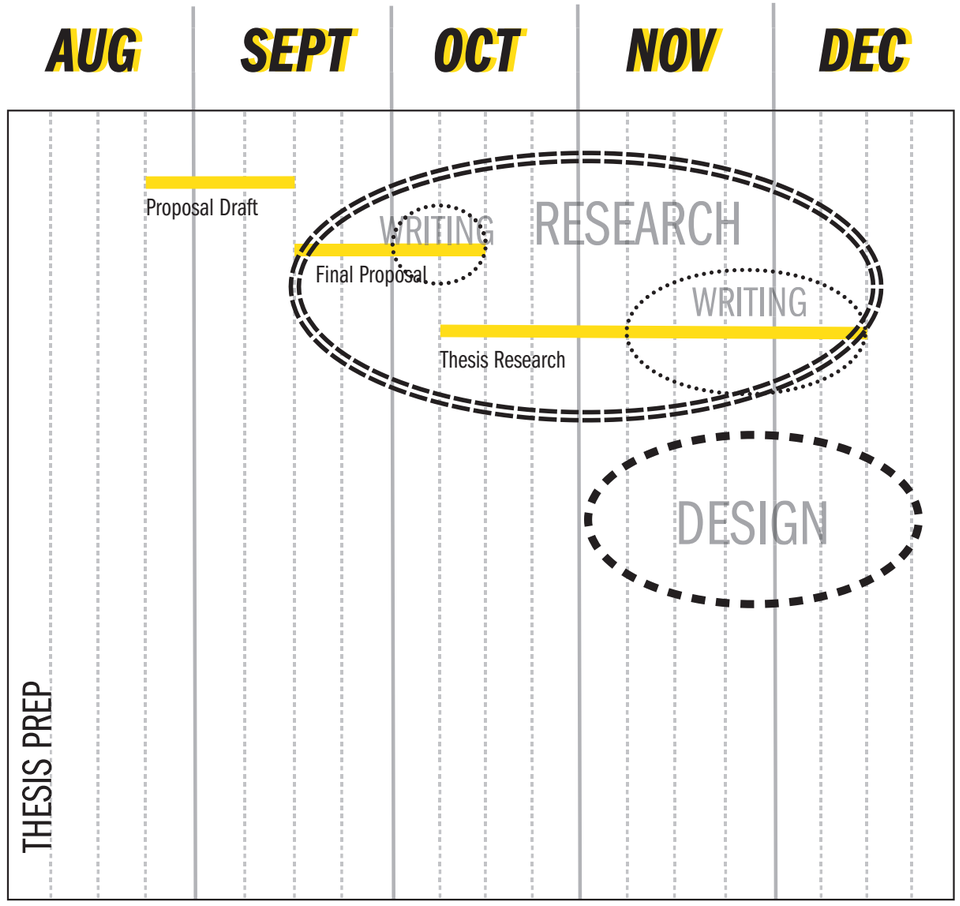
DOCUMENTING DESIGN PROCESS

The design process will be documented first through hand sketches and note taking, displaying real-time design and thought processes, during and after research findings. These notes and sketches will then be digitally presented through work in Adobe Illustrator, Adobe Photoshop, Adobe InDesign, Sketchup, and Revit. If these mediums do not capture the initial design inspiration, intention, or thought process, they will be scanned into the medium in question to ensure a complete understanding of the design process.

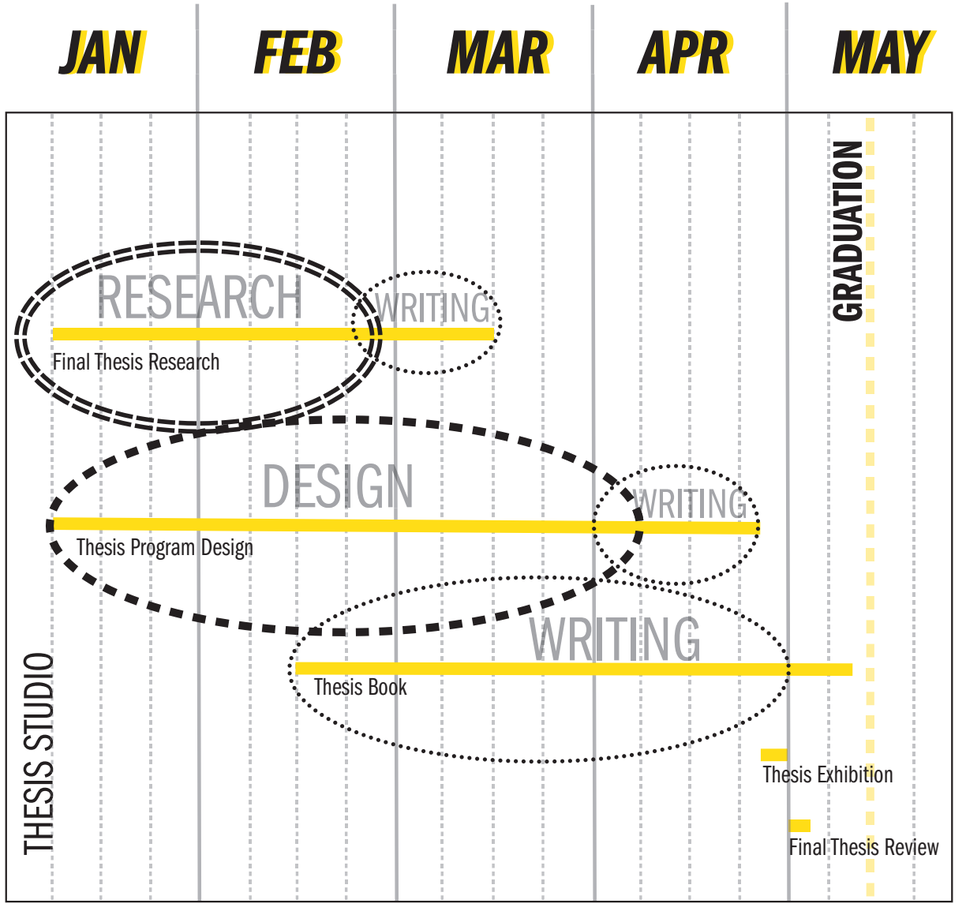
The areas of documentation will comprise of emphasis elements and typology elements. To preserve the documentation, all hand sketches and notes will be dated and digital mediums will be backed up weekly on Google Drive as well as a USB. Research sources will be continually updated in APA format in Microsoft Word to ensure no information is left unsited.

PLAN FOR PROCEEDING

PROJECT SCHEDULE



Fall Semester 2019



Spring Semester 2020

RESEARCH RESULTS

THEORETICAL PREMISE

Can convenience become sustainable? *Can sustainability become convenient?*

Convenience has become the forefront in modern daily life. Consumers are actively, but many unconsciously, seeking out ways to keep up with the fast-paced lifestyle constantly developing around them. Fast-moving consumer goods, or FMCG, companies are adapting to this lifestyle and creating solutions that appease to convenience. The need for convenience has brought the development of fast interstate systems, online delivery, grab-and-go food, and unfortunately, harmful emissions. So it needs to be asked; is it a competition between convenience and sustainability? Or can the two coincide?

This research is intended to aid in comprehending the impact of climate change and to inform architects, interior designers, and all other professions the impact each individual has on the environment. It is also intended for community members or notable community figures to understand their non-professional importance in changing market trends.

The research begins with taking a look into the impacts thus far of climate change and the rates of progression. Then, to understand the mind of the market, consumer behavior and impact is evaluated as well as consumers need for convenience. Two literature reviews were completed in order to fully understand the mind of the consumer and its relation to convenience. Finally, case studies were completed to determine the project program.

UNIFYING IDEA:
HOW CAN ARCHITECTURE JUMPSTART A COMMUNITY TO BECOME MORE CONSCIOUS ABOUT EVERYDAY ENVIRONMENTAL IMPACTS?

RESEARCH GOALS:
Understand the impact consumers have in the market and on the environment

Deepen my knowledge of climate change and how much humans have accelerated it

Learn why convenience has such a large influence on communities

Explore how and if convenience can shift meaning

Begin to consider how consumer behavior, sustainability and convenience can be tied back to architecture and in what manner

Identify the relationship between consumer behavior and their need for convenience

RESEARCH RESULTS

CLIMATE DATA

Satellites orbiting Earth enable scientists to collect information throughout time, which is now revealing the signs of climate change. Figure 11 shows carbon dioxide levels from approximately 800,000 years ago to 2018. Where, since 1950, levels have more than doubled from the average level that was consistent for 800,000 years. The figure also shows that in the last 650,000 years, there have been seven cycles of glacial growth and retreat and the end of the last ice age which was approximately 7,000 years ago. This marks the beginning of the modern climate era and human civilization.

Carbon dioxide traps heat, affecting the transfer of infrared energy and therefore allowing NASA to measure the scientific basis of many of their instruments and these climate trends. The Inter governmental Panel on Climate Change states that, "Scientific evidence for warming of the climate system is unequivocal" meaning that there is no question that the increased levels of carbon dioxide and other greenhouse gases are causing our Earth to warm up in response.

Besides using satellite imagery to indicate climate change, ice cores are drawn from Greenland, Antarctica and tropical mountain glaciers to show that Earth's climate is responding to the changes in these greenhouse gas levels. More ancient evidence is also found in tree rings, ocean sediments, coral reefs, and layers of sedimentary rocks. This ancient evidence exposes that the current rate of warming is occurring about ten times faster than the average rate of ice-age recovery warming.

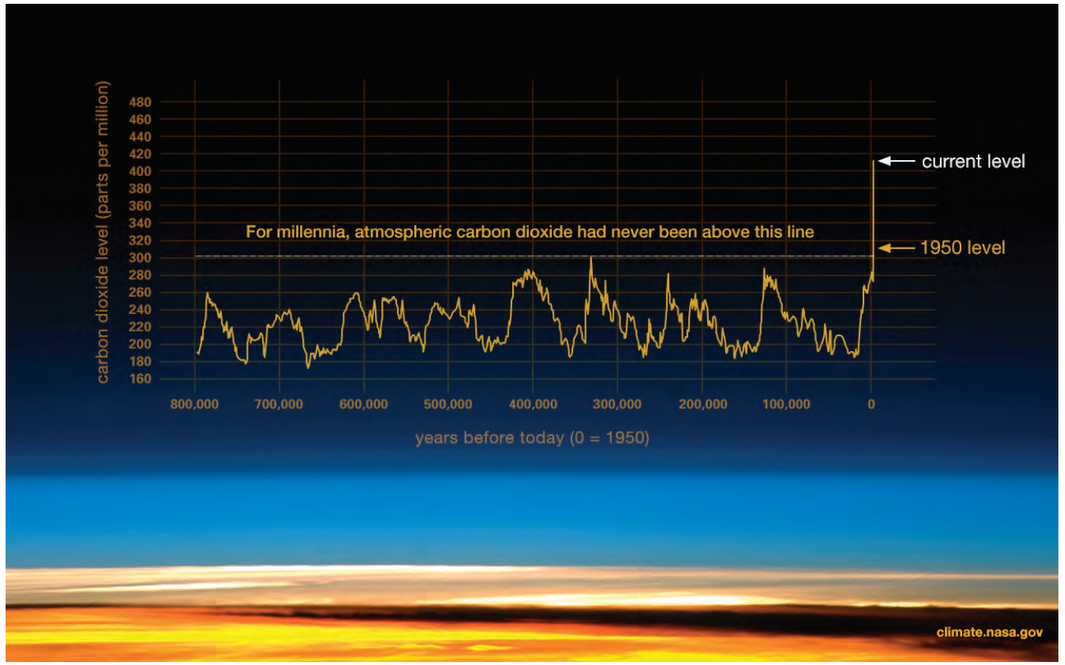


Figure 12 | Carbon Dioxide Levels
Luthi, D. | photo credit

RESEARCH RESULTS

CLIMATE DATA

The Earth's average temperature has risen 1.62 degrees Fahrenheit since the late 19th century, which is mostly driven by human-made carbon dioxide emissions released into the atmosphere. Most of this warming has occurred during the last 35 years, with five of the hottest years occurring after 2010. In turn, the oceans have absorbed much of this heat. The top layer, about 2,300 feet, is showing warmth of more than 0.4 degrees Fahrenheit since 1969.

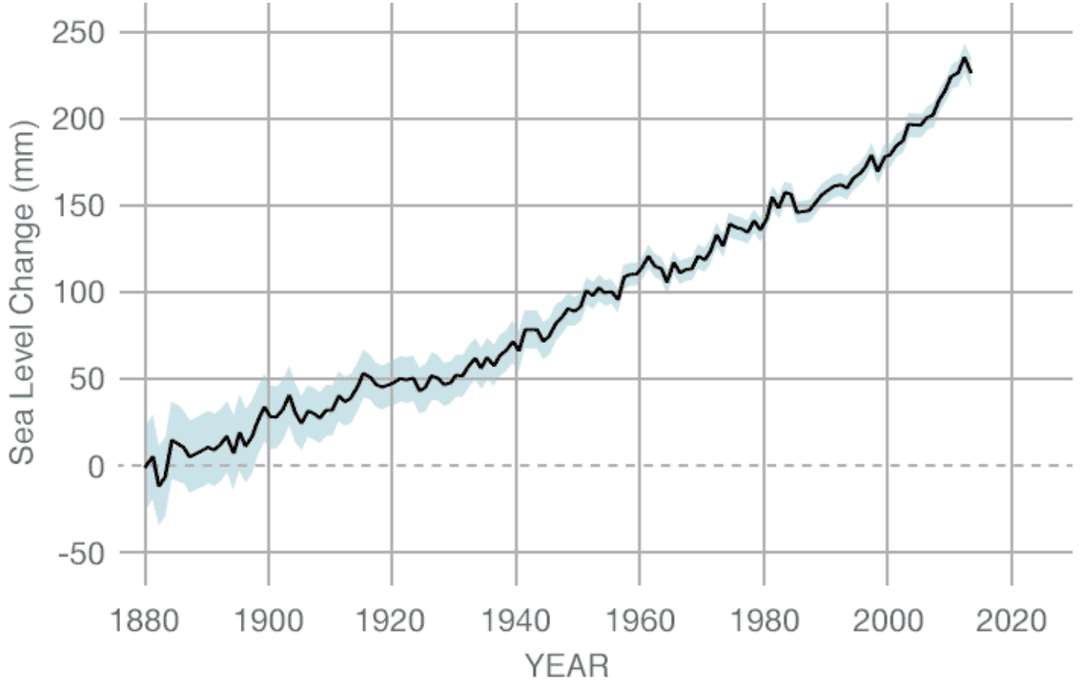


Figure 13 | Sea Levels
NASA | photo credit

basal melt

Melting of the ice shelves from underneath

A study found that basal melt accounted for 55% of all Antarctic ice shelf mass from 2003 to 2008, much higher than originally expected. Since Antarctica holds around 60% of the Earth's fresh water supply, the ice sheet melting is not only raising sea levels about eight inches in the last century, but causing entire metropolitan areas to go under. This rate of eight inches a century is now doubled and is accelerating ever so slightly every year.

Greenland has lost an average of 286 billion tons of ice per year between 1993 and 2016 while Antarctica has lost an average of 127 billion tons during the same years. These rates have tripled in the last decade. Figure 12 shows the sea levels through the span of 138 years. Most of the sea level rise is caused by two factors; added water from melting ice sheets and glaciers and the expansion of sea water as its temperatures rise. This graph is derived from coastal ride gauge data and showcases the expedited level changes in the last 30 years.

Aside from rising sea levels and global temperature increases, the number of extreme weather events has drastically increased. There is an increasing number of record high temperatures and decreasing number of record low temperatures around the globe since 1950. The US is also experiencing an increase of intense rainfall events.

RESEARCH RESULTS

CLIMATE DATA

As temperatures rise, ocean coral reefs are bleached. This is caused by the stress coral undergoes by changes in their conditions such as temperature, light, or needed nutrients. The corals expel the symbiotic algae living in their tissues which causes them to turn completely white. These temperature increases are also causing infectious disease outbreaks among ocean plant life, where much of ocean animal life depends on, affecting the entire ocean ecosystem. The carbon dioxide that's absorbed into the ocean has started to reduce calcification rates in reefs by altering the seawater chemistry through decreasing pH levels, this is called acidification.

Overfishing also creates a threat to coral reefs as coral reef fish are a significant food source for over a billion people worldwide. Too much of a good thing causes;

- decreasing population of fish nurseries, which are necessary to replenishing the fish population
- marine debris to be left on ocean floors, damaging coral reefs which take many years to recover
- decreasing populations of herbivorous fishes which eat algae and help keep the ecosystem in balance, this is caused from the use of non-selective gears like nets and traps, which often remove more of these herbivorous fish
- entire populations declining from fishing too many full grown fish and fishing spawning aggregations

(NASA, 2019).

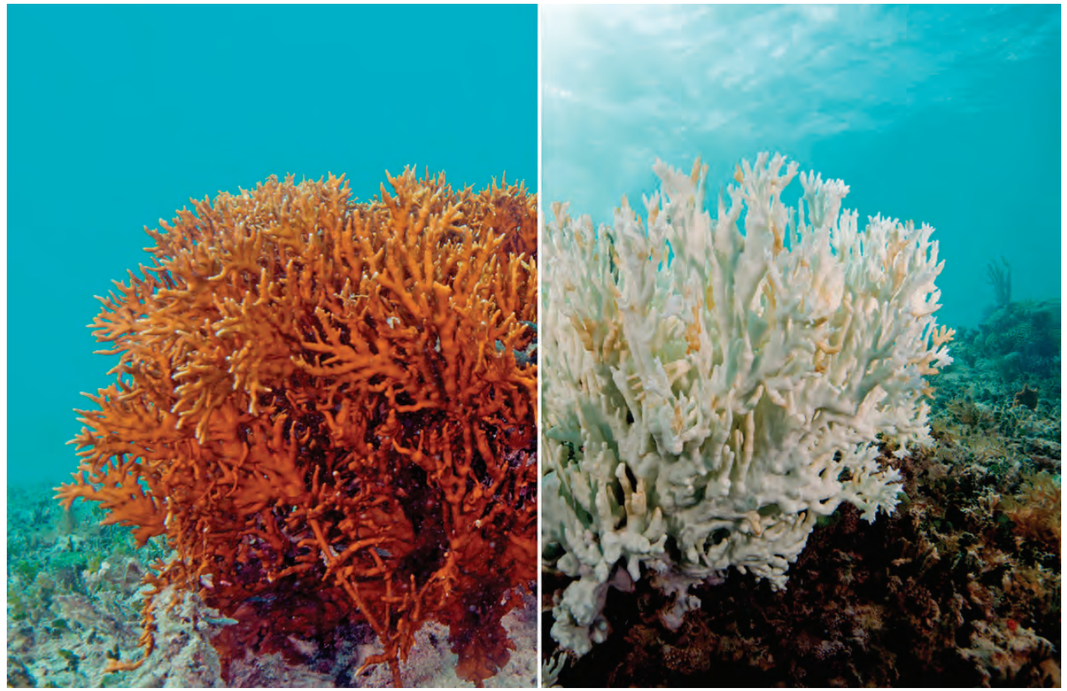


Figure 14 | Coral Reefs | 2016
Richard Vevers | photo credit

RESEARCH RESULTS

CLIMATE DATA

MEAT PRODUCTION

The emphasis of a plant-based diet stems from meat production data. Results show that by focusing on a diet of this sort, or a diet that replaces conventional meat with cultured meat produced by in vitro animal cells, could;

- reduce greenhouse gas emissions by **78-98%**
- reduce land use by **99%**
- reduce water use by **82-96%**
- reduce energy use by **45%** (Tuomisto, H. 2011).

Since this thesis isn't about cultured meat, we won't get into the details but rather into detail about plant-based diets. As mentioned before, this type of diet doesn't mean vegan or even vegetarian, but rather a diet that consumes less meat in general than the average consumer. By doing so even if just by half, greenhouse gas emissions can be reduced by up to **30%** and water use can be reduced by up to **37%.** This also means we could use up **42%** less of our agriculture land.

The second set of percentages differs from the first as the first is considering the impact if 100% of the population committed to an entirely plant-based, cultured meat diet while the second set of percentages is considering the impact if only 50% of the population switched.

Besides looking at it from an environmental view, a plant-based diet also creates a healthier lifestyle for the consumer as it is less likely to onset diabetes and other chronic conditions. Lastly, it would alleviate hunger in many third-world countries as almost two thirds of all soybeans, maize, and barely and a third of all grain is used to feed livestock (Barnard, N. 2019).

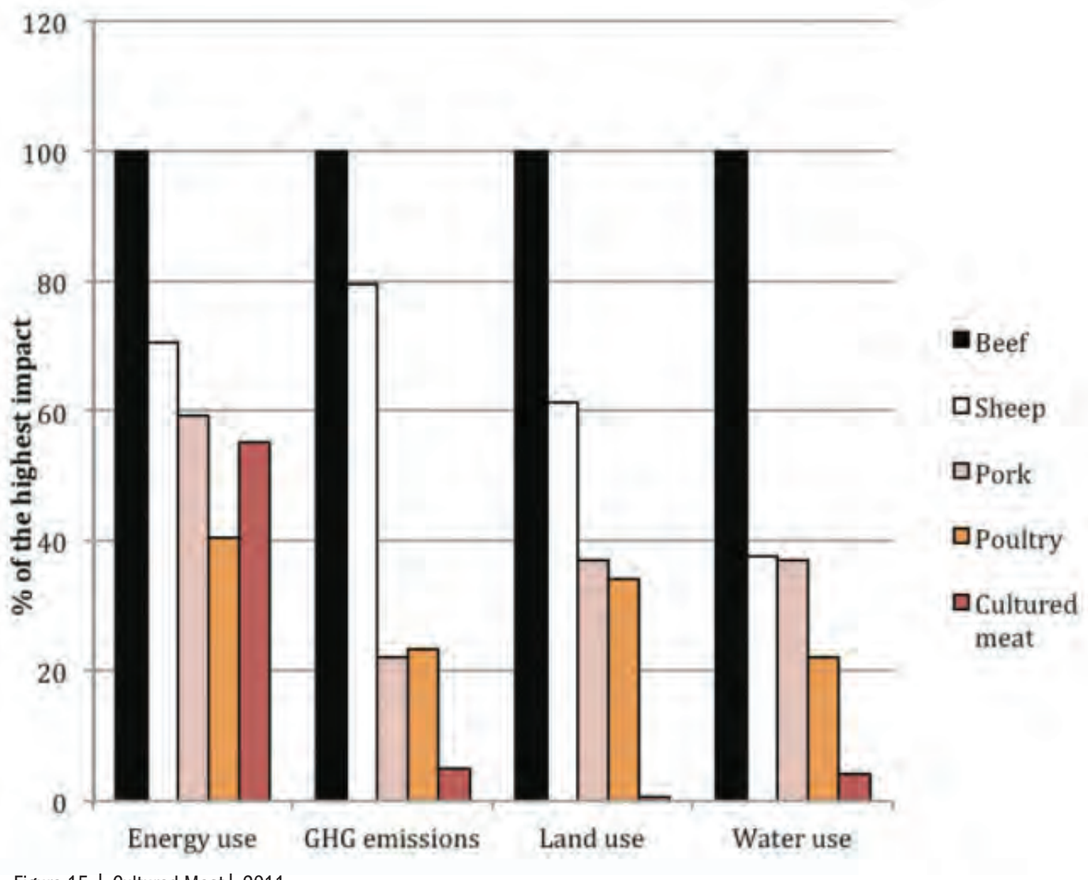


Figure 15 | Cultured Meat | 2011
Hanna Tuomisto | photo credit

RESEARCH RESULTS
CONSUMER BEHAVIOR

consumer behavior

study of individuals and their activity with the purchase, use and disposal of a good or service

Consumer behavior is our understanding of the interaction between physical consumerism and the mental responses of that follow. It is the way an individual acts when in the processes of obtaining a good or service. Consumer behavior is asking;

who is making the purchase decisions?
who is influencing the purchase decisions?
what is the motivator?
why is this good or service chosen?
what is the good or service chosen?
where can it be found?
when will the purchase take place?
how often is it being used?
how often is it bought?

These questions are asked by marketers and manufacturers to influence the behavior of consumers and collect data of buying habits and interests to create personal advertisements.

There are four factors that are influencing this consumer behavior; cultural, social, personal, and psychological. The market uses these factors by dividing up each group and subgroup then designing products according to the needs of each subgroup.

1 **CULTURAL** : A consumers values and perceptions, which are learned from society or family. Every culture is divided into different subcultures such as religion, nationality, race, geographic locations and racial groups.

2 **SOCIAL** : Reference groups, family and roles/status influence consumers from smaller subgroups than cultural factors. Reference groups are people with direct, or indirect, influences on an individuals attitudes and behavior. Primary reference groups are family and close friends, which have the most interaction with the individual. Secondary reference groups are considered classmates, co-workers, and neighbors. An individuals role or status can influence their personal market depending on the clubs or organizations that they belong to.

3 **PERSONAL** : Consumers age, occupation, economic status, lifestyle, and personality all influence their buying behavior. These factors are self-explanatory.

4 **PSYCHOLOGICAL** : Motivation, perception, and beliefs & attitudes make up the three most important factors in consumers psychological influences. Motivational factors mean some needs are more pressing than others. Maslow's Theory of Motivation explains why individuals are driven by specific needs at specific times. Perceptional factors explain why the same needs of two people don't always mean that they are purchasing the same product. Beliefs and attitude factors simply mean that different consumers have different beliefs or attitudes towards various products. These beliefs make up brand image, affecting consumer behavior, making the markets intrigued in changing said beliefs and attitudes (T. K., J. 2014).

RESEARCH RESULTS

CONSUMER BEHAVIOR : BUYING PROCESS STAGES

1

NEED RECOGNITION

Realization of a need, markets try to simulate consumers to thinking they have a need for a product.

"I need a new dietary supplement" Markets advertise supplements at correlated locations- gym, hospital, pharmacy

2

SEARCH FOR INFORMATION

Begin looking at different options for the need in question.

Asking friends for suggestions and looking online for good matches

3

PRODUCT EVALUATION

Decide on price point and "must have" criteria, then continue to examine each product based on those criteria.

"I'm willing to pay $25 and it must have some degree of hair growth."

4

PRODUCT CHOICE AND PURCHASE

Chose the product that matches the need and price point and decide when, where and how to purchase it.

"I found my hair supplement on amazon but they have it at Natural Grocers for cheaper, I'm going there next week to buy it in person."

5

POST PURCHASE USE & EVALUATION

Decide if product meets expectations

"These supplements are making my hair grow back."

6

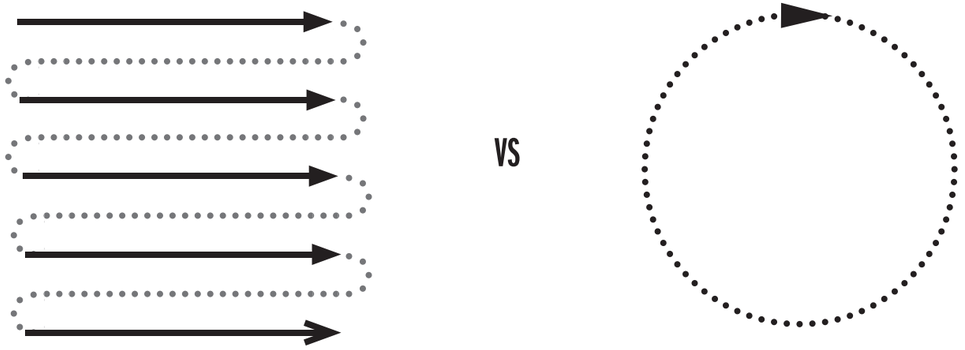
DISPOSAL OF PRODUCT

Either the item is thrown away or sold, them the consumer repurchases or starts the process over.

"I've used all my supplements, I'll throw my packaging away and buy another."

(Tanner, J. & Raymond M.A.)

Why does the process have to completely end, then restart?
Can't it circle back, reusing the original packaging no matter the product, branding, or store?



RESEARCH RESULTS

CONVENIENCE

According to Nielsen's "Quest for Convenience", convenience has three dominating factors; simplicity, time saving, and suitability. The Nielsen Company report took a look at the changing consumer needs around the world and focused on the driving factors of the increasing need for consumer convenience. This report provided global FMCG, or Fast Moving Consumer Goods, manufacturers with important revelations and resolutions in understanding the ever increasing need for convenience. These three factors, simplicity, time saving, and suitability, have developed the current standard for store layout, marketing, and packaging. They have created consumer encounters and interactions with products, therefore fulfilling consumer demand.

"Consumers require less to do more"

Basically, Nielsen was striving to redefine convenience, much like I am, but for it to become more convenient for consumers. This may seem like a strange approach, but while trying to understand convenience better, this angle to redefine to a more convenient convenience make sense as consumers are rapidly becoming more dependent on convenience factors. From the beginning of Neilsen's quest, they concluded that convenience is the driving factor for consumer lifestyle changes. They state that the solutions consumers are seeking in their everyday life is enhancing consumptions, shopping, and engagement. Finally, Neilsen concludes at the beginning of the report that satisfying the demand for the three main factors is the key for companies in providing well-versed convenience.

To identify future needs, Neilsen listed the driving factors of convenience in an average consumers lifestyle. These six driving factors are similar in a way to the four factors that influence consumer behavior, which as a refresher were; cultural, social, personal, and psychological influences. By understanding what drives consumers towards convenience, FMCG companies and manufacturers are able to create better strategies and develop future focused plans in satisfying consumer demands. These six change drivers are; rapid urbanization, smaller households, crowded transport, evolving gender roles, generational needs, and uptake of technology.

1

RAPID URBANIZATION

Consumers are moving to urban centers in hopes of employment opportunities, better infrastructure, and more lifestyle options than suburban or rural areas may have.

2

SHRINKING HOUSEHOLDS

As populations increase, there is limited urban living space available and at higher prices. This creates a need for living spaces to be more conveniently laid out to use small spaces in the best way. Because of this, companies are now reconsidering packaging, multi-use products, and single use products in an effort to save space.

3

CROWDED TRANSPORT

Car ownership is decreasing with the increasing population because of the extra traffic and congestion. There is more time spent "on the road" commuting with either public transportation or personal transportation, which means more meals are consumed on the go in a convenient fashion. With busier lives, there are more opportunities to manufacturers to consider what is being consumed, how it's being consumed, and when or where it's being consumed.

4

EVOLVING GENDER ROLES

There's an increasing number of women joining the labor force which means the traditional female role has shifted to a shared role between partners. This creates new marketing strategies to fit shifting traditional consumer roles.

5

GENERATIONAL NEEDS

Populations are experiencing longer lifespans but in some regions younger generations will remain as a majority of the population. Age demographics are shifting which drives changes in consumer behavior with technology, spending ability, and differing generational needs. This means that regions with older populations need different convenient products such as easy to open packaging and home delivery while younger populations are looking for food on the go but are generally more willing to travel for products.

6

OUTTAKE OF TECHNOLOGY

In the FMCG market, technology is at the center convenience. It's the key to matching consumer demand to the goods and services desired. It's products that are "right here, right now, and right for me". Technology is evolving increasing fast and can now be personally customized for convenience. This is what makes advertisements personally targeted and created timed delivery systems. It's created an on-demand society that's completely personalized.

Neilsen has proven that companies can continue to succeed in a growing world of convenience. The concept of convenience is not the same for everyone, for every product, everywhere in the world. It's about, "Relieving the burden of routine tasks to give back time to consumers, so they can do what they value most" says Neilsen in their report, *Quest for Convenience.* They state that it's important to ask companies if they are 'future ready', meaning are they considering the fast-changing opinions, lifestyles, and views of consumers? These factors have always been changing throughout human history, but with the waves of new evolving technology, population's opinions and lifestyles are changing more rapidly than ever before.

Convenience in stores can be seen through consumption, services, shopping, and leverage. Consumption convenience means having space to eat, grab-and-go options, and nutritional and portable options. Service convenience in stores is seen as pharmacy or health sections, similar to how Natural Grocers has a focus on health, as well as beauty, banking, delivery and digital sections. Shopping convenience is found on virtual apps to navigate stores or better store technology for fast services. Last, leverage convenience is the power of data analytics, which is the personalization brought by technology. This is seen as completely personalized shopping experiences and loyalty data for customized offers and sales based on previous purchases and interests.

So how can we, as companies and manufacturers, understand consumers pain points and deliver on the benefits of convenience? Pain points are defined as the routine tasks that are dreaded by the average consumer. Are consumers experiencing a new pain point of climate change and sustainability? Is convenience at the center of the questioned companies' strategy and is it possible to make room for sustainability, a possible developing pain point for consumers? (Neilsen Company, 2018).

LITERATURE REVIEW

These literature reviews cover two texts that related directly to the theoretical premise, *"How can architecture jumpstart a community to become more conscious about everyday environmental impacts?"* As well as the unifying idea of convenience in relation to consumer behavior. These texts were read and analyzed simultaneously with the research results above and contributed greatly in understanding both convenience and the consumer market.

Futures for a Preservation Movement, Ned Kaufman, 2004

The first reviewed text of two was *Giving preservation a history: histories of historic preservation in the United States* written by a handful of preservationist figures originally published in 2003. This abstract focuses on Ned Kaufman's vision of the future in terms of preservation and the market, titled *Futures for a Preservation Movement.* Kaufman concludes the article by stating that preservationists are to never forget their persisting strengths in influencing communities on a cultural, historical, and aesthetic basis.

So, what does preservation have to do with consumerism? Kaufman states that preservationists, similar in character to environmentalists, have to play in the capitalists game to succeed. **The market will not solve our problems.** First, we must understand what the market is comprised of. It consists of many different buyers and sellers. Each of these players represent a very small fraction of the market as a whole. Both ends of the spectrum, buyers and sellers, have an insignificant impact on the market individually. Together is when the changes occur. A buyer acts as the price taker, which means that this player has no impact on the price of the good or service in question. They take the prices given to them and decides whether or not the purchase is made and at what quantity. The seller acts as a pricer maker, but in this case they presume the production decisions taken place beforehand shape the price of a purchase. Sellers take the price given by production and decide the final price of a

product that will generate the highest profit. Good and services sold by all sellers in a market is thought to be homogeneous, meaning that if every seller sells the same good, the buyer doesn't particularly care about which seller they purchase from if the good is asking the same price as the next good. All of this calculates out to buyers and sellers having 'perfect information'. Sellers, or producers/manufacturers, are aware of the production capabilities of other producers in the same market and have instantaneous knowledge of all market price, utility, and predicted cost functions. This is a measure of how wrong, or right, a cost model is in terms of its ability to estimate the relationship between two producers. Both the buyers and sellers are aware of every price being charged by other sellers (Tanner, J., & Raymond, M. A.).

With an understanding of the market, it's easier to view Kaufman's vision on preservation in relation to consumerism. Since the two are so similar, this forces preservationists to look towards the market in terms of profit to be heard and make changes, but the important values of preservation are non-monetary. He states that community members are remolded from their original position as citizens to becoming consumers. These new-proclaimed consumers have then accepted the lie that their consumer choices must be entirely composed from their values as individual consumers rather than their values as individual *citizens* living in society together. However, we are not solely consumers, but rather we are also friends, colleagues, family members, neighbors, and ultimately citizens. Each of these roles allows us to make varying choices, where one choice may not align within every role. Citizens are living by these choices and are structured by rules and regulations, sometimes binded by law, but making each citizen their own individual not completely surrounded by consumerism and market influences. By taking away the role of 'citizen', the fullest expression of individual values is also removed. By this understanding, citizens-turned-consumers are less likely to take in new ideas like sustainability in efforts to better their community unless the market is influencing them. In his writing, Kaufman didn't state whether or not he believed individuals could exist as both citizens *and* consumers, but considering his defining point, I believe individuals can have values of both roles.

LITERATURE REVIEW

NED KAUFMAN

We can still contribute to the market as well as our community on equal levels, but tend to showcase more consumer values than community values unless the community in question is proposing change in some form.

THE POWER OF THE CONSUMER

We, as consumers and citizens, hold more power than we realize. We are able to influence the market, or the seller as stated previously, with what is being purchased and our wants, needs, and values. Because the market depends on consumers to kept it alive, they must adapt to consumers. From the surface, this concept could look like it's conflicting the price taker versus price maker view of the market, but actually means that the buyer is becoming the *value* maker and the seller is the *value* taker. In this example, price and value are swapped so that now the buyer is in control and the seller is adjusting.

Kaufman's concept of a "preservation society", one where individuals are defined as citizens rather than consumers, is viewed sort of as a Utopian society, but the concept is valid. He wishes that we were in a society that could support a life of quality, different from a life supported completely from a monetary stance, like a consumer basis. This is similar to the stage we are in now which has been growing steadily but substantially since the industrial revolution. He says that what we have learned from memory, tradition and hard work should be a considered a form of wealth and carefully increased over time, not as an obstacle to gain power then overlooked. Basically stating that convenience has over-weighed communities completely where they are entirely run on what is convenience. That we just look for what product is the easiest, cheapest, and most readily available thing that can be bought for what is needed, which strongly relates to Neilsen's Quest for Convenience report analysis.

GROWTH: GOOD OR BAD?

A large notion in Kaufman's article is that growth is not good for us. He explains that market growth has overpowered quality and now quantity is more desirable for consumers and producers. He doesn't necessarily state that growth is *bad* but rather growth is wonderful and has brought many new possibilities and opportunities but is pointing out that the 'bad' growth is industrialism to an extent. Industrialism is using our resources in an unsustainable matter where new products are no longer able to outlive the buyer or even 10 years. Kaufman says that growth is bad in this instance because we are not changing, we are not fully comprehending our responsibilities as a consumer and are creating irreversible waste and overproduction. He aligns this with both sustainability and preservation, proposing that while the market is the cause, it is not also the answer. Our history as civilization lies in both preservation and sustainability and is also our present and future.

Our history in preservation is defined as buildings, material, and construction methods. It's historic in terms of the way it was constructed, by whom, when, and how long the architecture was meant to last, not necessarily even in the current or past function. Preservation history is proof that buildings, much like consumer products, can last longer than 10 or 20 years if made with sustainable intentions. More intentions of quality instead of quantity.

The history in sustainability has proof in today's climate- today's *declining climate*- where it continues to decline with no real evidence for a possible change in consumerism. No evidence that politicians will help, or even that the "big guys", meaning the dozen parent companies that own the entire market, will start making changes that could have an actual impact on environmental-focused consumer behavior. However, the evidence lies in the existing market for sustainable products, where a profit is currently being made but is much deeper than selling metal straws and reusable bags. This materialistic effort is all consumers are able to do in the fight with climate change. They are given no substantial options to help the environment because the market nonetheless still mostly controlled

by those “big guys”. Essentially, it all circles back around. Back to consumers, like Kaufman states, as they have the power to take control of the market by their wants, needs, and values that are displayed to the sellers, which are the dozen parent companies developing products, hence controlling the market. If consumers develop a large enough need for a sustainable lifestyle, the market has no choice other than to oblige.

Circling back around once again, Kaufman originally states that for preservation to have its place in communities, it must play in the capitalists game, even if its values are non-monetary. Exactly like environmentalism, which also exhibits non-monetary values, they both must insert themselves into consumerism for changes to be made because ultimately, citizens have been remolded into consumers (Page, M., & Mason, R. 2004).

The Importance of Convenience in Consumer Purchasing, Eugene J. Kelley, 1958

The second reviewed text was the *Journal of Marketing*, volume 23 issue 1, an article titled *The Importance of Convenience in Consumer Purchasing* written by Eugene J. Kelley in July of 1958. Kelley was a renowned marketing scholar and wrote this abstract as a key to understanding the increasing importance convenience was portraying on consumers at that time. In 1958, a movement was started in which planned shopping centers were becoming very popular in aiding to convenience considerations. Kelley begins the article by laying out the ten convenience forms and concludes it with a better understanding of how the market was changing during that time to accommodate to shifting consumer wants and needs. The age of the article helps us see market patterns since then and what companies have done to accommodate to other shifting consumer needs. Emerging into this new upcoming decade, another shift is happening: a shift for sustainability.

CONVENIENCE FORMS AND MARKETING THEORY

Right off the bat, Kelley determined two factors in understanding consumer shopping behavior. First, consumers making these shopping decisions are balanced between commodity costs and convenience costs. Second, convenience costs are assumed to be more important to the consumer than the rather. Commodity costs are defined as the monetary price paid to the seller to have possession of the good or service in question. While convenience costs are defined as the expenditure of time, physical and adrenaline (nervous) energy, and the money required to have possession of the good or service as well as the money required to get to the location of the good or service, whether it’s the cost of transportation, owning a computer, or the situation leading up to the need of the purchase. Basically, commodity cost is the physical monetary price of an item and the convenience cost is what had to happen before getting to the point of owning the item, physical and mentally. At the time, this was a new view on convenience, one where it was gaining a reputation that convenience is expected instead of a luxury. This new emphasis didn’t mean that consumers were less conscious about prices but rather it was superimposed that convenience also favored lower prices, which would be considered wallet convenience in this case.

As conveniences increased, populations had more leisure time which meant they had more shopping time. Companies used this new emphasis to create a new type of advertising, one that seemed more personalized to the consumer and their wants, similar to today’s technological personalized shopping experiences. Since there was such a large increase in standardized production with the new wave of convenience, there was very limited price competition. This narrow price range suggested a new importance for consumer convenience costs and translated to new seller strategies. This meant that in the future, it was likely that merchants would be focusing on the competitive nature of convenience considerations rather than focusing on lowering prices like they had in the past. Because of this, product quality was raised and again, new advertisement strategies were tested. Since then, the extremely high demand for quantity has gone up, thus actually decreasing quality and prices but increasing sales and unfortunately waste. The expectation for convenience has only gotten higher and quality is harder to find.

LITERATURE REVIEW

EUGENE J. KELLEY

TEN CONVENIENCE FORMS

Similar in a way to Neilsen's six driving factors of convenience, Charles G. Mortimer, president of the General Foods Corporation at the time, listed out the ten forms of convenience in Kelley's article. The average American consumer now expects these forms almost entirely, but perhaps subconsciously. Convenience factors have become built into a range of new products and as new forms that continue to appear in marketing.

1 FORM CONVENIENCE

Size and shape of a product

cigarette or mint boxes designed to fit varying vest pocket ratios

2 TIME CONVENIENCE

How much time it takes to acquire a good or service and how long that good or service lasts

winter evenings quickly turning to nigh | out of season produce

3 PLACE CONVENIENCE

Where a good or service is located and whether or not that location is applicable to its use

planned shopping centers | life insurance in an airport | supplements at the gym

4 QUANTITY OR UNIT CONVENIENCE

An appropriate amount or size of a good

buying eggs by half a dozen or two times a dozen | travel sized containers or packaging

5 PACKAGING CONVENIENCE

Packaging that's easily removed, disposable, or similar goods packaged together

one serving of yogurt that comes with a spoon | packaging only used to determine serving sizes

6 READINESS CONVENIENCE

A good or service that's immediately ready to be consumed

instant coffee | to-go meals | pre-pealed produce

7 COMBINATION CONVENIENCE

Goods or services that come with all the necessary aspects including ingredients or tools

meal services that deliver uncooked meals but with the all exact measurements needed

deconstructed furniture that comes with any needed screws, bolts, or one-use tools

8 AUTOMATIC OPERATIONS CONVENIENCE

A good or service with little to no set-up required

products that come with batteries | disposable cameras

9 SELECTION CONVENIENCE

Many options of a good or service with varying levels of differences

barbers, tattoo artists, bakers | dairy options- flavor, texture, ingredients, source, replacements

10 CREDIT CONVENIENCE

A good or service that can be obtained before paying for it

cars | homes |vacations | schooling

LITERATURE REVIEW

EUGENE J. KELLEY

METROPOLITAN STRUCTURES

The ten convenience forms helped the consumer market reach a place where they could comprehend the developing desire for convenience. With an understanding of the forms, the shopping center concept exploded and cities shifted to a consumer role from their previous citizen role as Kaufman explained in his article, *Futures for a Preservation Movement.* These shopping centers increased in size and individual numbers which meant that the larger these super stores became, the farther away from central metropolitan areas they were constructed. Consumer convenience considerations were also setting a limit on the growth of these stores. Most consumers agreed that walking more than 600 feet from their car to store entrances was too far and they would prefer to be in closer range. This limited the maximum parking distance that could be built for a shopping center before the store loses its convenience advantages over traditional shopping districts such as downtown city centers.

On another spectrum, distance concept involved time-cost elements instead of the exclusively spacial element noted previously. The interstate system was developing during the same time frame that shopping centers were, while the comparative slower highways were experiencing less traffic than ever. These direct and hyper-fast routes continue to allow consumers to travel further from home, at faster speeds, and have changed the view on distance. Since their construction, distance between metropolitan areas is measured based on time rather than by actual mile distance. Because of this, downtown retailers must compete more with suburban retailers because downtown locations are generally not directly connected with the interstate system. Although now, there's proof of shifting competition amongst these central locations. The proof lies in the new pattern of rehabilitation central business directs are experiencing which includes improvement of access, traffic, parking conditions, modernization of facilities, new business incentives, and strengthening mass transportation.

Essentially, this means that downtown competition is once again emerging because of the restoration of lost convenience aspects that central business districts once had, the same preservation ideal that Kaufman wrote about.

Both suburban shopping centers and urban shopping districts are benefiting from community identification. Many different typologies can be put into shopping centers and already exist in historical city centers, which is considered central business districts and downtown neighborhoods. Having that many typologies in one area is convenient for most consumers. These centers resemble earlier market places which historically served as trading function, much like today's version of a farmers market. Consumer tend to favor shopping conditions where products are presented in a convenient, informal, and interesting approach. Kelley states that one large different in the two markets is that one floor retail stores are not possible or practical in downtown neighborhoods since the land cost is much higher than suburban areas. These one floor stores are typically constructed 'out of town' as super markets or malls but fortunately, their construction generally results in the construction of other retail stores and living communities in that same location. This pressure for convenience is providing an incentive for other retailers to offer lower convenience costs to consumers.

REALIZATION OF SHIFTING NEEDS

Convenience based innovations are becoming increasingly successful, but this raises the question about the role of market considerations. Shopping centers differentiate from specialty, stand-alone store since they offer more for consumer convenience in a spatial relevant scale. As we know by now, products and needs shift, so retailers are required to change with their consumers to make a profit. Understanding this process of changing markets is critical in building a successful retail business. When this article was written in 1958, shopping centers, now called malls, were the newest upcoming consumerism approach. Today in major metropolitan areas, malls are dying. If malls are so convenient, why are they dying? The answer to this lies in online shopping. The convenience cost to purchase a product online from home and have it delivered directly to you is much lower than the convenience

LITERATURE REVIEW
SUMMARY

cost of driving to the mall, parking, walking to the entrance, and finding the exact store and product desired. Since way before Kelley's article and many centuries after the current online shift, the market will continue to change solely to accommodate consumers. This is because the need for convenience has always driven consumers to new innovations, new products and new modes of shopping (Kelley, E. J. 1958).

LITERATURE REVIEW SUMMARY

Both Kaufman and Kelley exhibit the understanding that consumers hold the power. Their changing needs cause shifts in the market, which range from advertising, transportation, the physical mode of shopping, production, and how purchases are made. Kaufman believed that the power to shift communities was only possible if brought on by capitalism. In his case he references historical preservation which generally holds non-monetary values but to be considered important in communities, historical preservation has to create a market for consumers. Since consumers are in power, if they were to develop a need for preserving history the market must technically oblige and give them a mode to preserve history, in whatever form that may be. In Kelley's case, he references convenience and how the different forms are expected amongst consumers, but these expectations grow larger and change with time. The two together display the constantly changing market, even with two concepts that don't traditionally create profit. For one, that concept is preservation and environmentalism and for the other that concept is convenience.

In relation to my thesis, there's a need to shift consumer convenience into having environmentally sustainable values. These new values come from climate change evidence thats negatively having an impact on our planet, our source for any life. Kaufman proved that since citizens are remolding into consumers, the only way for non-monetary concepts to have a place in communities is by conforming to capitalism, by creating a profit that isn't traditionally there. If a profit margin for sustainable lifestyles is introduced to the market by consumers-turned-citizens valuing climate change, retailers must also adopt these values to continue to make a profit. Kelley proved the need for convenience and that it must shift to accommodate consumers with time. This means that if both consumer values and expectations for convenience are changing, they must collaborate to not create lifestyle-value competition.

These reviews were necessary in understanding these suggestively opposing concepts. The preliminary research set a basis of understanding, (1) the current state of the climate through climate research, (2) how and why consumers behave the way they do throughout the buying process, and (3) the reason why convenience is forever prevalent in society. In analyzing the articles written by Kaufman and Kelley, the undeniable issue that has come to light is that a majority of consumers don't view sustainable lifestyles as a need. Without the need, it cannot be powered by consumers into influencing retailers.

Suggested by the climate data, individuals and communities as a whole cannot see their impact on the environment, therefore it doesn't directly affect their lives at this time. Because of this I have to ask; how do we inform communities of their harmful impacts without using scare tactics? ***Can architecture help inform communities of their environmental impacts?*** If they can be successfully informed, can their expectation of convenience be sustainable? And last, can both these aspects, convenience and sustainability, respect each other and coexist? After reviewing and analyzing the two articles, I've concluded that they can in fact coexist alongside and inter-wind with one another. Kelley never explicitly defined convenience as wasteful and instead that it simply encourages a fast-paced lifestyle where products are quickly bought with ease and are able to be consumed (or used) immediately. The entire concept suggests a new market for sustainable convenience. A market formed by consumers ability to recognize the importance of a zero waste, locally sourced, and plant based lifestyle.

Figure 16 | Zero-Waste Market
www.zerowastenerd.com | photo credit

Figure 17 | Yellowhouse
www.greenhousehubs.com | photo credit

TYPOLOGICAL RESEARCH (CASE STUDIES)

The following case studies are used in the exploratory research. From an architectural standpoint they aid in developing new ideas, building programs, and understanding building typologies. They differ from experimental research because they link the observed phenomenons with real life situations. The main interest in these case studies is sustainability, closely focused on lessening waste from a commercial perspective.

GOALS:

Develop an understanding of the typical retail building program

Explore different business models when focused on environmental factors

Differentiate which models are successful and which models lead to failure

Understand how deep-winter greenhouses work including their cost and construction

Decide if this type of greenhouse is viable for North Dakota climate in an urban and commercial setting

1 NATURAL GROCERS

2 IN.GREDIENTS

3 PRAIRIE ROOTS FOOD CO-OP

4 PARADOX FARM

NATURAL GROCERS

TYPOLOGY: Organic Supermarket
LOCATION: Lakewood, CO (headquarters)
SIZE: 5,000-16,000 ft^2 (selling space)
148 stores | 19 states
YEAR: 1955
(Natural Grocers Annual Report, 2017)

Figure 18 | Natural Grocers by State

DISTINGUISHING CHARACTERISTICS

This retail chain focuses on organic, natural, and affordable products including, but not limited to, groceries, body and pet care, dietary supplements, and household products. The business was created in 1955 in Colorado as door-to-door sales and opened its first store in 1963. They were founded upon five principles; nutrition education, quality, affordable prices, community, and their employees. They have a strict set of product and manufacturer standards and an extensive list of ingredients they won't carry in their stores. All Natural Grocer distributors are local to each store and 100% certified organic. (Natural & Organic Grocery Store).

FARGO, NORTH DAKOTA LOCATION

After opening in 2015, Natural Grocers became the first grocery store of its type in Fargo. The store took over the former Office Depot on 13th Avenue South, totaling around 14,000 ft^2. According to Natural Grocers website, new stores are usually constructed using plant-based, recycled, and nontoxic materials unless there's an opportunity to use an existing space (Prairie Business, 2015). From personally visiting this store, I discovered some interesting details. First, the store is bag-free, meaning I had to bring my own bag or else I'd be given a cardboard box that had been previously used for product shipping for the store. The second detail, although nothing to seemingly due with the business model, was their strange hours. Not every location is the same but the Fargo store is open from 8:30 am to 9:36 pm. Having worked in retail, I'm curious if this is a new approach to stay open for "a couple more minutes" to accommodate to those shoppers who like to come during the last minutes. One last detail I noticed from shopping there was the huge amount of space they had set aside for supplements. Seemingly half the store was dedicated to natural dietary products. The remaining space was filled with grocery items including produce, frozen products, and grab-n-go items, and a small section with body care, pet care, and household products. They seemed to have room for growth as there was a excessive amount of empty space in comparison to other grocery stores.

Natural Grocers Fargo location is situated on one of the busiest streets in town. Since the construction of West Acres Mall, 13th Avenue has become home to many businesses and is in a constant state construction. After the grand opening, Fargo locals were said to be impressed by the lower prices in comparison to organic sections of "regular" grocery stores and commented on the large community room. This room is used for demonstrations on products and is open daily for free coffee and tea (Olson, D. 2015).

Figure 19 | Former Office Depot | Fargo, ND
David Samson | photo credit

Figure 20 | Natural Grocers Today | Fargo, ND
Laura Laughbaum | photo credit

Figure 21 | Natural Grocers Site Map

SITE ANALYSIS

An analysis of the surrounding area shows the extent of retail and food services in this area of Fargo. Restaurants, fast food and sit down, seem to be all situated directly adjacent to the main roads while the retail stores are set back behind their connecting parking lots. Just north west of the Natural Grocers is a Wal-Mart which carries an even larger and cheaper variety of products, but undoubtedly not advertised as organic. This suggests the need for spatial competition, when similar businesses seek to develop next to each other to be where the customers are.

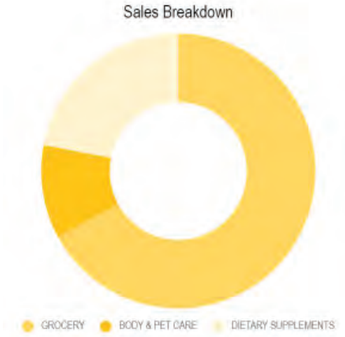


Figure 22 | Sales Breakdown

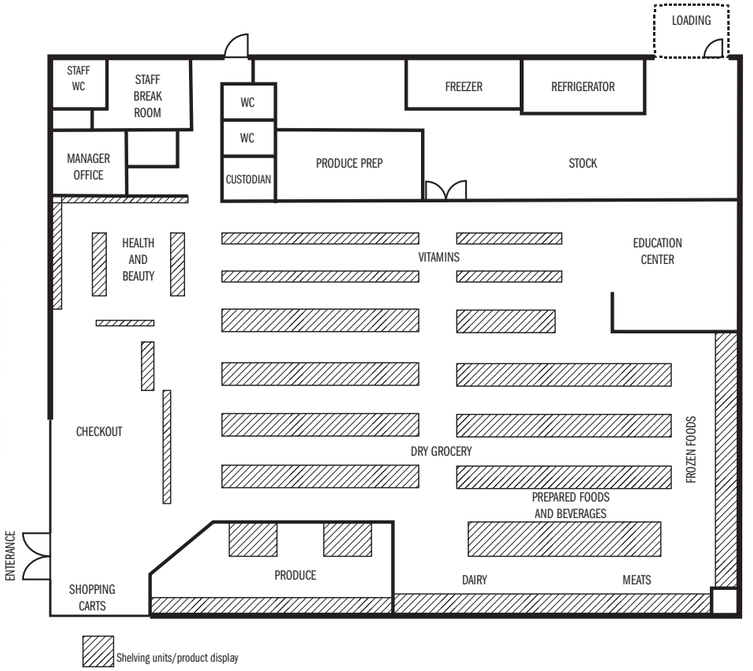


Figure 23 | Natural Grocers Plan Proposal

PLAN ANALYSIS

This plan was a proposal for all new Natural Grocers after the year 2017, totaling 11,000 ft^2 selling space. The goal was to offer consumers a clutter-free, organized layout, with a quiet ambiance utilizing warm lighting and decreasing the odors produced by meat and seafood. The pie chart showcases the sales breakdown for 2017 (Vitamin Cottage Inc, 2017). The floor plan helps to understand the space comparison between the retail floor versus the store operations. It also suggests an accurate list of program elements, assuming the “education center” is a space to learn about healthy habits or food education, implying this space is a placeholder for the community room similar to Fargos’.

RESEARCH FINDINGS

Natural Grocers is similar to other chain stores like Whole Foods and Sprouts but also similar in its own way to the Prairie Food Co-op in Fargo. Because it's a chain retail store, Natural Grocers has set nation-wide standards for all locations to follow, keeping consistency. However, I found that the Fargo location felt uncomfortable with the amount of open space in relation to human scale as the aisles felt wide and unnatural. Even though the store proportions may have been subpar, the business itself exceeded my expectations. The products were reasonably priced and carried a considerable amount of organic substitutes for dietary needs. It's convenient location on 13th avenue provided easy access to the store itself and others nearby.

At an environmental level, Natural Grocers has done a great job in sourcing sustainable manufacturers. All dairy, produce, and cattle farms are chosen based on locality, humane practices, and pasture-based values. By being completely transparent, the store can guarantee quality and healthy climate impacts. Along with this, they've publicly listed their green building practices to fight in reducing their carbon footprint. This list consists of, although not limited to, re-purposing buildings, using non-toxic construction materials, innovative heating and cooling, and solar powered store signs. Understanding the differing effects individual choices can make on the environment is not a straightforward business practice, but Natural Grocers seems to grasp this.

CONCLUSION

The business model emphasizes excellent product standards that were carried into building construction. By not dismissing the importance of adaptive reuse, Natural Grocers is able to feature these standards throughout its entirety. Organic grocery stores focusing on sustainable distributors embrace the concept of a successful environmentally friendly retail store. Although not strictly zero-waste, Natural Grocers has set its priorities to the consumer and worker but also to the environment by setting unyielding expectations for product production and building construction.

Figure 24 | Natural Grocers Interior | Vancouver, B.C., Canada
Natural Grocers | photo credit

IN.GREDIENTS

TYPOLOGY: Zero-waste Grocery Store
LOCATION: Austin, TX
SIZE: 1,400 ft^2
YEAR: 2012
(Brinkley, R. 2018)

Figure 25 | In.gredients | Austin, TX
Katie Jo D. | photo credit

DISTINGUISHING CHARACTERISTICS

The small In.gredients store in Austin opened in 2012 as the nations first zero-waste grocery store. Its goal was to be as package-free as possible while still providing the grocery experience consumers were accustomed to, all while only sending five to eight pounds of trash per month to landfills and zero food waste. They had a 70% package-free rate and set a goal to increase that percentage as the store got older. (Brinkley, R. 2018). Products in the store were advertised as local, sustainable sourced, ethically manufactured, and responsible (un)packaged, adhering to the demand for sustainable consumerism. The local vendors are encouraged to deliver products in reusable, returnable containers (Watson, B. 2018).

DOWNFALL

18 months in, employees noticed they weren't changing consumer habits. Customers had to plan when they were going to the store in order to bring their own containers to accommodate to the needs of zero-waste. The former general manager, Erica Howard Cormier, noted that shoppers weren't able to purchase their "must-have items" like a bag of chips or key holiday food. The business attempted to shift its mission from package-free to decreasing food waste. But after five years, the store closed down due to low sales (Watson, B. 2018). The downfall of the USA's first zero-waste store is disappointing, although not surprising. Consumers and merchants are fixated on the concept of convenience. By introducing a completely new way to shop, consumers are faced with the decision to create new values or continue old habits. Because In.gredients was the first of its kind, they took the chance to be knocked down first. Even through the same model has worked across the world in Hong Kong and London, In.gredients was constructed on a vastly smaller scale, most likely contributing to its eventual closure.

SOCIAL IMPACTS

Before its closure, In.gredients was praised for its community involvement. It was considered the neighborhood grocery store, a ideal mix between a supermarkets' products at a corner stores' scale. The store featured many events and its porch quickly became a favorite hang out spot for locals, according to Cormier (Schmiedgen, J., & Rudolph, C. 2014). Along with its infamous porch was their beer garden and an outdoor garden, featuring seasonal produce that was sold in the store alongside local farmer produce. The store once hosted many education events like workshops, cooking classes and demonstrations, and children's food programming. Besides food education, In.gredients was passionate about community and hosted many entertainment events like trivia nights, square dancing, yoga, and the occasional block party (Brinkley, R. 2018).

Figure 26 | In.gredients Exterior | Austin, TX
In.gredients | photo credit

Figure 27 | In.gredients Site Map

SITE ANALYSIS

Located east of the University of Texas at Austin as well as downtown Austin, In.gredients was in the center of the Cherrywood residential district. After the closure, locals complained that the site was out of the way for most people, causing their prices to increase due to low traffic. The map shows very few retail and food services in the area, suggesting that the "neighborhood grocery store" was true to the surrounding residential area to combat the food desert, but not geared towards the rest of Austin. A food desert is brought on when a high-populated area doesn't have convenient access to quality food, like a grocery store. When opening such a specific type of business, the location is extremely important. A store as specialized as In.gredients was doesn't work in a food desert because zero-waste shopping has yet to be considered "normal".

PROGRAM ELEMENTS

Retail Floor
- | tare station
  - container weigh station
  - reusable containers for sale
  - paper bags (free)
  - plastic bags ($0.05)
- | bulk grocery products
  - produce
  - refrigerated meat (packaged) & dairy
  - grains, nuts, spices, pastas, tea, liquids, etc.
- | checkout counter
  - deli & bakery food made from unsold products to eliminate food waste
  - drink pour station (beer, kombucha, wine, soda, etc.)

Back Space
- | employee break
- | office
- | storage for returnable containers & product refills

Seasonal Garden
- | outdoor garden for seasonal produce tended to by employees

Beer Garden
- | outdoor porch space all events are held at
- | seating

(sourced from online pictures and videos)

Figure 28 | In.gredients Product | Austin, TX
www.thrillest.com | photo credit

RESEARCH FINDINGS

In.gredients resided for five years in urban Austin, surrounding themselves with like-minded, environmentally conscious people, similar to the customers at the Prairie Roots Food Co-op. Founded from two Texan brothers, their goal was to revolutionize grocery shopping and ditch packaging, becoming the first store of its kind in the US. After facing multiple financial challenges, I found that the brothers were adamant to keep the business growing. They adjusted their model and narrowed their focus to the three original concepts; zero-waste, local food, and community. Before closing, In.gredients was only sending five to eight pounds of trash to landfills per month, none of which was food waste. For comparison, the average American household produces five to six pounds of trash per *day* (Openideo, G. 2017). The brothers claimed that the timing was not right for a full-fledged zero-waste grocery store and the essential branded products were not yet feasible for the bulk, package-free concept. Adding to this, I believe the location wasn't right. The store was simply positioned too far away from the most convenient area of Austin.

Socially, In.gredients also left its impact. Before their closure, they were raising awareness for a different non-profit organization every six months. In that six month time-frame, they would hold fundraising events and donated a percentage of profit from every reusable container that was filled (Schmiedgen, J., & Rudolph, C. 2014). Aside from giving back to the community through awareness, they also gave back by opening up their porch for all neighborhood events. It quickly became a favorite place for many locals, but unfortunately didn't outlive the life of the store after its imminent financial closure.

CONCLUSION

In.gredients demonstrates success for future zero-waste stores. Even though this store location may have failed, credit is still due to its overall model. Their values and practices are what made this store stay open for its five years. Its important to remember the people whose identity was In.gredients and what was sacrificed to become not only the first zero-waste grocery store, but a notable one. Similar future businesses now have the opportunity to compare values and practices with their own to create a successful model. Their value of community engagement can also be considered in my proposed program elements.

Figure 29 | In.gredients Interior | Austin, TX
www.thrillest.com | *photo credit*

PRAIRIE ROOTS FOOD CO-OP

TYPOLOGY: Bulk & Organic Grocery Store
LOCATION: Fargo, ND
SIZE: 5,600 ft^2 retail space | 8,500 ft^2 total
YEAR: 2017
(Praire Roots Food Coop)

Figure 30 | Mathison's | Fargo, ND
Dave Wallis | photo credit

DISTINGUISHING CHARACTERISTICS

Prairie Roots opened in the summer of 2017 in downtown Fargo, located on the corner of Northern Pacific Avenue and University Drive. Being a co-op, Prairie Roots is defined as a "business that is owned and operated by and for the benefit of its members", or in this case, its owners (Rouse, M. 2015). The Fargo co-op has an ownership program where shoppers can pay a one time fee of $300. This fee grants them a share in the business stock, potentially making a profit after a good year in sales. Owners also get access monthly and annual discounts on products. Currently, there are more than 2,200 owners.

Prairie Roots goals are to;

1. Sell healthy, fairy priced, local food
2. Be community owned and support a sustainable food system
3. Provide education about healthy food and lifestyle choices

Inside the store, Prairie Roots carries a variety of bulk items, seasonal produce, natural and organic grocery and household items and opened a deli called their "hot bar". This deli serves hot, grab-and-go meals and snacks and 4 on-tap kombucha flavors. Every Sunday the store also hosts a brunch. In their community room, they put on events like food/wine tastings and gardening classes (Prairie Roots Food Co-op).

The co-op is currently in the process of raising $250,000 from their owners for financial and operational needs. As of September 30th, 2019, they have raised $90,000 and are now "breaking even" according to their new general manager. If the funding goal isn't met, they risk their doors permanently closing (Schmidt, H. 2019).
UPDATE: As of January 2020, Prairie Roots Food Co-op has permanently closed.

SITE HISTORY

1213 Northern Pacific Avenue is a multi-level building with office space on the second and third floors and Prairie Roots Food Co-op on the first. The two-story masonry building was constructed in 1950, originally purposed as a tire manufacturer. Later it was used as a gas station then as the retail space Mathison's, which was used for blueprint supplies and a large-format printing service until it closed in 2017. Attached to the building is a historic stable which currently houses Wild Terra Cidery. This stable was constructed sometime between 1905 and 1910 according to Sanborn Fire Maps. (Kilbourne Group, 2017). The third floor was added in late 2016 by the Kilbourne Group to lease out more office space. According to the commercial agent Cam Knutson, since the historic building was built originally as a production facility, its foundation was not effected (Johnson, R. 2016). Wild Terra Cidery opened its doors in late 2017, bringing with it a wave of new faces to potentially visit the neighboring co-op.


Figure 31 | Historic 1213 NP | Fargo, ND
www.digitalhorizonsonline.org | photo credit

Figure 32 | Present 1213 NP | Fargo, ND
Shultz & Associates Architects | photo credit

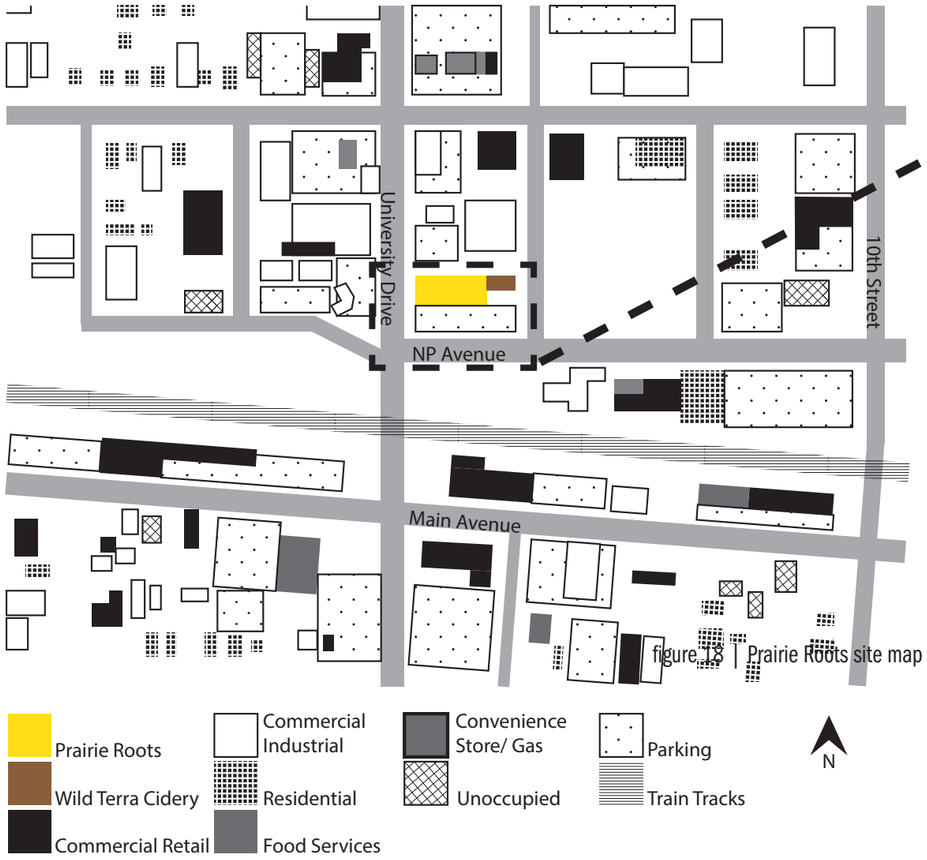


figure 13 | Prairie Roots site map

Figure 33 | Prairie Roots Site Map

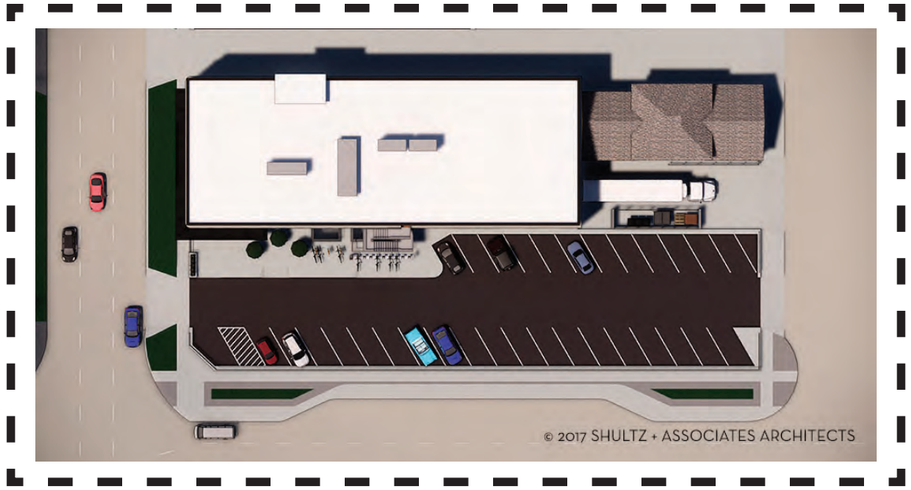


Figure 34 | Prairie Roots Site Plan
Shultz & Associates Architects | photo credit

SITE ANALYSIS

Prairie Roots is located in Fargo's Renaissance Zone, granting a possible five year tax exemption and the ability to add the third floor. The co-op is on busy corner of NP Avenue and University Drive, where an estimated 20,000 cars pass the site every day (Kilbourne Group, 2017). The site is heavily surrounded by commercial industrial buildings to the south/west and new downtown construction and restoration to the east. Their parking consists is a small lot with 32 spots that's shared with Wild Terra Cidery. From passing this area everyday going to and from NDSU's Renaissance Hall further down NP avenue, I quickly discovered the high amount traffic on both NP and University. Specifically, the merging of the two roads on the co-op's corner. Because of this, one would assume high traffic in the store itself, but the co-op's financial situation suggests otherwise. Alluding that customers are reluctant to shop in this area because of the traffic during peak hours. The close-knit quarters could also prevent the businesses from using their parking lot for frequent outdoor events.

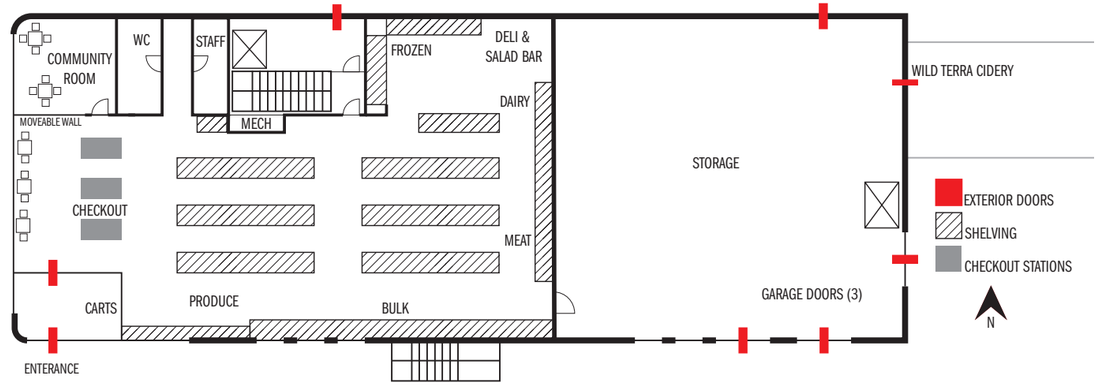


Figure 35 | Prairie Roots Floor Plan

PLAN ANALYSIS

This floor plan was created using a combination of interior and exterior pictures of the co-op and a simple floor plan from the Kilbourn Group (Peschel, M). It illustrates the compact layout of the store, suggesting another reason for decreasing sales. The building program implied from this plan is simple, similar to In.gredients' program.

RESEARCH FINDINGS

Prairie Roots Food Co-op is in an interesting situation. From a glance, they seem to have a great location; downtown, high-traffic roads, and a historically significant building. I've found that this location creates similar problems that In.gredients faced. It's inconvenient to travel through the traffic and it's scale is too small for a high-populated food desert.

They are also facing an issue with their ownership program. Of course, shared ownership is the definition of a co-op, but I found that Prairie Roots has not marketed their program accurately. The average person assumes they need a membership to shop there and when corrected, they see no tangible benefits besides an occasional extra discount. From a strictly monetary standpoint, it would take a substantial amount of time before the typical member, or owner, would see a return on their initial investment.

From a historical standpoint, the co-op undertook the responsibility of preserving a historically significant building. Six months after its opening, the remaining half of the building was also restored. This development suggests that the co-op subconsciously enthused the preservation of the entire building. I found that Prairie Roots' adaptive reuse application further more showcases their sustainability values. It's similar to Natural Grocers in this way, that besides food waste, the companies are aware of all environmental impacts which includes building demolition waste.

CONCLUSION

Prairie Roots Food Co-op recognizes the concept that a community owned, natural focused grocery store is of importance. They've showcased their value of community that, similar to both In.gredients and Natural Grocers but specifically to this case, the community as a whole holds shared ownership. Although some may argue that its location has its obstacles, the restoration has positively affected the surrounding area, breathing life into a neglected industrial zone. The historical preservation and adaptive reuse elements can both be applied to the proposed zero-waste, site grown store. By understanding the historical and environmental benefits of reuse, locals can begin to develop a new perspective towards their personal concept of convenience.

Figure 36 | Prairie Roots Interior | Fargo, ND
Shultz & Associates Architects | photo credit

PARADOX FARM

TYPOLOGY: Deep Winter Greenhouse
LOCATION: Ashby, MN
SIZE: 384 ft^2 | 16’ x 24’
YEAR: 2011
(Morrison, L. 2018)

Figure 37 | Paradox Farm Greens | Ashby, MN
Ann Arbor | photo credit

DISTINGUISHING CHARACTERISTICS

During the harsh Minnesota winters, two Ashby farmers have built a deep winter greenhouse. This greenhouse is powered on passive solar technology using no lights and little added heat. It was built in 2011 for around $15,000 and continues to be low-cost for the farm (Morrison, L. 2018). Comparatively much cheaper and more sustainable than the traditional four-season greenhouses.

HOW IT WORKS

The greenhouse was constructed as a lead-to against the farms barn. During the day, the south glazed wall, angled at 60 degrees, collects the sun’s energy. This heats up the air in the greenhouse, then this hot air rises and is drawn into vents. From there, the air is forced into an insulated thermal rock bed under the greenhouse. As night comes around and temperatures drop, the heat is circulated back into the greenhouse aiding in plant growth. During extra cold nights, a gas heater is triggered to keep the temperature up. The greenhouse is successfully kept around 90 degrees during colder seasons.

Inside, 90 three foot plastic roof gutters hand from the ceiling as planters. Placed on the floor are plastic bags of soil with holes cut out, growing various larger vegetables like cabbage and radishes. The sun-heated rocks under the greenhouse keep these plants warm. Every few weeks the plants are ready to harvest and another set of seasonal vegetables are planted (Gunderson, D. 2014).

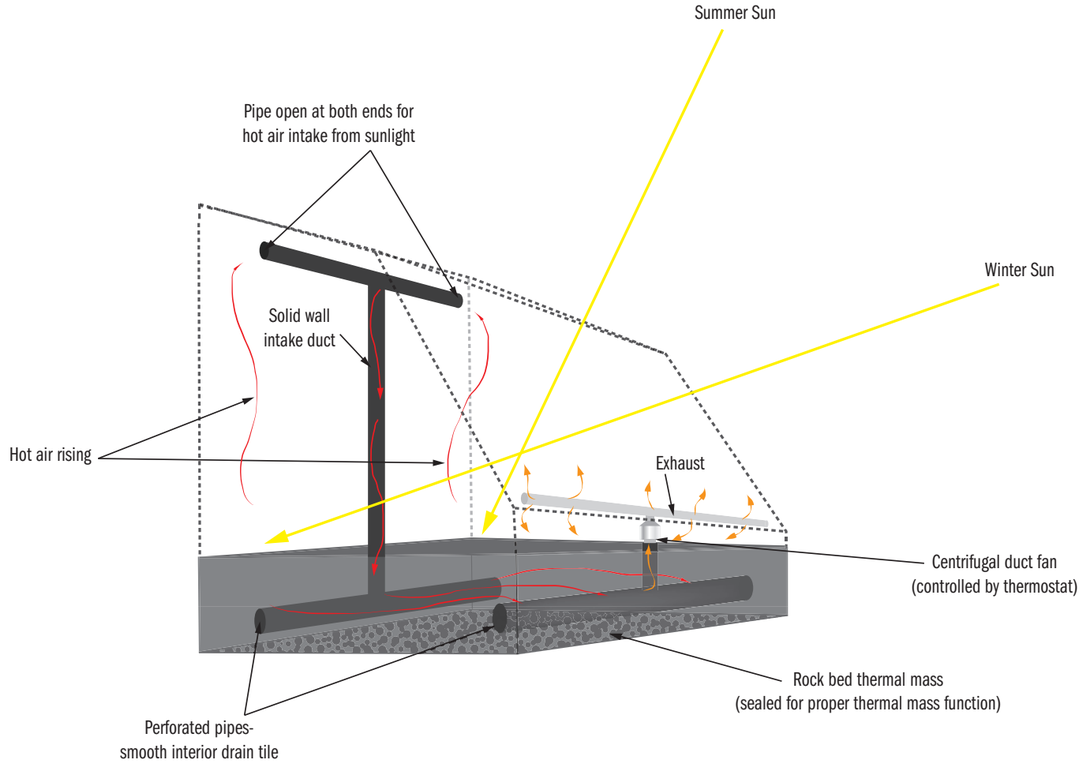


Figure 38 | Deep Winter Greenhouse Diagram

Figure 39 | Paradox Farm Interior | Ashby, MN
Ann Arbor | photo credit

Figure 40 | Paradox Farm Exterior | Ashby, MN
Ann Arbor | photo credit

RESEARCH FINDINGS

The deep winter greenhouse at Paradox Farms, like many others in northern Minnesota, are run on a direct sunlight powered passive system. This system keeps running costs low, including the initial construction cost, and allows for plant production during the coldest, darkest months of the year. Growing containers work best in this type of greenhouse because of the expected speed of crop cycles and it allows better use of the growing space. Containerized growing also helps reduce water waste and unproductive soil surfaces. Thus, making deep winter greenhouses that much more sustainable.

At Paradox Farm, the owners weren't trained specifically to take care of this specialized type of greenhouse, but its simple mechanisms helped them adjust quickly, making a great addition to an already sustainable-practicing farm. They also hold tours and classes for visitors to construct their own greenhouse. At just under 400 square feet, this greenhouse provides fresh greens for the farmers themselves, their animals, and ten other families in the area (Gunderson, D. 2014). That equates out to about 8 square foot per mouth, depending on family sizes and the varying number of animals.

CONCLUSION

Deep winter greenhouses provide an environmentally friendly approach to the traditional four season greenhouses. This supports the initial premise asking if architecture can jumpstart a community to become more conscious about the environment. Paradox Farms' success suggests the need for a larger-scale deep winter greenhouse in a higher-populated community. Their commitment to educating others about construction has the possibility to be applied to the proposed store and greenhouse hybrid.

CASE STUDY SUMMARY

Environmentally conscious retail practices are not all that uncommon. However, this subcategory of grocery stores require much more awareness about production impacts, costs, building construction, and waste. The case study research found that, by being completely open to the public about sustainability values, the public is then faced with the choice to try something new in an effort to combat climate change at a personal scale, or continue to shop at their "convenient" comfortable store. This choice, whether conscious or not, impacts the future of consumerism. No singular retail store can entirely impact the highly competitive world of consumerism, but the many, smaller-scaled stores publicly showcasing their environmental values can influence customer habits, which influences the big-box stores to make changes, therefore influencing the dozen parent companies, the ones that own and control all the subsidiary companies, to make changes in an effort to relate to their customers sought-after values.

The four case studies focused on sustainability and their desire to create a discussion about waste. Some practiced adaptive reuse, others set strict standards in choosing local, sustainable farmers, but they all displayed a passion for healthy lifestyles to positively impact both the customer and the planet.

There were other stores that I did not include in the final typological research, and this was ultimately because they were all very similar. This reinstates the initial proposed typology. There were no cases that fully exemplified the values of zero-waste, plant based, locally sourced food that considered both adaptive reuse and year-round greenhouse practices. Along with that, the case studies began to shed light on consumer habits and convenience and will further aid in understanding how the definition can be shifted to bettering the environment.

Figure 41 | Live Zero | Hong Kong
www.insideretail.hk | photo credit

PROJECT JUSTIFICATION

The importance a sustainable lifestyle is ever-growing. From a personal standpoint, I feel as if I cannot sit back and watch the planet continue to be impacted by humanity when I have the education to help. By understanding how consumers behave and respecting their need for convenience, I'm able to impact not only how I design but also spread the awareness to my colleagues and future employers. The concept of sustainability in and of itself is not new, but designing with the intention of lessening waste production, the reuse of an existing building, and thoughtfulness of future generational use is extremely impactful on the future of design. I'm expecting to see a lot more adaptive reuse design not only in the academic world but also the profession itself. Along with that comes reducing waste and building for longevity rather than a fast construction process. In all, this means that there's a different type of focus on sustainability, a focus on the past, present and future.

Looking at the retail aspect, consumerism is one of the largest contributors to climate change. This is because consumerism as a whole has many elements; production and transportation of goods, individual consumer transportation, manufacturer and consumer waste, and facility heat and electricity emissions from both manufacturers and sellers. From looking at recent statistics, it's found that online shopping is gaining popularity, and fast, for its low convenience cost. This reduces climate impact to a degree but at the same time also increases the impact because it generally results in more waste from increased packaging to ship products. But since I am focusing on a traditional retail experience, it's important to realize that while online shopping is increasing for many categories, the grocery sector is not increasing as rapidly. *Conveniently*, the grocery sector is also contributing quite a lot to climate change. In part of its meat and produce production and transportation but also in part to societies packaging standard and expectation. This allows a shift in traditional consumerism to create a public awareness and conversation about sustainability.

So why are consumers still grocery shopping at brick-and-mortar stores versus the more "convenient" online shopping? It's because in reality, it's **more convenient to have groceries right then and there** whereas most consumers can wait two days for an online order like clothing or electronics to arrive. Groceries are different in this way because shopping in store allows customers to browse and compare prices more efficiently while online grocery shopping requires more planning to accommodate for delivery time, which can takes days.

As for the site, the location is important almost strictly for its convenience factor. While the city of Fargo, North Dakota is not the most populated or visited in the nation, it is growing, and fast at that. Fargo is also centrally located in terms of the US. Both of these factors make it a great location for this typology. It's mostly growing from young college graduates and families, those of who are generally more accepting to new ideas like sustainability. Because it's centrally located, these consumer values can spread in all directions, hypothetically impacting more than say a city near a coast line. Fargo is also small enough that adding a retail store completely focused on sustainability would be the first of its kind and more likely to be known across the whole city rather than just a couple nearby neighborhoods. The chosen block itself, in my opinion as a Fargo resident of 23 years, is basically perfect. First, is downtown location is visited by many residents all from Fargo, West Fargo, and Moorhead. Second, the block is used for the Red River Market during the spring, summer, and fall bringing in a large number of customers consistently with the same values. Lastly, the Loudon building already existing on the site is unoccupied, has room on the south side for a greenhouse, and of historical importance to the downtown area. This allows for adaptive reuse, or what I like to call, the Future of Design and Sustainability.

This thesis project is imperative to the future of sustainable consumerism. It needs to be understood across the board that consumers and manufacturers must value the same principles. Metal straws and reusable bags will not same the planet. Sustainability in not inherently profitable and consumerism is not environmentally sustainable. But for the sake of humanities future, sustainability must become profitable to make consumerism sustainable.

HISTORICAL, SOCIAL, & CULTURAL CONTEXT

In 1852 next to the London King's Cross railway station, the Goods Yard Complex was completed. The North London district is named King's Cross and believed to be the location of a major battle between the Romans and a British tribe named Iceni. This historical site was comprised of a grain building, a train assembly shed, as well as the eastern and western transit sheds that serviced the rest of Europe. Specifically, the Granary relates the concept of zero waste stores well as it was used as storage and a transportation depot for wheat and grains. There was no packaging involved in storing or transporting these goods and was completely powered by hydraulic power. This complex style is considered the first form of zero-waste production.

After a long history of industrial growth and war, the 21st century started the newest chapter of the King's Cross district. In 2001, restoration work started on the railway station causing a revival in the surrounding areas as well. The Granary Building in specific was restored and became the world famous arts college named Central Saint Martins, an extension of the University of the Arts London (King's Cross Visitor Center). This preservation act resembles my chosen thesis site, the Loudon Building. Both locations went through a period of industrial expansion, then a period of decline and abandonment, to now a period of revival and new life through adaptive reuse and historical preservation.

Similarly, Fargo, North Dakota has evolved through time and as its population grew quickly, so did its land mass. This is represented by its historical downtown and northern neighborhoods to its southern, newer neighborhoods, to its present growth found even more south. Fargo has continued to respect its history through restoring the downtown neighborhood, the core of its initial growth. Many buildings like the Loudon have been preserved and added to the National Register of Historic Places and formed into Renaissance Zones. These zones provide incentives to businesses for moving into these historic properties and up-keeping their historic value.

Figure 42 | King's Cross | London, UK
King's Cross Visitor Center | photo credit

Figure 43 | Downtown Fargo Historic | Fargo, ND
NDSU Archives | photo credit

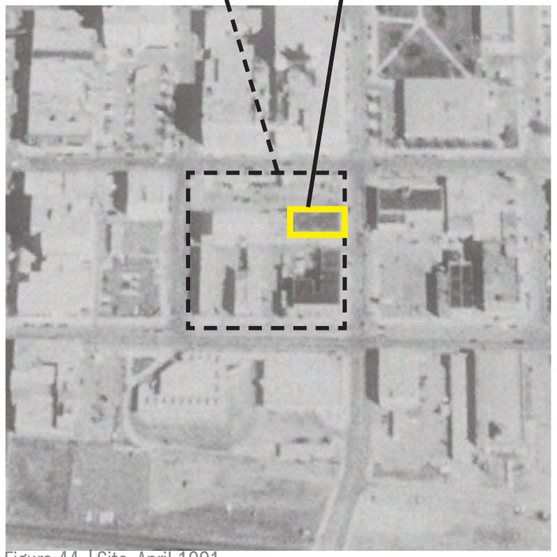


Figure 44 | Site April 1991

APRIL 1991

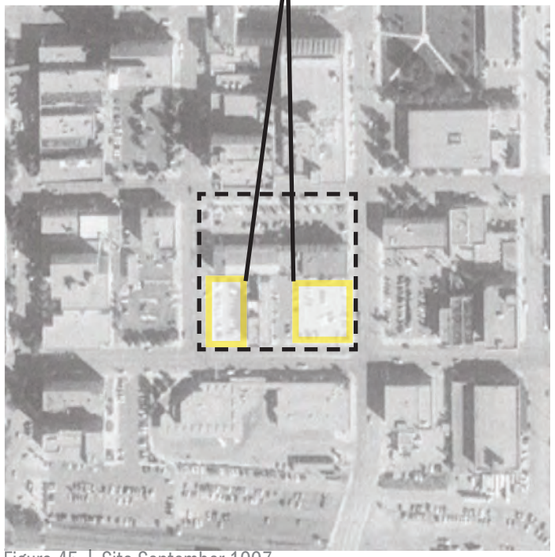


Figure 45 | Site September 1997

SEPT 1997

Figure 46 | Site April 2004

APRIL 2004

Figure 47 | Site August 2005

AUG 2005

HISTORICAL, SOCIAL, & CULTURAL CONTEXT

Much of Downtown Fargo continued to see little to no change from the late 90's to the mid 2010's. A majority of the changes were seen in storefronts lining Main Avenue and Broadway. With the construction of the new City Hall east of downtown, more substantial changes were being made including the current construction of Block 9 north west of the site, pending as Fargo's tallest building.

Figure 48 | Site October 2010

OCT 2010

Figure 49 | Site April 2014

APRIL 2014

Block remains the same until building directly behind Loudon is removed

Figure 50 | Site May 2016

MAY 2016

New City Hall now completed just north of photo

Figure 51 | Site May 2018

MAY 2018

Figure 52 | Loudon 1956
www.digitalhorizonsonline.org | photo credit

Figure 53 | Loudon 2012
Dan Francis | photo credit

Figure 54 | Loudon 2013
Dan Francis | photo credit

Figure 55 | Loudon 2017
Micah Marchand | photo credit

Originally, the Loudon building was purposed as the Horton Motor Co. In 1956, Fargo Rubber Stamp Works moved to the building after a fire destroyed their former headquarters (Digital Horizons).

From 1976 to 2012, after the rubber stamp company was sold, the Loudon building's windows were boarded up as an energy saving effort while it sat vacant (Kilbourne Group).

In 2013, the Kilbourne Group bought the property to prevent its demolition that would bring more parking. They removed the window coverings and restored the interior (Kilbourne group).

As of today, the Loudon building has had no long-term tenants since Fargo Rubber Stamp Works. It is currently sitting mostly vacant with little interior infastructure. Its block is used as a parking lot for Forum employees and the Red River Farmers Market from spring through fall.

SITE ANALYSIS

QUALITATIVE ASPECTS

The block selected rests on the north west corner of Northern Pacific Avenue and 4th Street North. The warming season in Fargo usually brings heavier pedestrian traffic. Residents become giddy as they finally have the opportunity to be outside comfortably. The block begins to experience more passerby's, being situated between popular local restaurants to the west, the public library to the north, and the main downtown bus service to the south.

Once summer arrives, it gets its chance to accommodate to the locals by serving as a home to the Red River Market. Every Saturday for 16 weeks it becomes a must-visit location for locals and visitors to stock up on their fresh produce and home-made products. Bringing the farmers market to the block made the area feel much more safe considering the Adult Novelty store on the south end of the block has some questionable frequenters. After its weekly peak, the block returns to its harsh reality as a car park for downtown employees, nothing more than an afterthought until the next Saturday.

Falls rolls around, bringing with it brisker temperatures and shorter days. Casting longer shadows on the lessening passerby's. Nonetheless like clock work, every Saturday sweeps in locals looking to enjoy the last of the fresh harvest before winter ultimately puts an end to any lukewarm days.

The winter never fails to show Fargo's dark side. Shorter days mean less opportunity to explore downtown safely and more time for residents to forget why they stay. The blocks only visitors are those who travel there each morning to work and leave each evening to go home, resulting in lonely, cold nights. All around, buildings and locals alike become harsh, only desiring the warmth many months away. Their beauty becomes indistinguishable from their cold faces. The streets accumulate snow, then ice, then more snow to make it feel unending. But the cycle always continues. The snow

The Loudon Building sits patiently on the central east side of the block, waiting for its first long-term resident since providing a home to Rubber Stamp Works. It experiences the seasons like the rest of its block, but with less acknowledgment. It's irregular brick pattern tells the history to those who choose to pay attention. Its front can be deceiving, showcasing an updated facade with a uniform, gray brick pattern. The south and north sides, although featuring new windows, tells its true age. Chipped, discolored bricks lie disproportionate compared to the facade's perfectly aligned bricks. The back of the building tells its history more clear. Many layers of bricks stacked on top of each other outline the recent deconstruction of its once-attached neighbor. It's easy to see the old door frames and structure elements that were once in use as they've been neatly filled in with bricks.

Once inside, the vast space is consuming. Concrete floor make it feel cold, but the story-telling bricks convince you otherwise. The exposed ceiling and wooden structure acts as another chapter to the Loudon's book. Informing the visitor of its past use, strictly as factory warehouse space. The expansive front windows try to compete with the original wood framed windows but fail as the original windows bring in more visual warmth. The open space aches to tell its story, unmatched brick walls pleading to be framed.

The Loudon Building holds a beauty much like the rest of historical Fargo. At a glance, it is seen as old, insignificant by its vacancy. At a closer look, its story unfolds almost immediately as if it needs to be read. The block it sits on, although bursting with life for 16 continuous Saturdays, has little interaction with its long-time resident. Forcing the two to collaborate is nothing but a blatantly obvious choice. The building has the opportunity to become home for visitors during its week days and refuge from the cold during its uninhabitable winters. The opportunity is as clear the block is on a Sunday night, an opportunity to bring environmental responsibility to Fargo while also upholding its passion for warming spring days and fresh produce.

SITE ANALYSIS

PLAN & GRID

Figure 56 | Site Plan

Fargo's grid system generally tends to roughly be a 400' x 400' pattern with small inconsistencies in areas with higher traffic to create more roads.

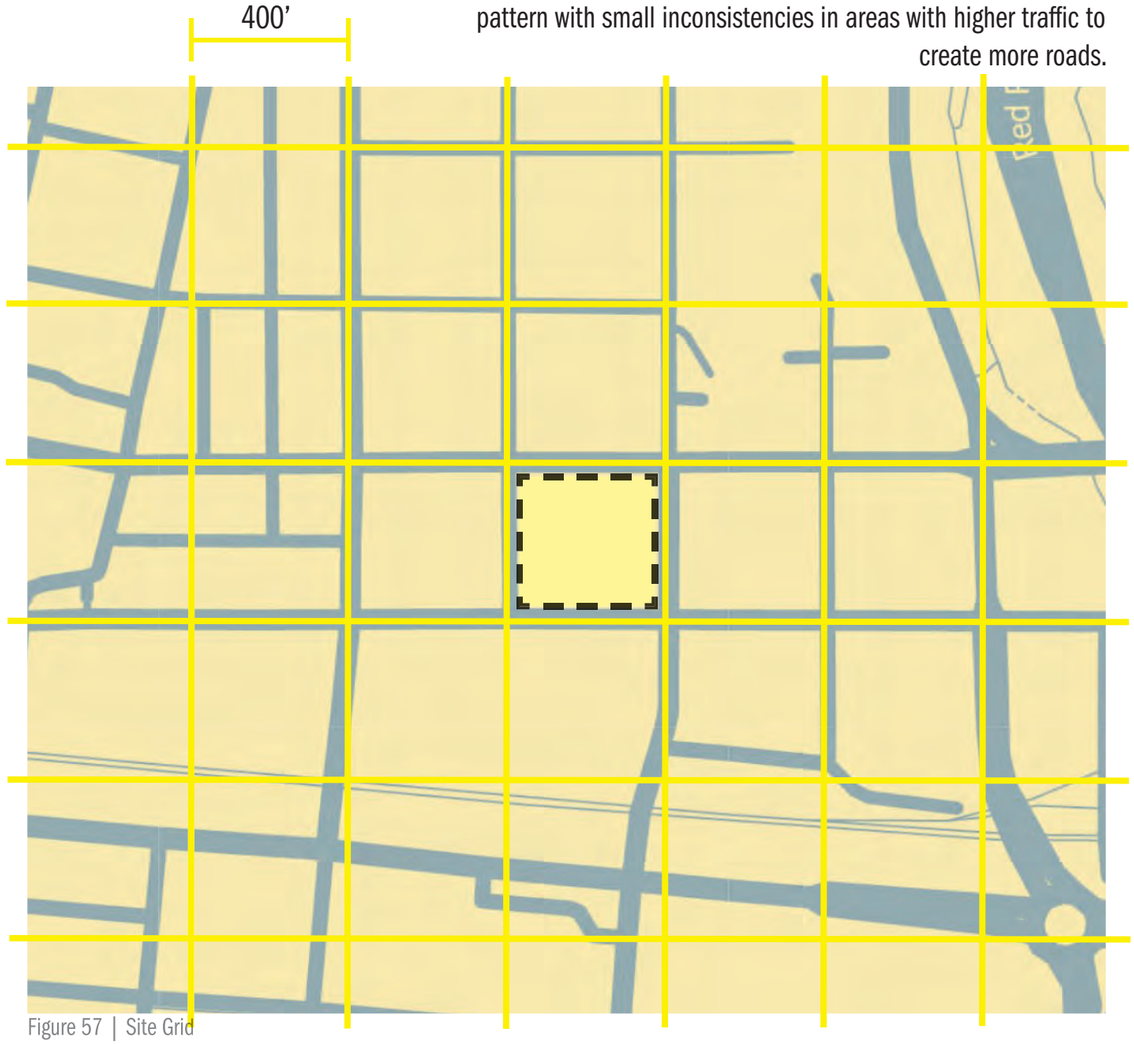


Figure 57 | Site Grid

SITE ANALYSIS

SECTION

Looking north on NP Avenue by corner of 5th street north, this section cuts through the only other building on the block, a store called Romantix. The building was originally the Twin City Army Surplus Store that closed sometime in the 80's.

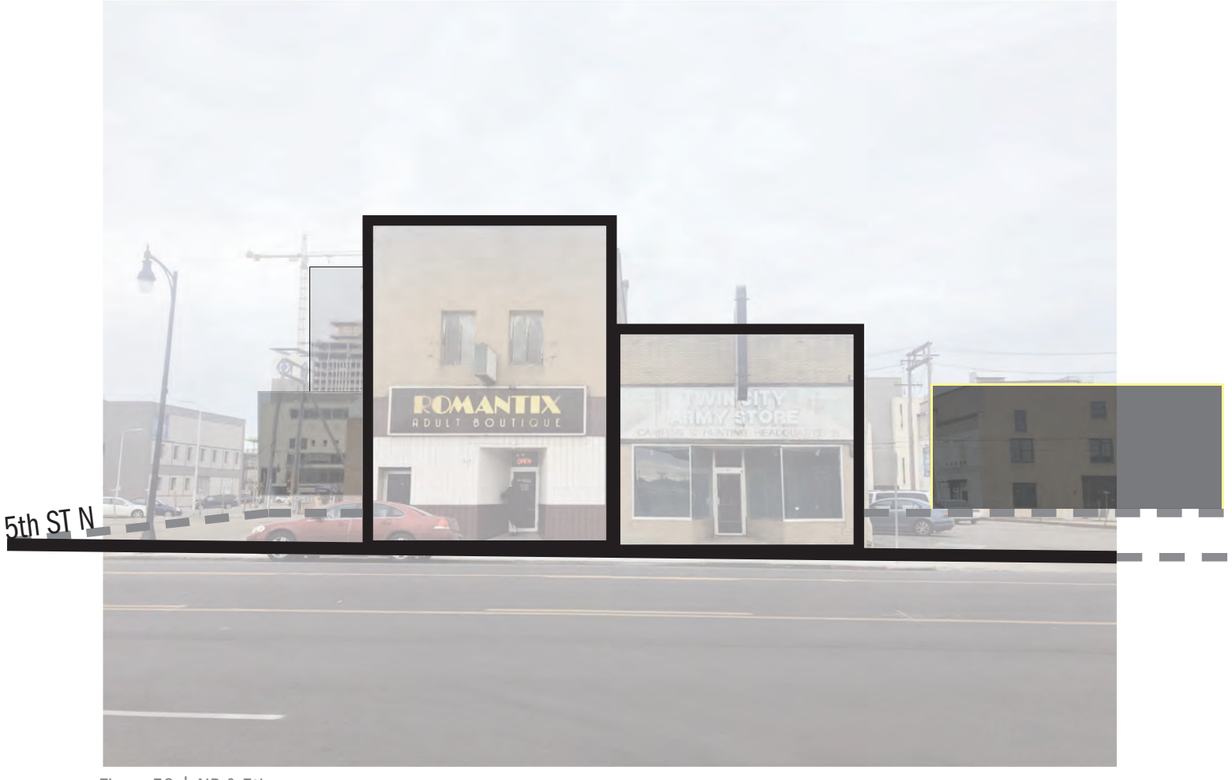


Figure 58 | NP & 5th

Looking north again on NP Avenue but this time farther down on the corner of 4th street north, this section cuts through the Loudon Building, which is outlined in yellow on both sections. Block 9 is also seen in the background of both at its approximate height when construction is completed in 2020.

Figure 59 | NP & 4th

SITE ANALYSIS
BUILT FEATURES

Figure 60 | Surplus Site Plan

The store, Romantix, or originally known as Twin City Surplus Army Store, is the only other building on the block other than Loudon. It's highlighted in yellow on figure 60 and it's privately owned parking lot is overlaid in gray. The front facade is shown in figure 58 with the original signage. The east side is painted gray, while the north and west sides make it clear that the building hasn't been up-kept through the decades. Original signage is also seen on the west side.

Figure 61 | Surplus East

Figure 62 | Surplus North

Figure 63 | Surplus West

Figure 64 | Surplus South

Figure 65 | Surplus West Signage

SITE ANALYSIS

TEXTURES

The Loudon Building's textures are mostly shown in its various brick colors, ages, and patterns. On the exterior seen in figure 66, the front entrance is lined in wood. Figure 67 shows the differing bricks on the back of the building after its attached neighbor was removed sometime between 2014 and 2015. The north and south sides of the exterior have two brick types shown in figure 70, one is a more textured yellow and the other is a flat white. On the interior, the brick textures and colors multiply. The figure 68 shows the range of brick types across a small section of wall and figure 69 to the right shows this differing texture in detail. The stairwell on figure 71 looks untouched with its aging white

Figure 66 | Texture Exterior Front

Figure 67 | Texture Exterior Back

Figure 68 | Texture Interior 1

Figure 69 | Texture Interior 2

Figure 70 | Texture Exterior

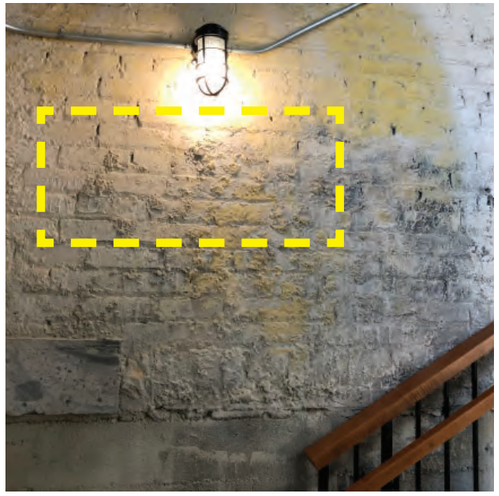


Figure 71 | Texture Interior 3

SITE ANALYSIS

SUN & SHADE

Most important area to consider:
Proposed Deep-Winter Greenhouse site
considering its southern exposure.

MARCH 21ST: SPRING EQUINOX

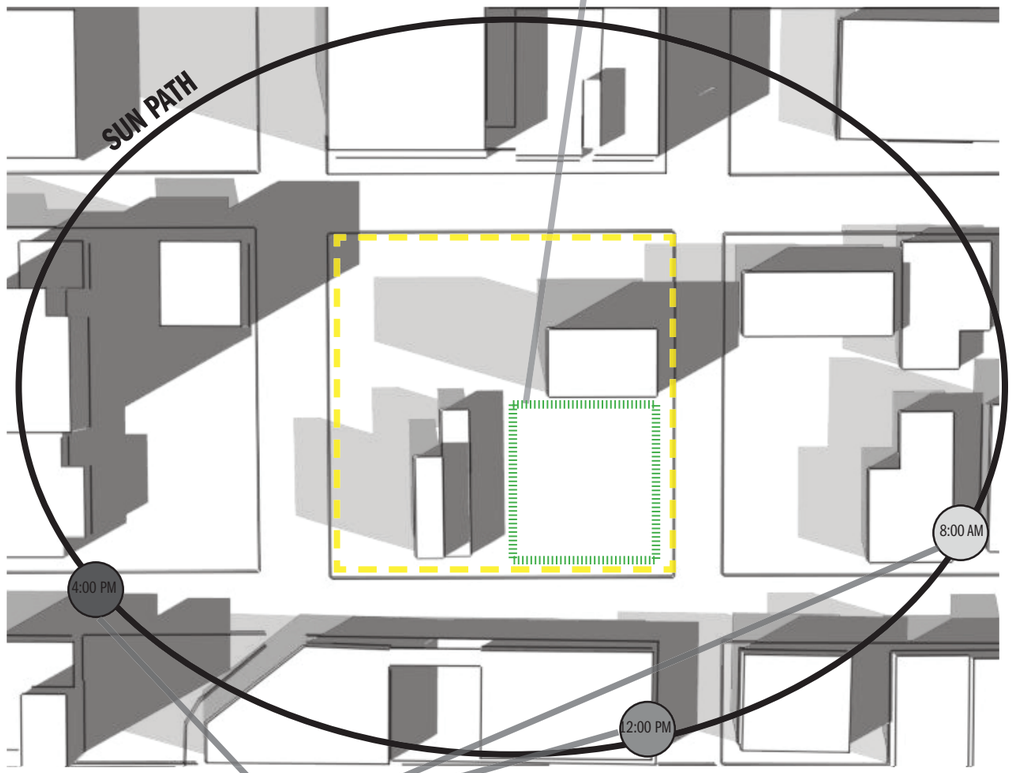


Figure 72 | Spring Equinox

Shaded circles represent the sun's position at different times of the day,
where the color correlates to the buildings shadows in each figure.

JUNE 21ST: SUMMER SOLSTICE

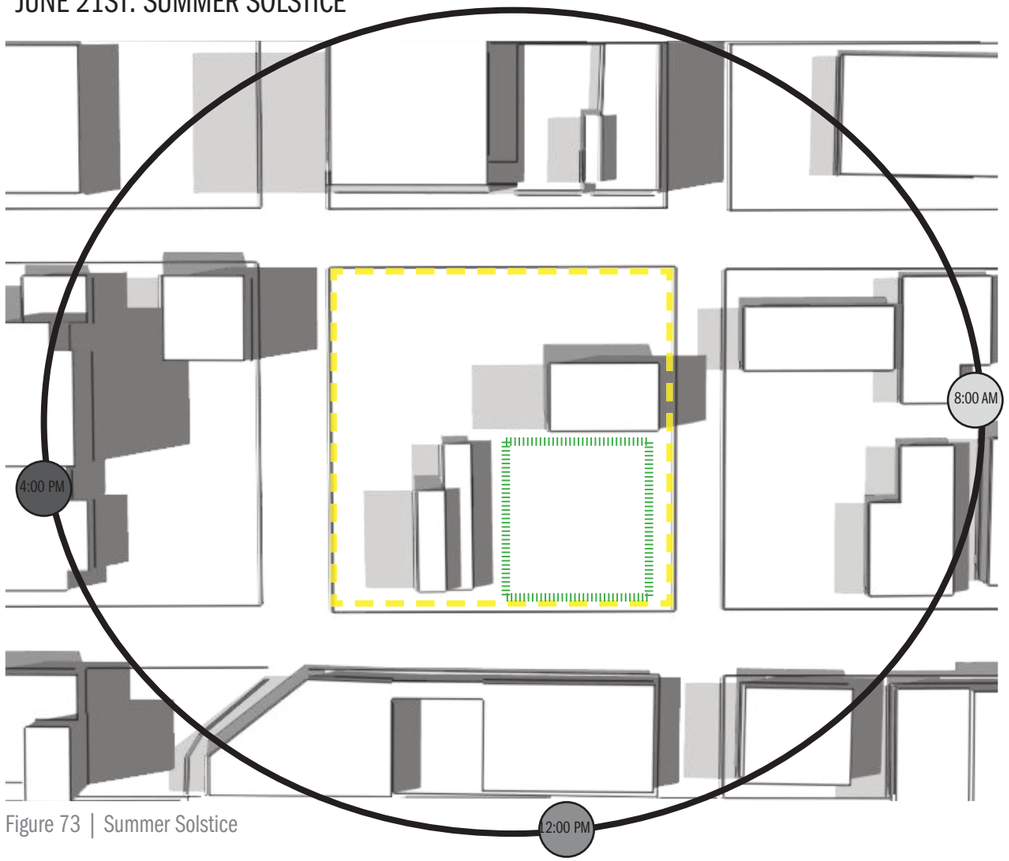


Figure 73 | Summer Solstice

SITE ANALYSIS
SUN & SHADE

SEPTEMBER 21ST: FALL EQUINOX

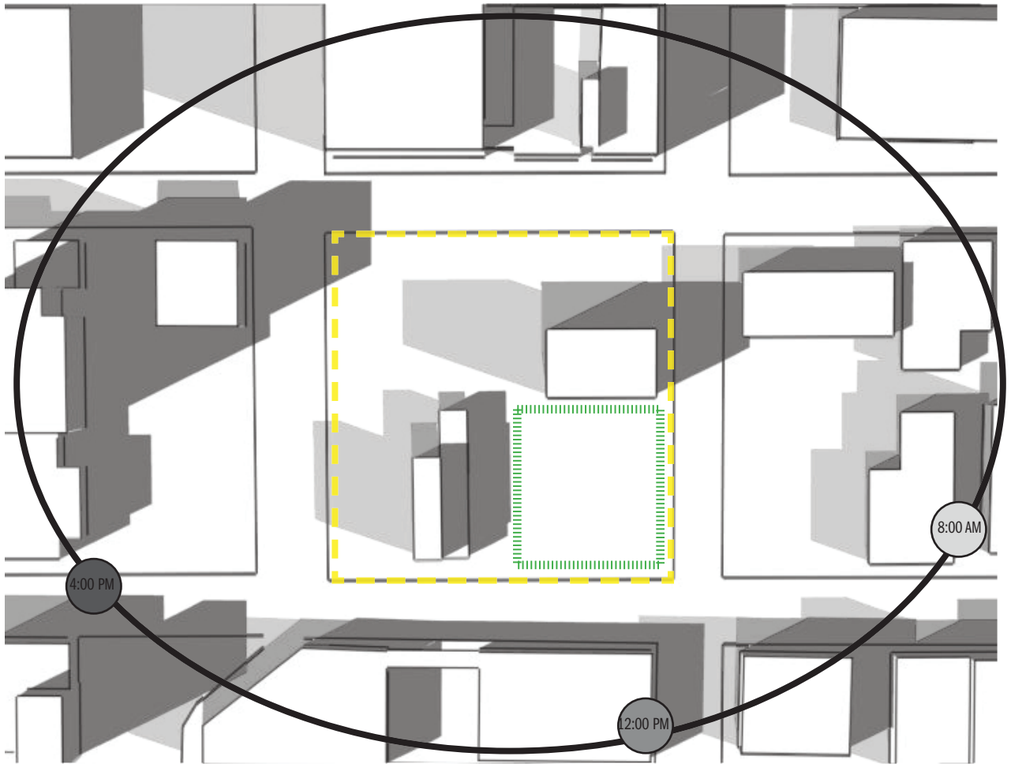


Figure 74 | Fall Equinox

ANALYSIS: During the winter solstice, the sun is not fully risen by 8:00 AM, so the range of daylight the greenhouse site receives is between about 10:00 AM and 2:00. This limits natural daylighting to 4 hours a day, meaning plant lights may by necessary for darker months.

DECEMBER 21ST: WINTER SOLSTICE

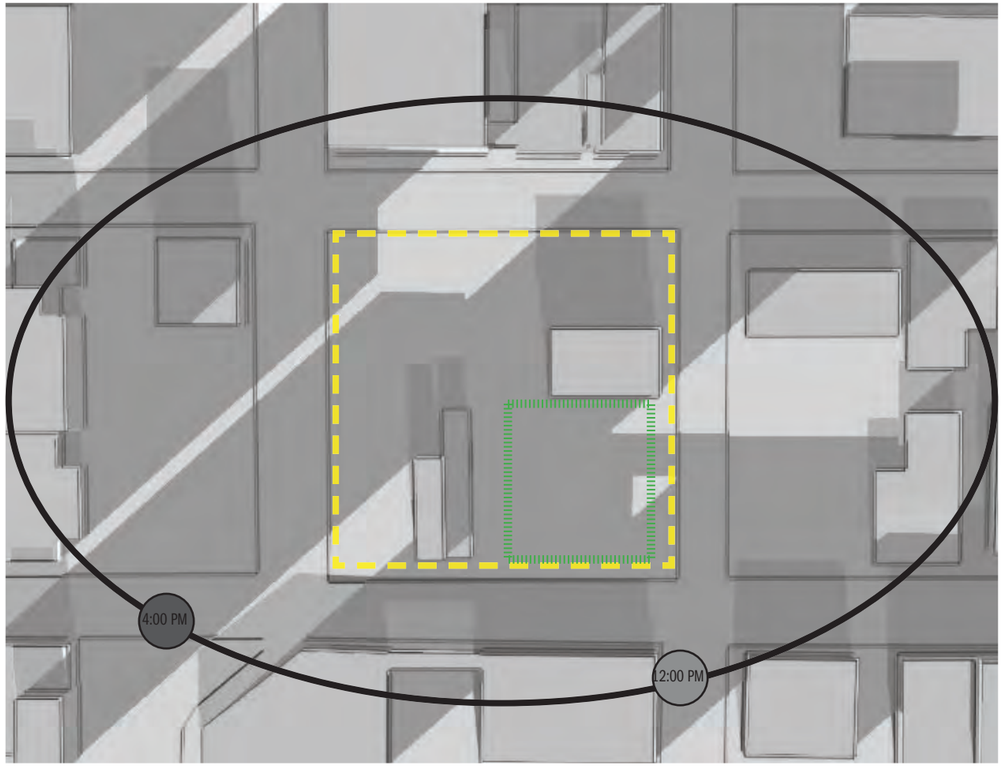


Figure 75 | Winter Solstice

SITE ANALYSIS

HUMAN CHARACTERISTICS

Human use on the site is seen through its full parking lot and overwhelming amount of parking signs. During week days, the parking lot is restricted to Forum employees, the local newspaper, with their building across 1st Avenue North. The area directly behind the Loudon Building extending to 5th Street, is only used for Loudon's visitors. Summer weekends, the lot is restricted to strictly farmers market vendors. Any other time of the year or week, the lot is generally empty except the spare car or two. Not a single other person was seen on the site while exploring.

Figure 76 | Parking 1

Figure 77 | Parking 2

Figure 78 | Parking 3

Figure 79 | Parking 4

Figure 80 | Parking 5

SITE ANALYSIS

PARKING

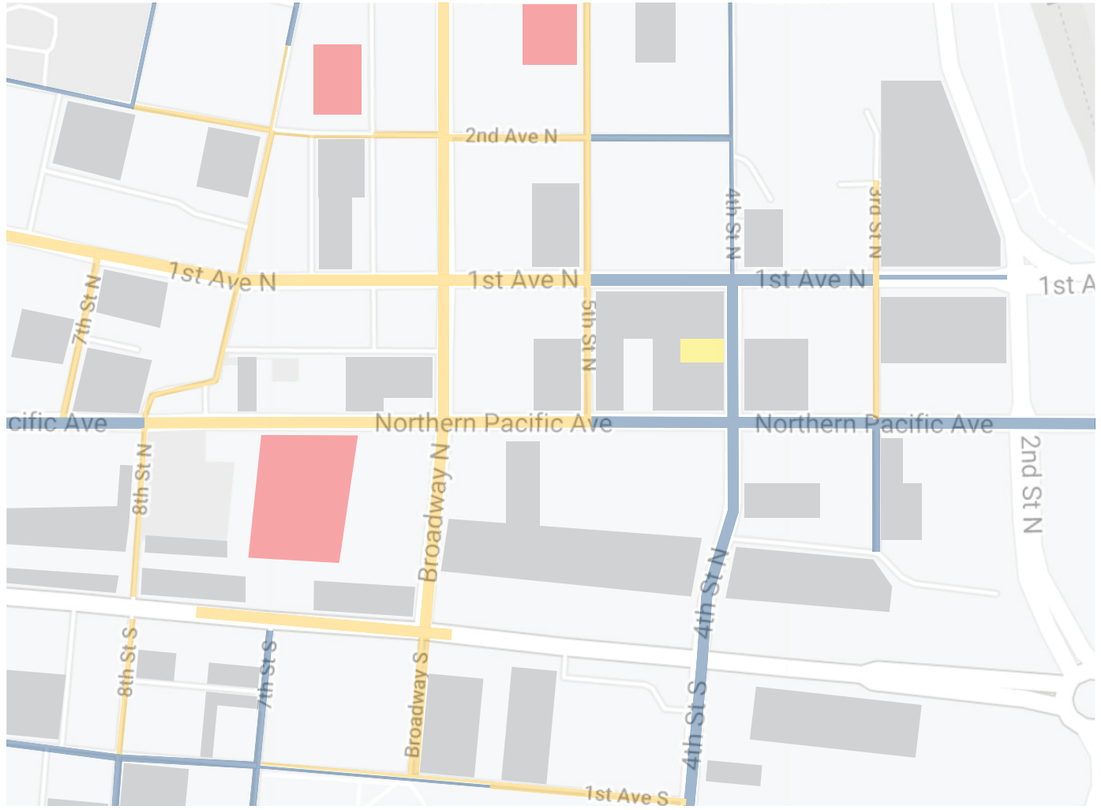


Figure 81 | Parking Plan

KEY:

- 4-HOUR PARKING
- 2-HOUR/90 MINUTE PARKING
- PARKING LOT
- CITY PARKING LOT
- LOUDON BUILDING

Figure 82 | Parking 6

Downtown Fargo has free street parking, ranging from 15 minutes to 4 hours from 8:00 AM to 5:00 PM on weekdays. To allow for snow plows, cars are required to alternate avenues and streets every night. There's a handful of parking lots in this area, either privately owned or owned by the city. These lots usually require a parking pass although there's a handful where users pay by the hour, with free evenings and weekends.

Parking on the selected site is a mixture of Loudon tenent parking, located directly behind the building, as well as Romantix parking which surrounds their building, and the rest of the site is used for Forum employee parking.

Figure 83 | Distress 1

Figure 84 | Distress 2

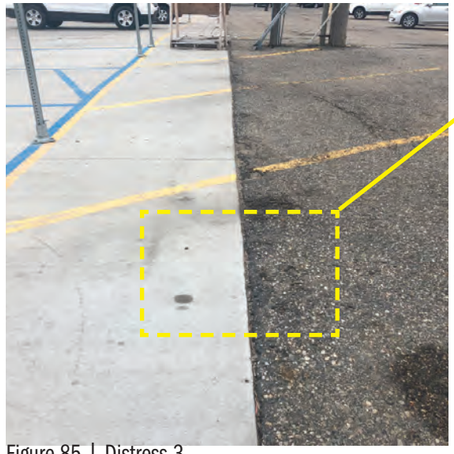


Figure 85 | Distress 3

Figure 86 | Distress 4

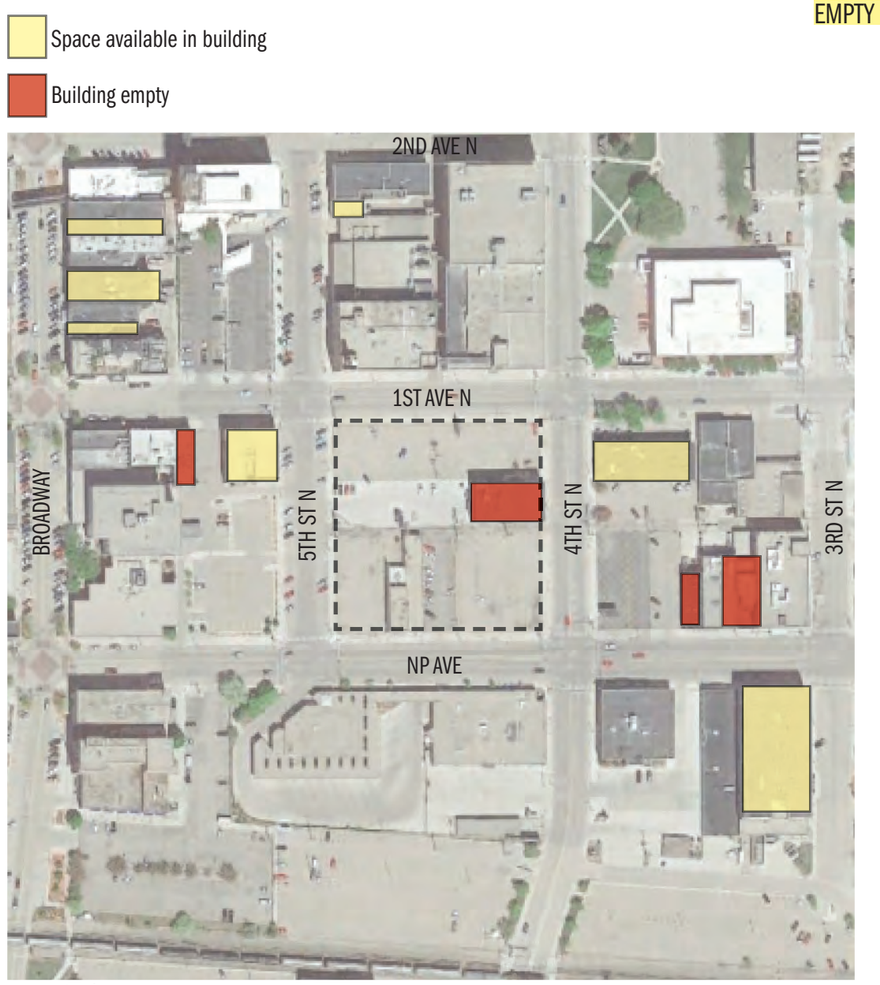


Figure 87 | Emtpy Building Plan

Fargo has little terrain and is generally very flat. Because of this, the wind tends to be worse, adding trees to the site could help.

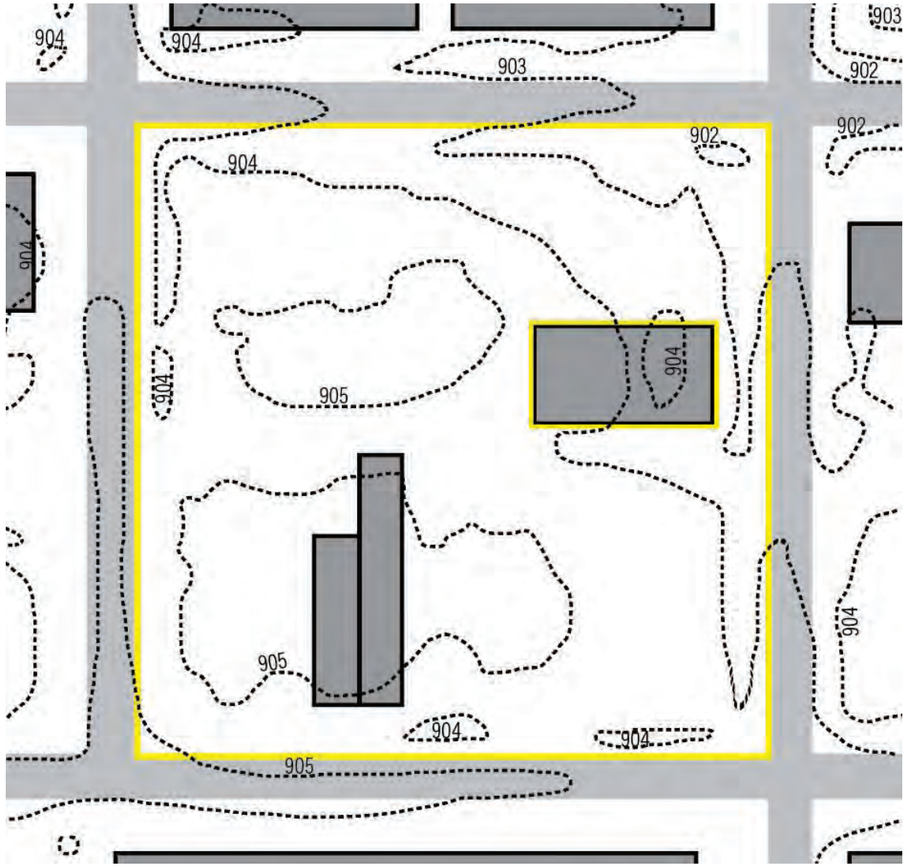


Figure 88 | Contour Map

Figure 89 | Utility 1

Figure 90 | Utility 2

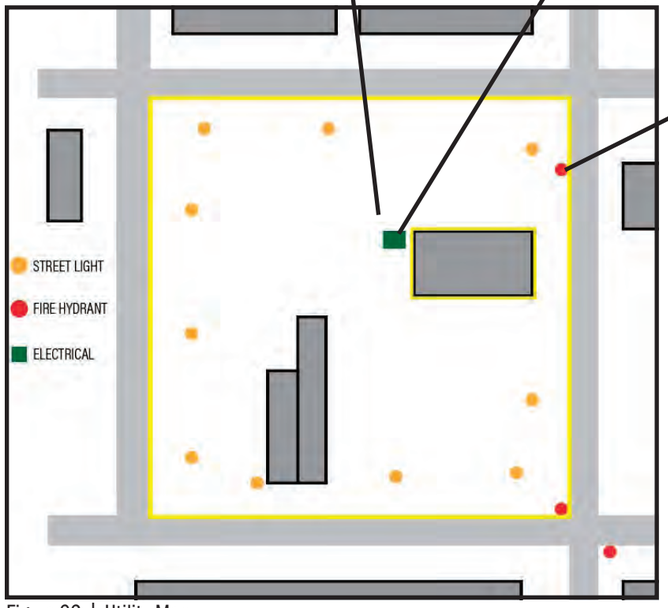


Figure 92 | Utility Map

Figure 91 | Utility 3

SITE ANALYSIS
VEHICLE TRAFFIC PATTERNS

Figure 93 | Vehicle Traffic

SITE ANALYSIS
PEDESTRIAN TRAFFIC PATTERNS

Downtown vehicle stays relatively the same through the seasons. Typically, peak hours are at 8:00-9:00 AM, 12:00-1:00 PM, and 4:30-5:30 PM. Pedestrian traffic, however, lessens significantly during colder months. Broadway is almost always the busiest, increasing during lunch and dinner hours as well as weekend evenings for its large number of bars. The pedestrian traffic around the site is higher in the summer during the farmers market and otherwise has low traffic, usually just Forum employees and those traveling to the library.

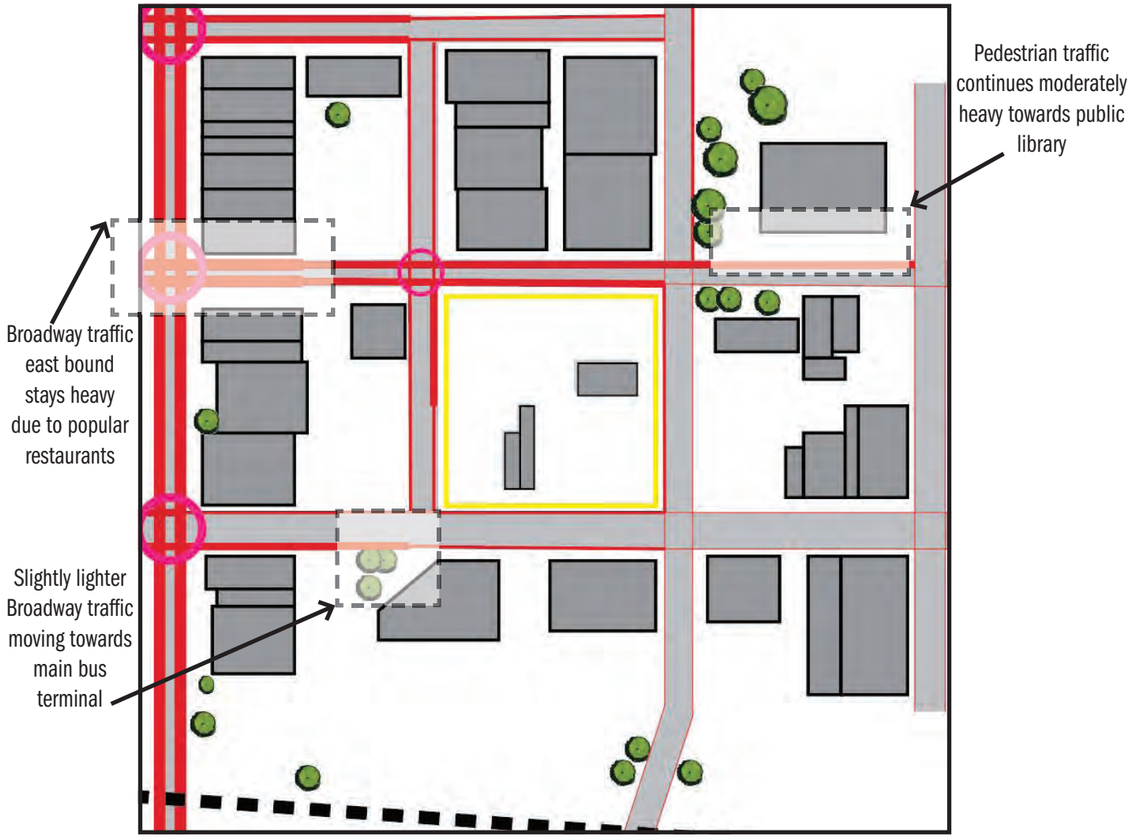


Figure 94 | Pedestrian Traffic

SITE ANALYSIS

GROCERY STORES

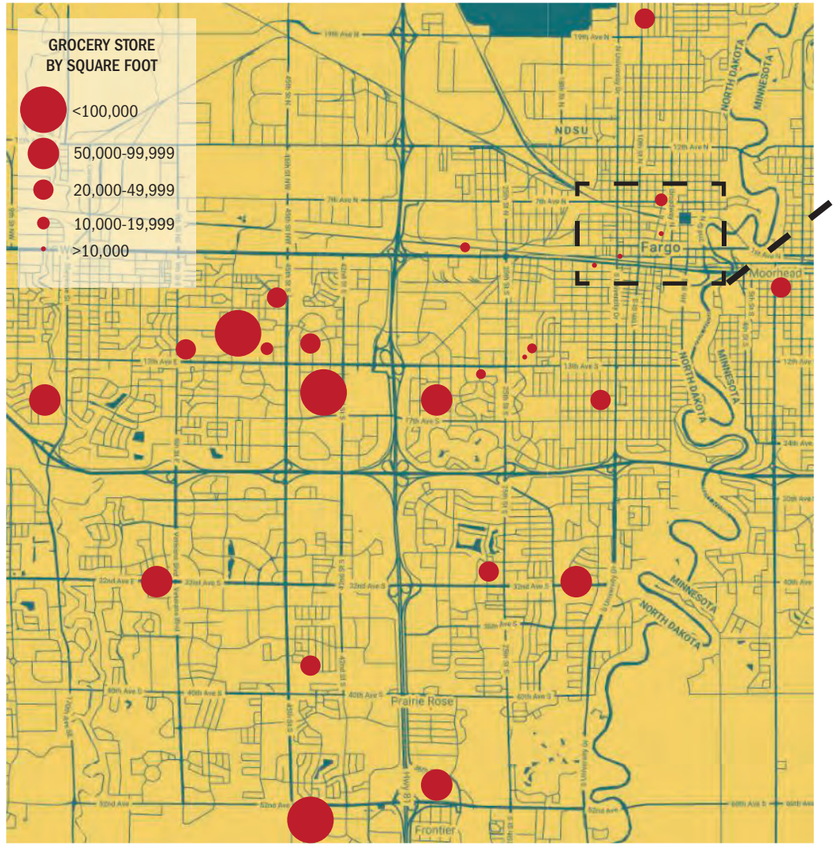


Figure 95 | Fargo Grocery Stores

Figure 96 | Downtown Grocery Stores

A majority of grocery stores in Fargo are in the area of 13th avenue south. Although downtown Fargo has a handful of grocery stores, none are larger than 10,000 square feet other than Family Fare which is located on 8th avenue north, not in walking distance. The newest, Daily Market on Broadway, carries items a typical gas station has and is so small it's barley visible on the map above. Two of the three others are specialty international shops and the last, Prairie Roots, was covered in a case study further up in this proposal. The proposed store would aid in the downtown food desert and give more options to the high population that lives in this area.

SOUTH LOUDON

Figure 97 | North 2

Figure 98 | North 1

New construction: Block 9

Figure 99 | North 3

Figure 100 | North 4

Radison Hotel
road cantilever

Figure 101 | North 5

Figure 102 | North 6

WEST LOUDON

Bricks show where attached building was removed in 2016

Figure 103 | East 1

Figure 104 | East 2

WEST SITE

View looking from front doors

Figure 105 | East 3

Old murals

Figure 106 | East 4

NORTH LOUDON

Figure 108 | South 2

Different brick textures

Figure 109 | South 3

Figure 107 | South 1

NORTH SITE

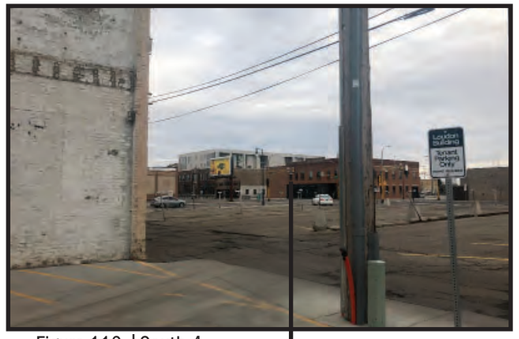


Figure 110 | South 4

Figure 111 | South 5

Figure 112 | South 6

EAST
LOUDON

Original building signage

Figure 114 | West 2

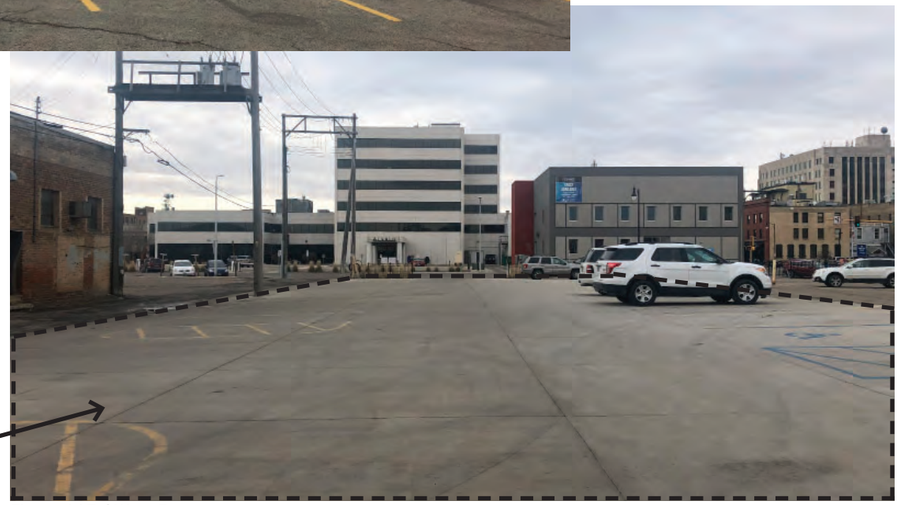
Figure 115 | West 3

Figure 113 | West 1

More parking signs

Figure 116 | West 4

EAST SITE



Loudon parking lot

Figure 117 | West 5

SITE ANALYSIS

TEMPERATURE

A deep-winter greenhouse would allow plant production all year round, especially important in colder months with a climate like Fargo's. Each season has different seasonal produce that grows better during those months and climates, allowing fresh, *local* produce for the community on a commercial scale.

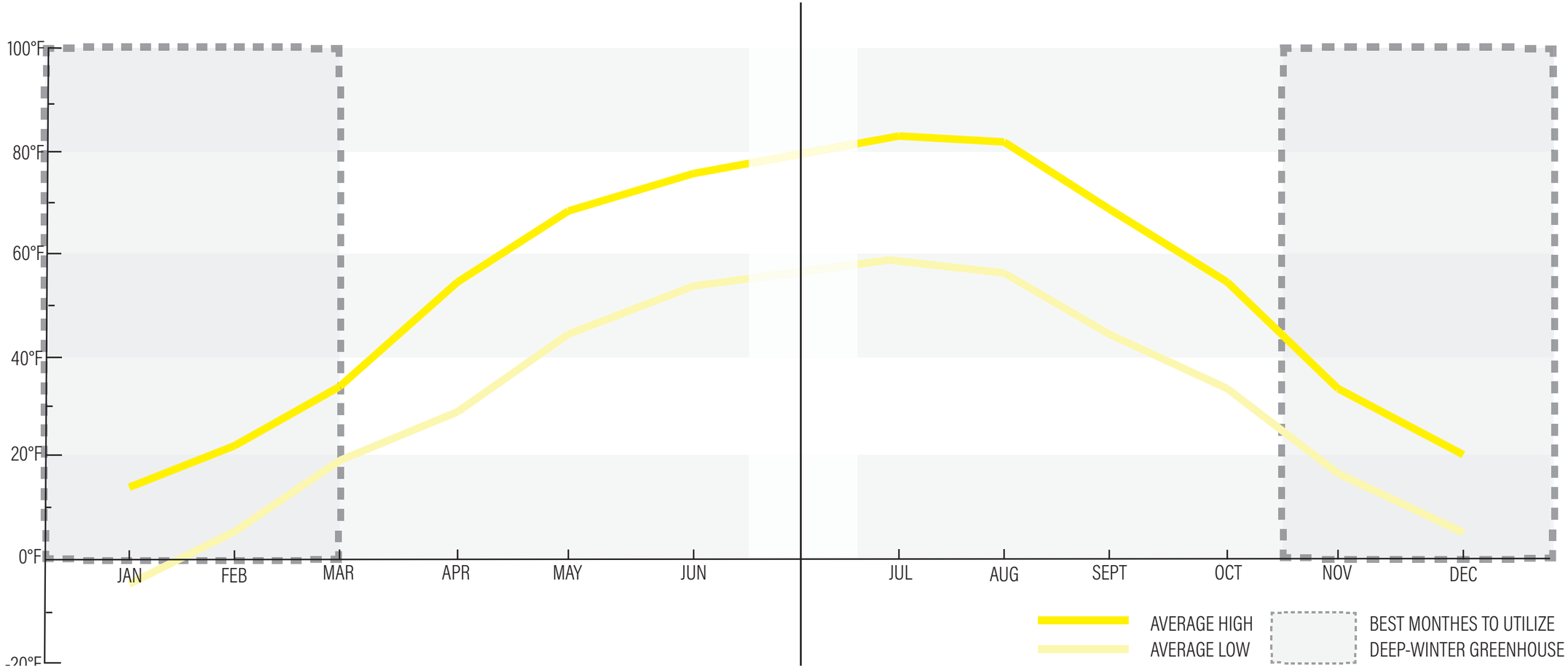


Figure 118 | Average Temperature

SITE ANALYSIS

TEMPERATURE

CLIMATE CHANGE
DATA IN **FARGO, ND**

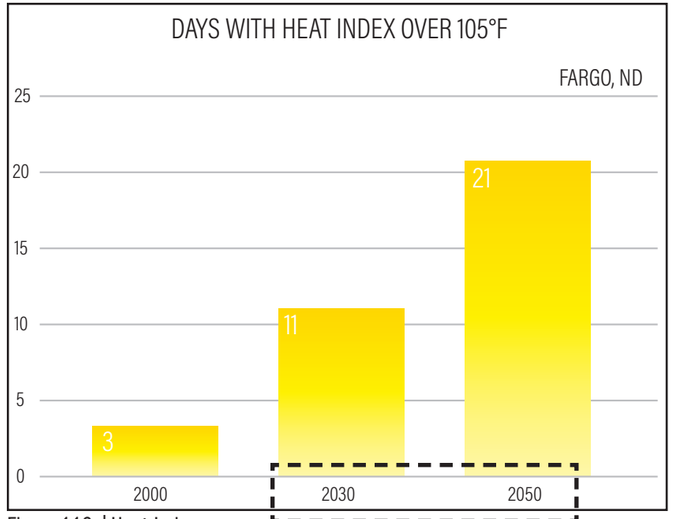
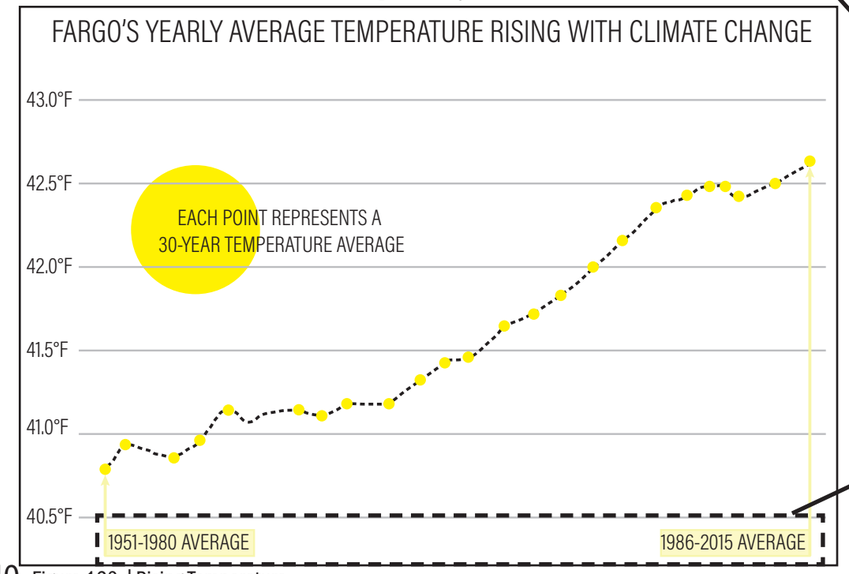


Figure 119 | Heat Index

*Projected days



1.8°increase for
30-year temperature
average

Figure 120 | Rising Temperature

TOP 25 FASTEST WARMING CITIES

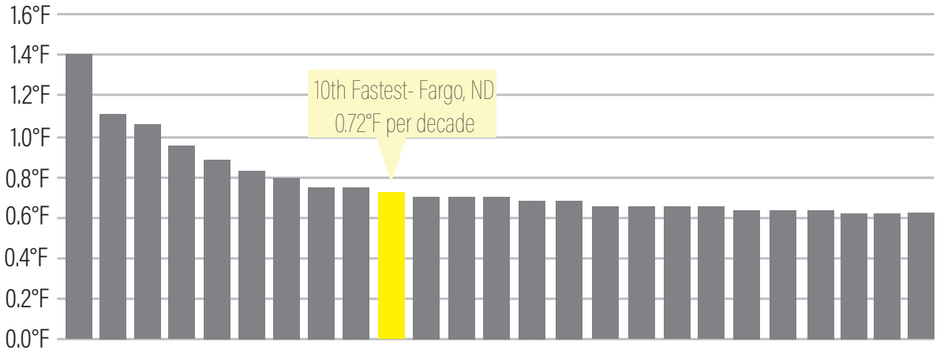


Figure 121 | Warming Cities

SITE ANALYSIS

PRECIPITATION

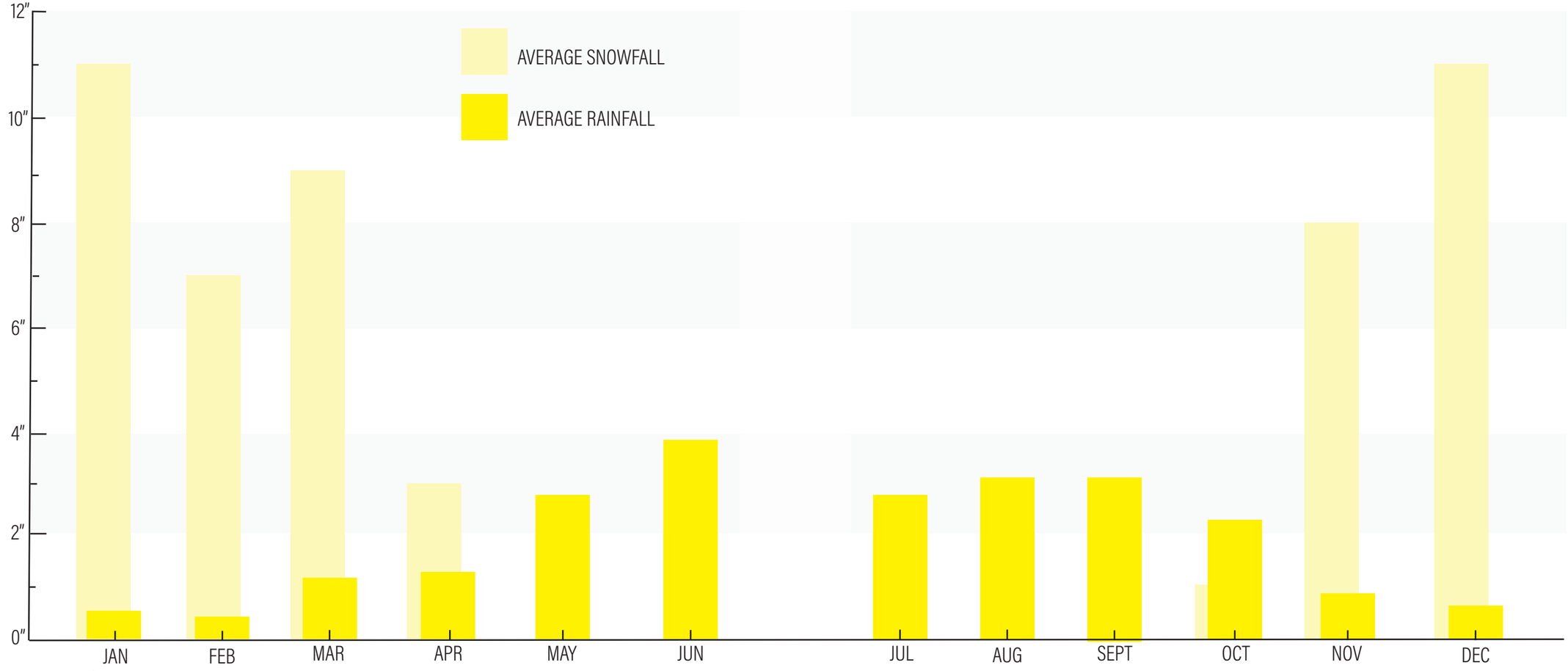


Figure 122 | Average Precipitation

SITE ANALYSIS

SUNLIGHT

Shorter days and less direct light suggests the possible need for strong lights in the greenhouse to utilize the most growing time possible.

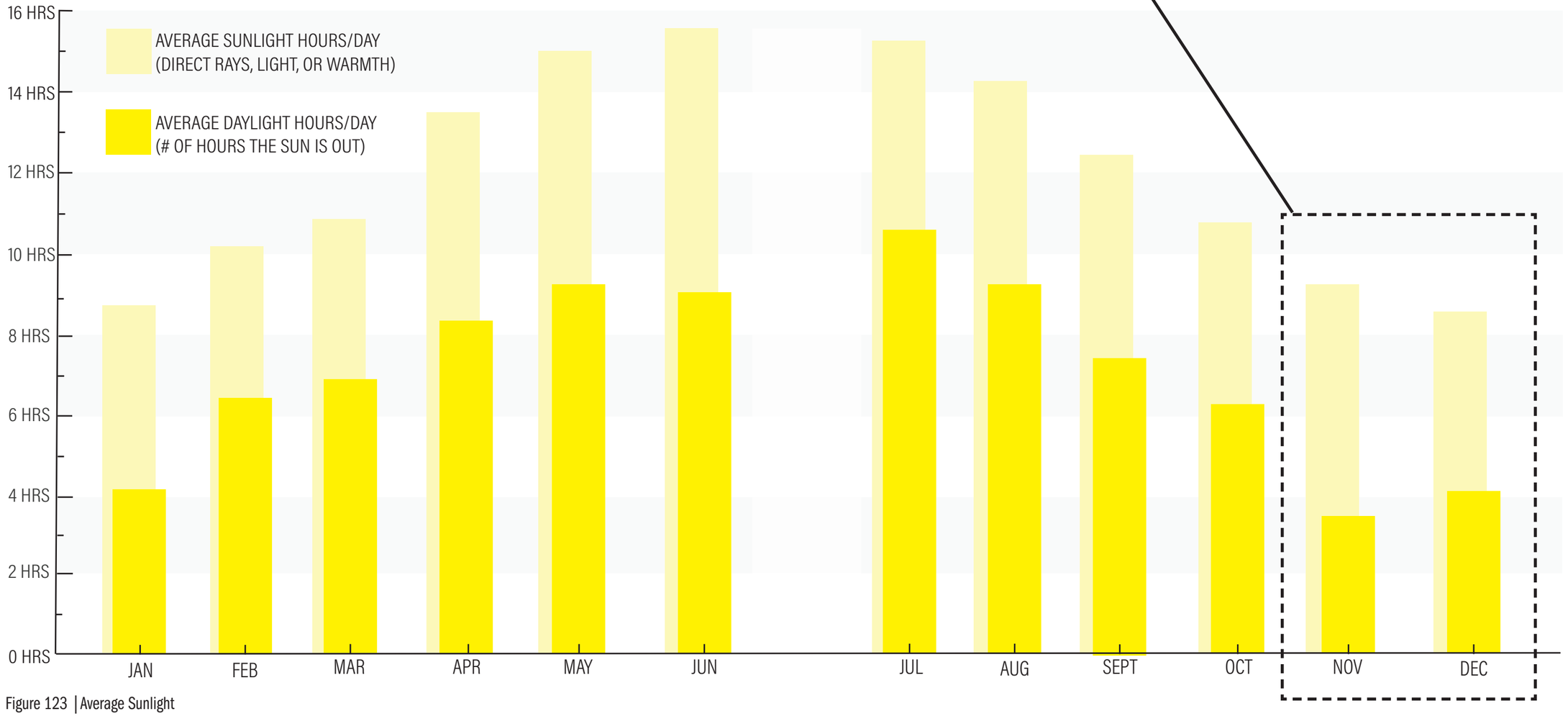


Figure 123 | Average Sunlight

AVERAGE ANNUAL WIND DIRECTION

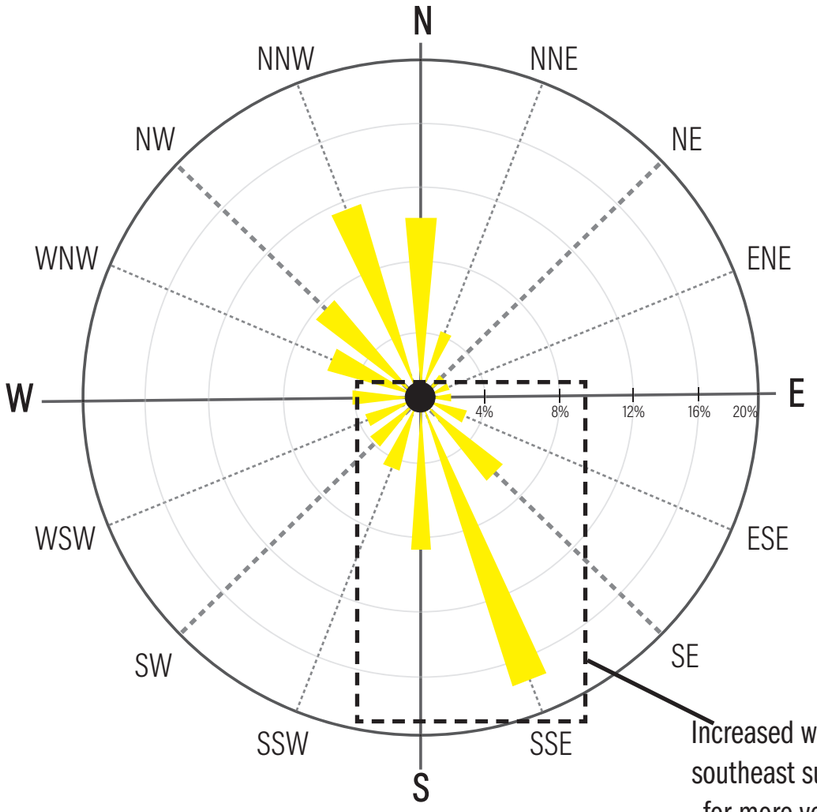


Figure 124 | Wind Rose

Increased wind speed south-southeast suggests the need for more vegetation in this area of the site to reduce wind.

AVERAGE WIND SPEED

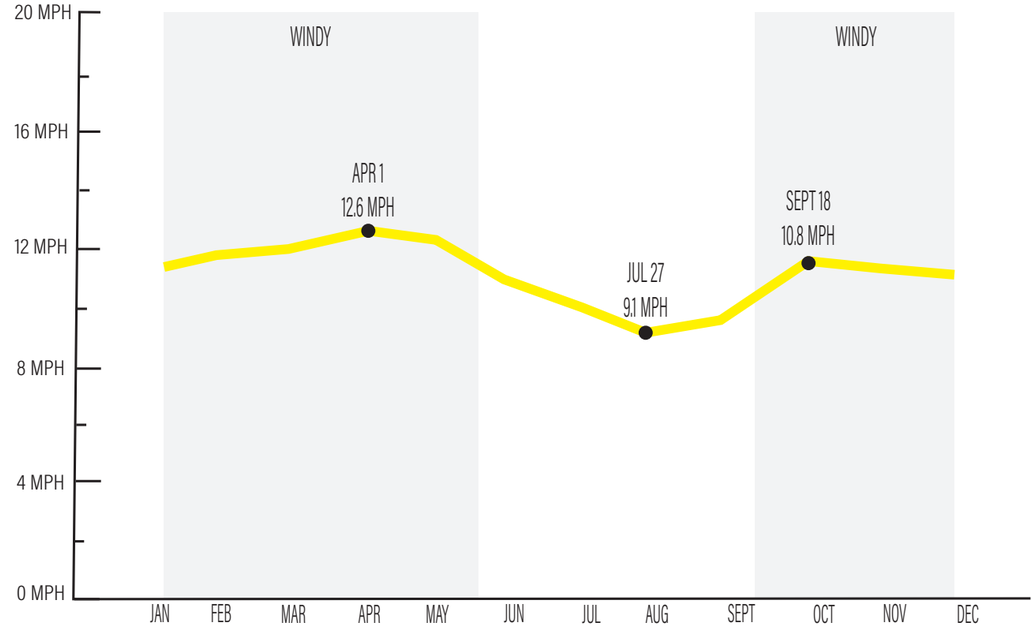


Figure 125 | Wind Speed

SITE ANALYSIS

LOUDON BUILDING

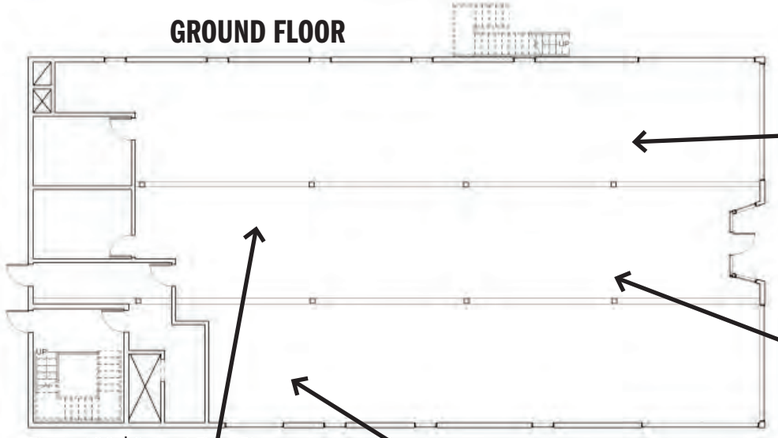


Figure 126 | Ground Floor Plan

Figure 129 | Interior G3

Large windows by front door

Figure 130 | Interior G4

Figure 127 | Interior G1

Concrete Floors

Figure 128 | Interior G2

Figure 131 | Interior G5

Interior brick textures differ vastly, adding age and history to the building

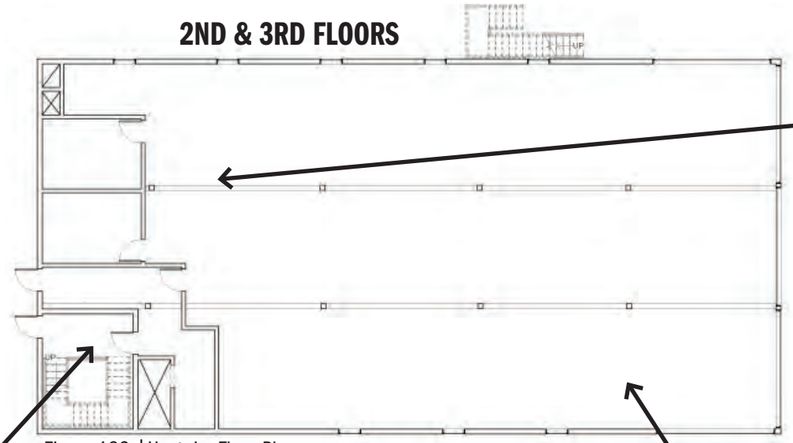


Figure 132 | Upstairs Floor Plan

Figure 135 | Interior Upstairs 3

Mechanical space next to restrooms

Figure 136 | Interior Upstairs 4

Figure 133 | Interior Upstairs 1

Original structural beams

Figure 134 | Interior Upstairs 2

Wooden structure & beams

SITE ANALYSIS

LOUDON BUILDING

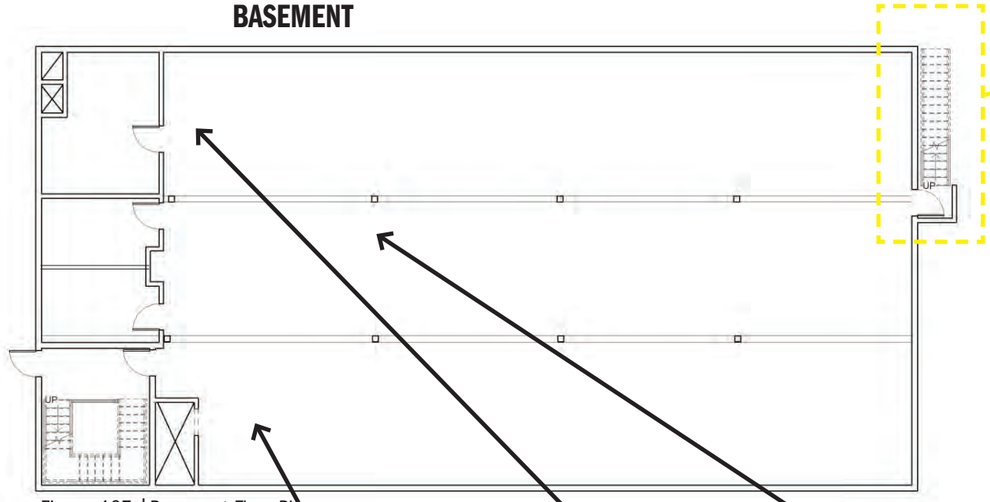


Figure 137 | Basement Floor Plan

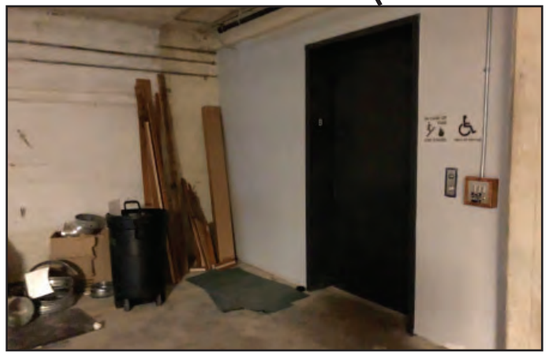


Figure 138 | Interior B1

Figure 139 | Interior B2

Larger mechanical space

Figure 140 | Interior B3

Empty space good for storage and refrigeration

Figure 141 | Interior B4

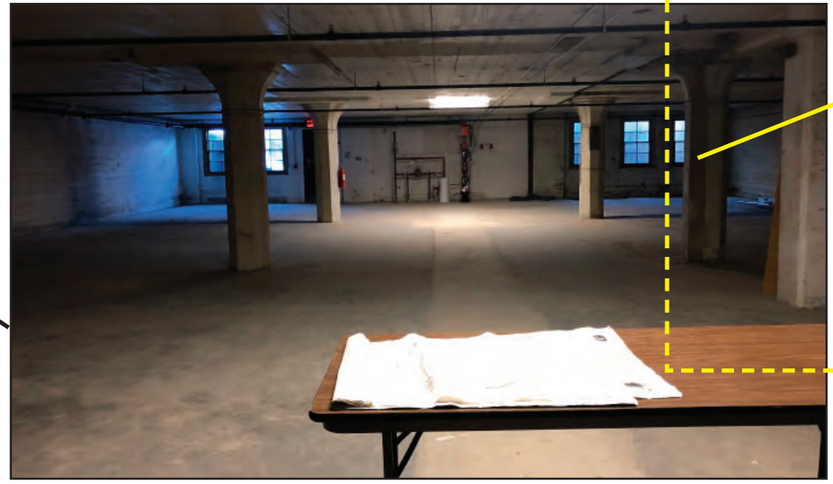


Figure 142 | Interior B5

Concrete structure

PERFORMANCE CRITERIA

INTERACTION MATRIX

Adaptive reuse means reusing the space available in an existing building and working with what's available. In the Loudon building, **restrooms, mechanical, and circulation stairs are already existing** all on the west side. The greenhouse would be a new construction on the south side. The question is where the cafe/bar area would go, considering how a user would get to that area. Either 1) walk through the retail space to reach the stairs or 2) Use the back entrance, which would most likely be used for employees. Another question to ask is how much retail space would be available if just limited to the first and second floors. The faded areas on figure 143 represent this questioning, where this cafe space should be.

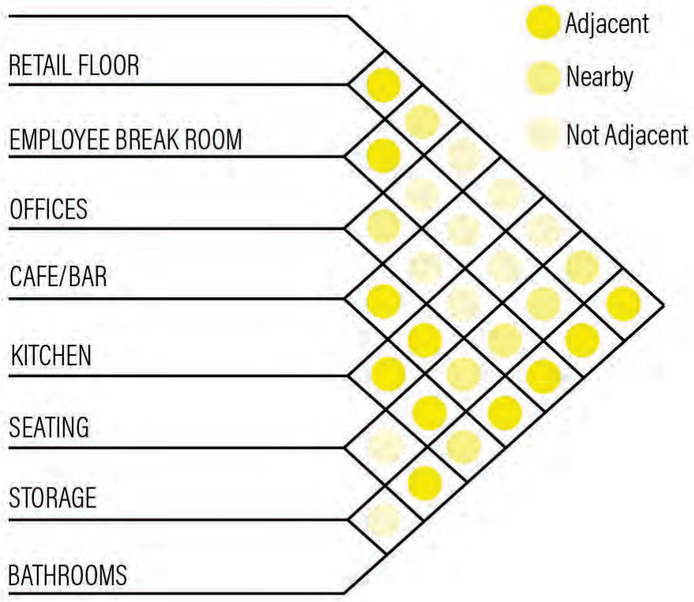


Figure 143 | Interaction Matrix

Figure 143 is different from the typical interaction net because the building already exists and each floor is already limited to a set amount of space. There's exterior space available, but we want to use the existing space to its maximum potential to not waste the embodied energy.

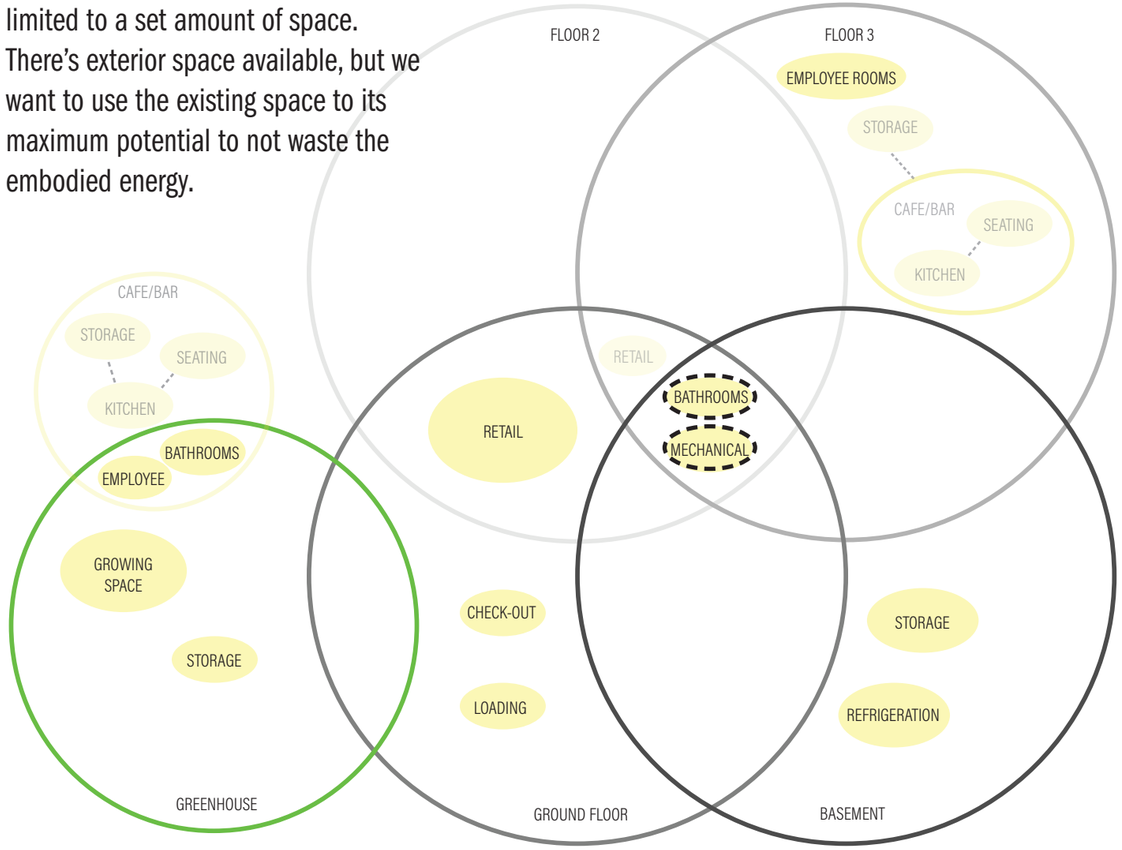


Figure 144 | Interaction Net

PERFORMANCE CRITERIA

SPACE ALLOCATION

LOUDON BUILDING

22,400 SF / 4 FLOORS **= 5,600SF PER FLOOR**

*EXISTING SPACE

Table I shows the approximate square footage in total of each program element. The average grocery store selling space is 40,000 square feet, but more modern stores are rounding to 20,000. Looking back on the case studies, Natural Grocers is 5,000 to 16,000 square feet, In.gredients was 1,500, and Prairie Roots is 5,600. The question is if roughly 9,600 is enough space and if the retail model would do better with more space.

	RETAIL	EMPLOYEE	BATHROOMS*	STORAGE	CAFE/BAR	KITCHEN	STAIRS/ELEV.*	BACK CIRC.*	MECHANICAL*
1	76%		5%	3%			5%	10%	1%
2	76%		5%	3%			5%	10%	1%
3		15%	5%	5%	45%	14%	5%	10%	1%
B	20%		5%	60%			5%	5%	5%
TOTAL	9,632 sf	672 sf	1,120 sf	3,976 sf	2,520 sf	784 sf	1,120 sf	1,960 sf	448 sf

Table I | Space Allocation 1

If the cafe/bar space were to be moved to the exterior of the building in a new construction by the greenhouse, 3,000 square feet of retail space could be added, totaling out to 12,600, seen in table II. Having the cafe in its own structure would allow better circulation in the proposed retail space and users looking to only visit this space would have their own entrance. Moving this space also gives more public interaction with the greenhouse, possibly increasing interest. A bigger retail floors means having a bigger greenhouse, so the site space would decrease to accommodate for needs.

	RETAIL	EMPLOYEE	BATHROOMS*	STORAGE	CAFE/BAR	KITCHEN	STAIRS/ELEV.*	BACK CIRC.*	MECHANICAL*
1	76%		5%	3%			5%	10%	1%
2	76%		5%	3%			5%	10%	1%
3	54%	20%	5%	5%			5%	10%	1%
B	20%		5%	60%			5%	5%	5%
TOTAL	12,656 sf	1,120 sf	1,120 sf	3,976 sf			1,120 sf	1,960 sf	448 sf

Table II | Space Allocation 2

PERFORMANCE CRITERIA

SUMMARY

Finally, it's important to remember sustainability. How can convenience be sustainable? Whether it's through grocery shopping specifically, or various program elements like delivery, the space will most likely not become strictly grocery, but a learning space. A learning space to educate communities about zero waste, plant based diets, and purchasing from local sources. It's also important to consider the history of the Loudon building, and how the building can tell a story through its construction and materials. The contrast between the historical building and a new glass structure filled with green has it has a possibility to tell its own story, a story about sustainable convenience.

Although the focus has been on convenience, the most critical goal is sustainability, overwhelmingly for the environment. Designing with sustainability in mind is not enough but rather designing entirely focused on our natural environment should be nothing less than a goal. We cannot ignore the evidence seen in our daily life, and should be considered negligent on a designers part by doing so. A change of lifestyle is not an option for later, it's one that must happen now especially in communities that have the resources to do so. Our time frame to make substantial changes is shrinking fast, we have no choice but to accept the environmental responsibility humanity has ignored for too long.

Figure 145 | Loudon Front Door

Figure 146 | Sketchbook Cover

Figure 147 | Loudon Front Design

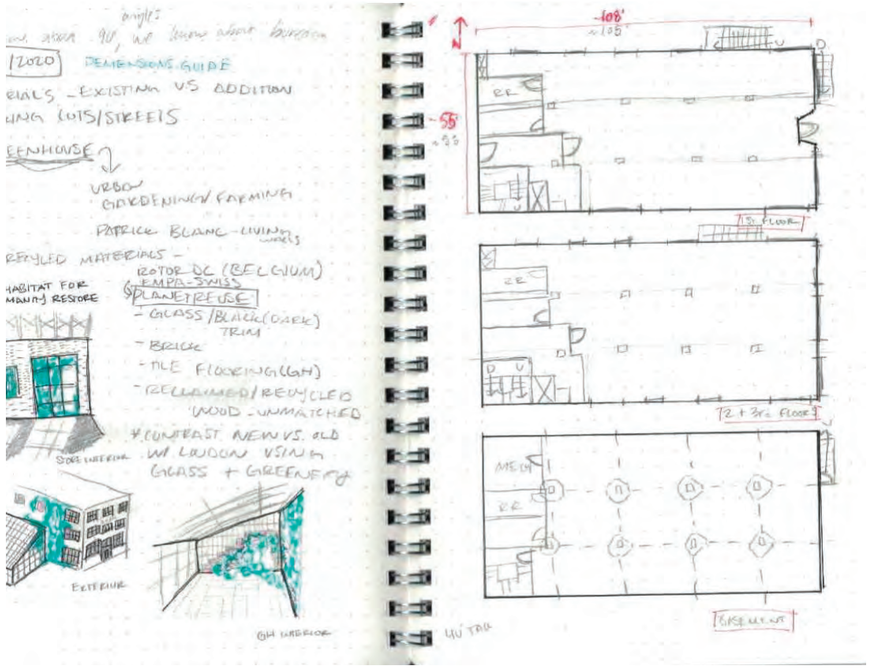


Figure 148 | Sketchbook 1

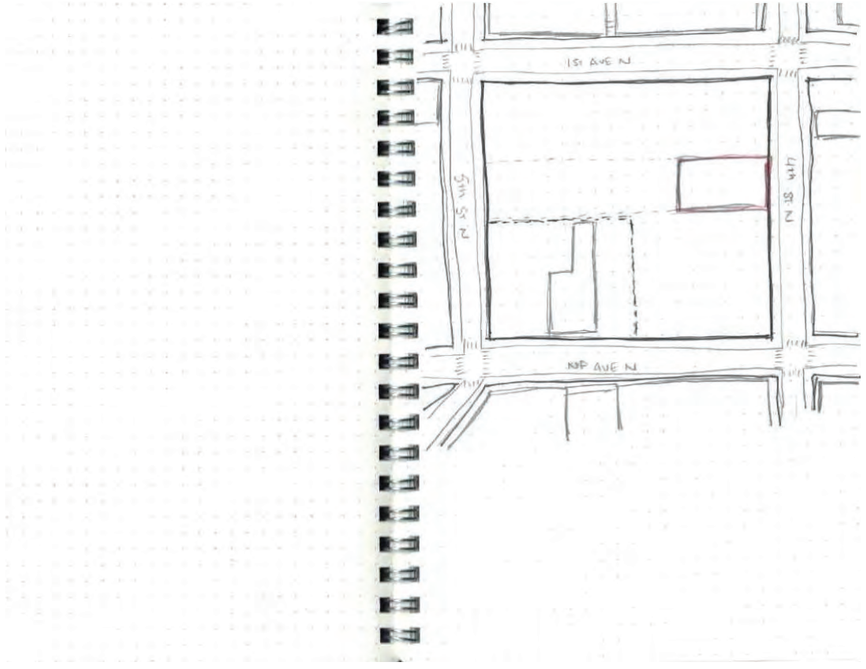


Figure 149 | Sketchbook 2

The design process began with analyzing the south side of Loudon and the existing floor plans. Since deep winter greenhouses use a solid wall as its main support system, the greenhouse had to be built as a lead-to, with the roof at a 60 degree angle. The existing floor plans already had a grid-like system in place due to the structure and this would be continued into the greenhouse.

Since a site analysis was already conducted, it was time to begin thinking of where this addition would be constructed and what would be happening on the rest of the site. It was split into three areas, the north side, west side, and south side. This helped divide up the large, concrete space into something more manageable.

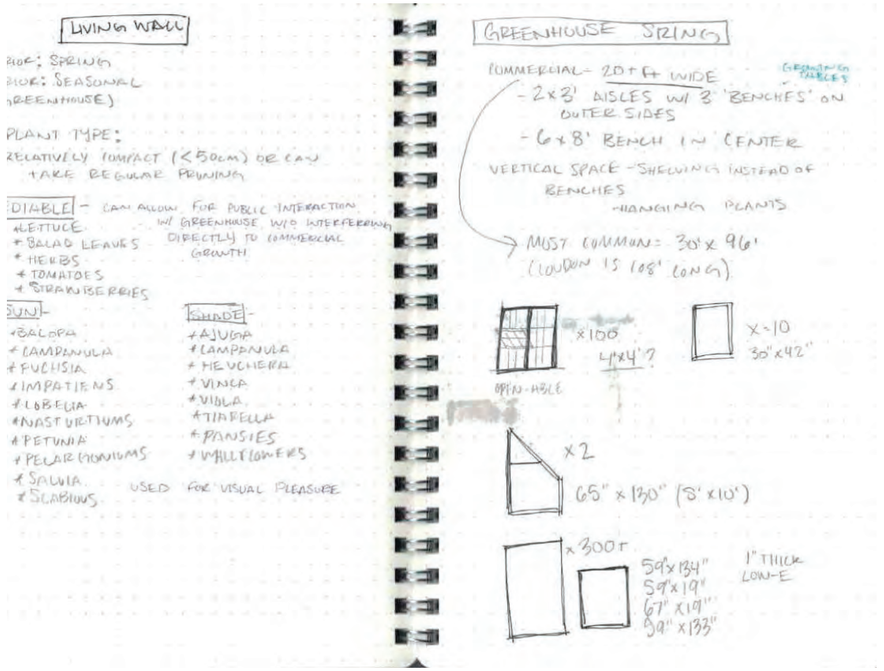


Figure 150 | Sketchbook 3

From terms of sustainability, it was important to continue these standards into the new construction. I found a couple different resources where people sell used building materials and decided on using recycled materials to completely construct the additions. Sketchbook page 3 shows a couple different listings of various sizes of windows to be used for the greenhouse.

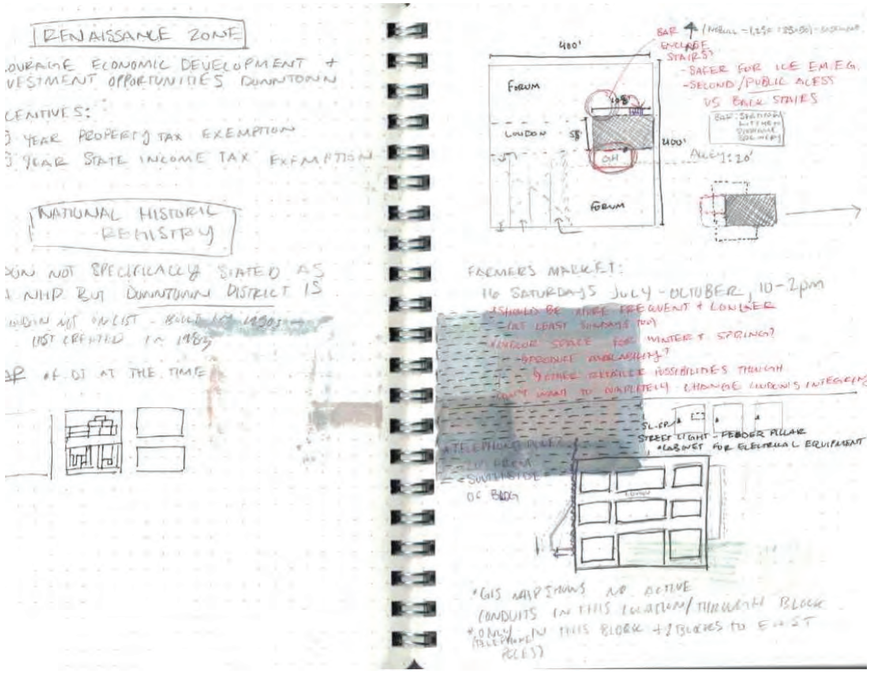


Figure 151 | Sketchbook 4

Deciding where to put the second addition other than the greenhouse was the next step. Originally, it was planned to but this addition on the north side, using the existing exterior fire escape as an interior staircase. However, it was important that the two additions interacted with each other, causing this construction to move to the west end, extending the length of Loudon.

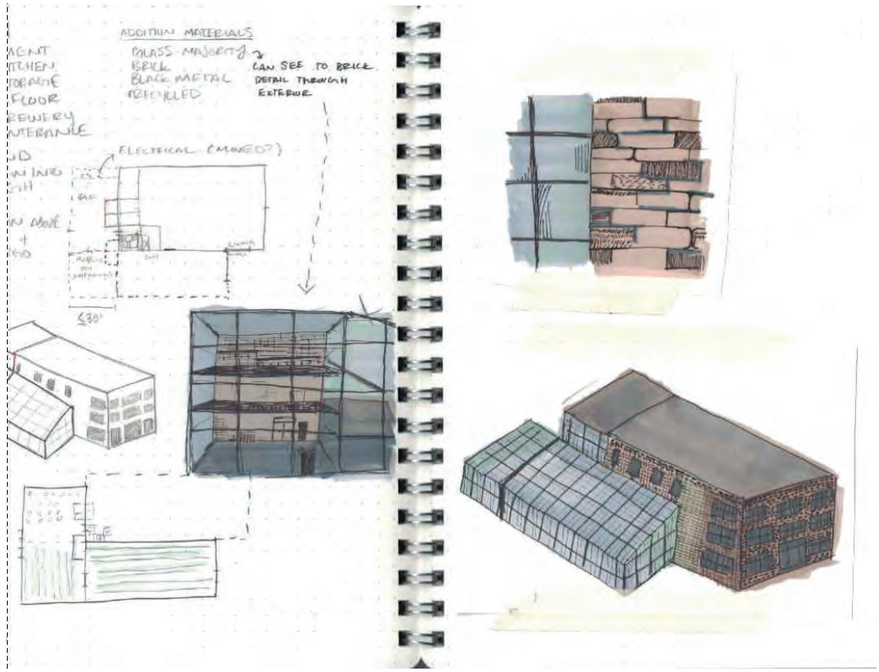


Figure 152 | Sketchbook 5

In wanting to celebrate the masonry details on the existing building, the west addition became completely glass. The concept of using this addition as a micro-brewery, bar, and restaurant combination was born. The idea was that the greenhouse would grow produce, moved to the existing building for retail, and any unsold products would be brewed or cooked and sold in the addition, eliminating any transportation therefore reducing carbon dioxide levels.

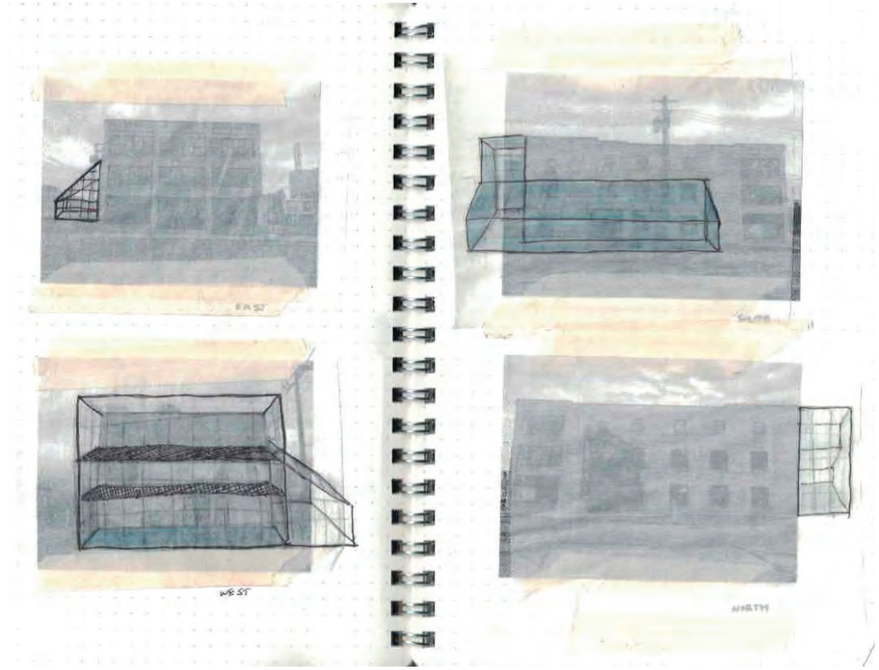


Figure 153 | Sketchbook 6

Page 6 showed a first look at the initial elevations, where these were later sketched in Illustrator and used as a reference for presentations and the final boards. Pages 168 and 169 show these sketches.

Figure 154 | East Sketch

Figure 155 | South Sketch

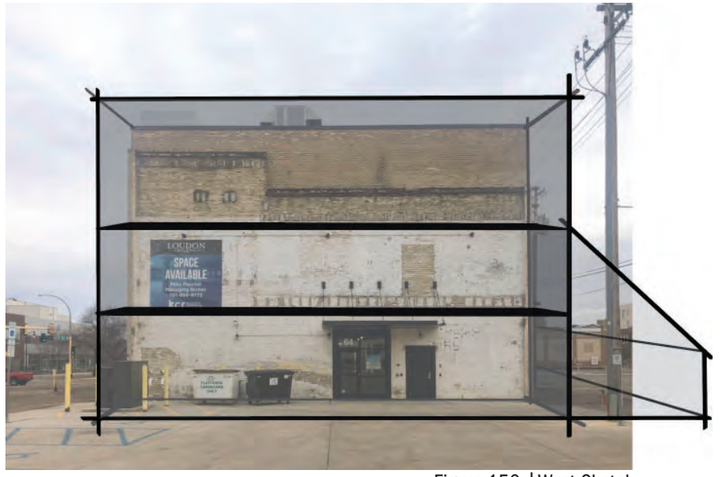


Figure 156 | West Sketch

Figure 157 | North Sketch

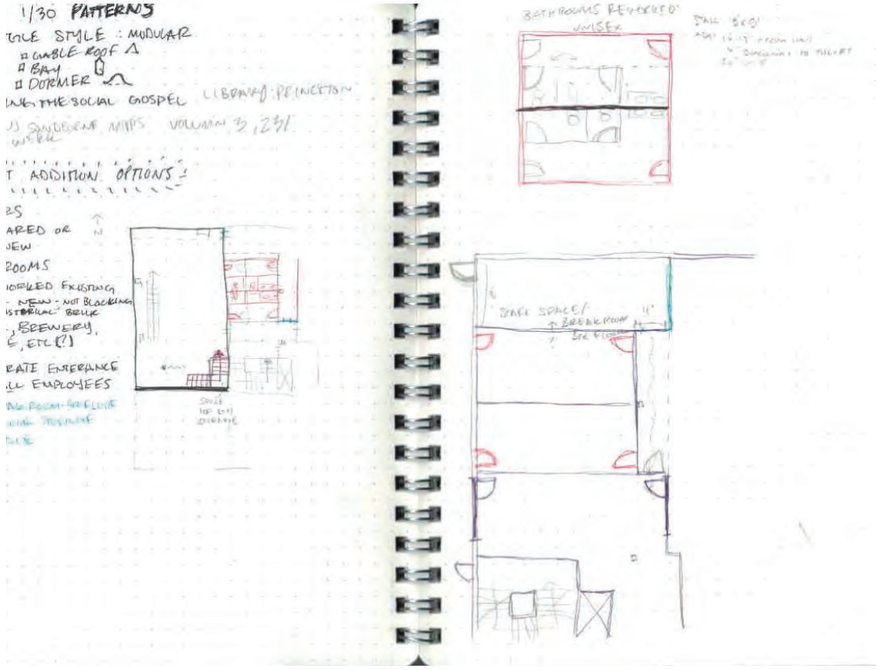


Figure 158 | Sketchbook 7

Originally, the plan was to rework the circulation in the existing building to accommodate to the convenience aspect of the west addition. The bathrooms were rearranged to allow traffic from both ends, but ultimately this changed because of the need to add about 10 additional doors on the west elevation of the existing building, minimizing the importance of the masonry patterns.

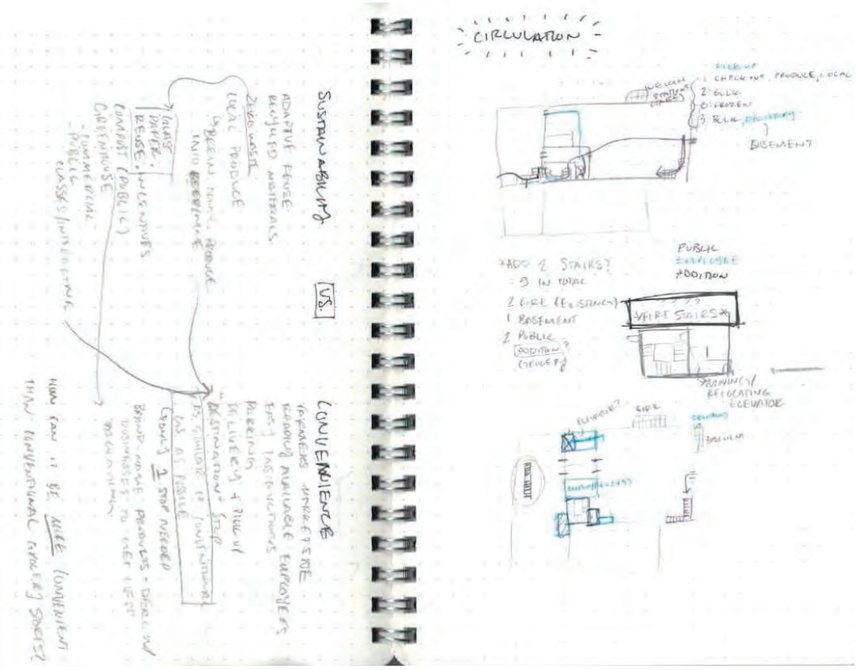


Figure 159 | Sketchbook 8

Continuing with circulation issues, a staircase was added to the east end of Loudon, strictly for retail circulation. A comparison between sustainability and convenience was also done to ensure both concepts were apparent in the final design.

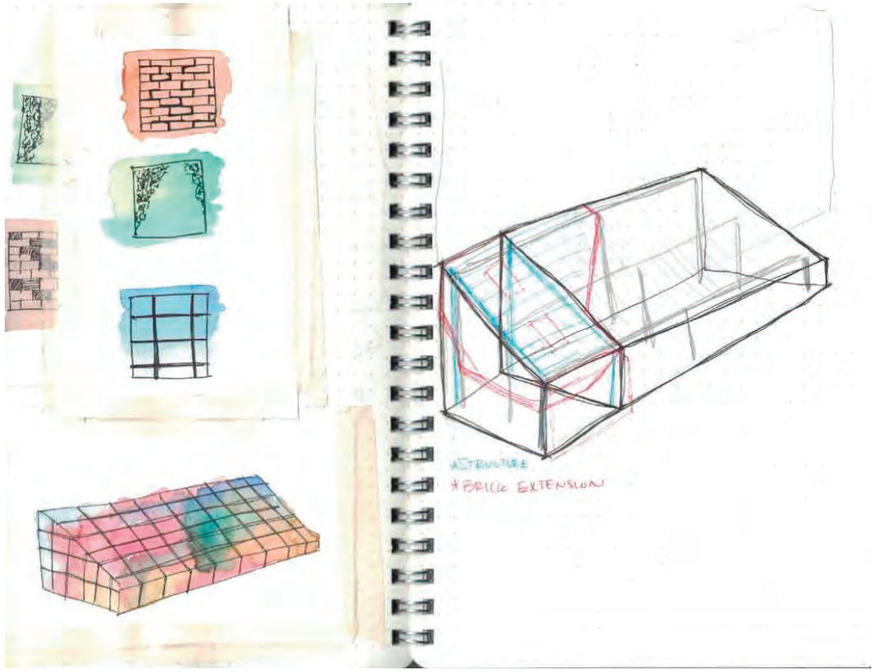


Figure 160 | Sketchbook 9

Because of the high sun exposure on the south side, a couple options were discussed to diffuse this sun in order to keep temperatures controllable. The first was using a transparent, but colored glass in an effort to shade. This concept on greenhouses is currently being research of the University of Minnesota's Green Building Research Center. The second option was to construct a sort of envelope around the greenhouse with the ability to move along the length of the greenhouse.

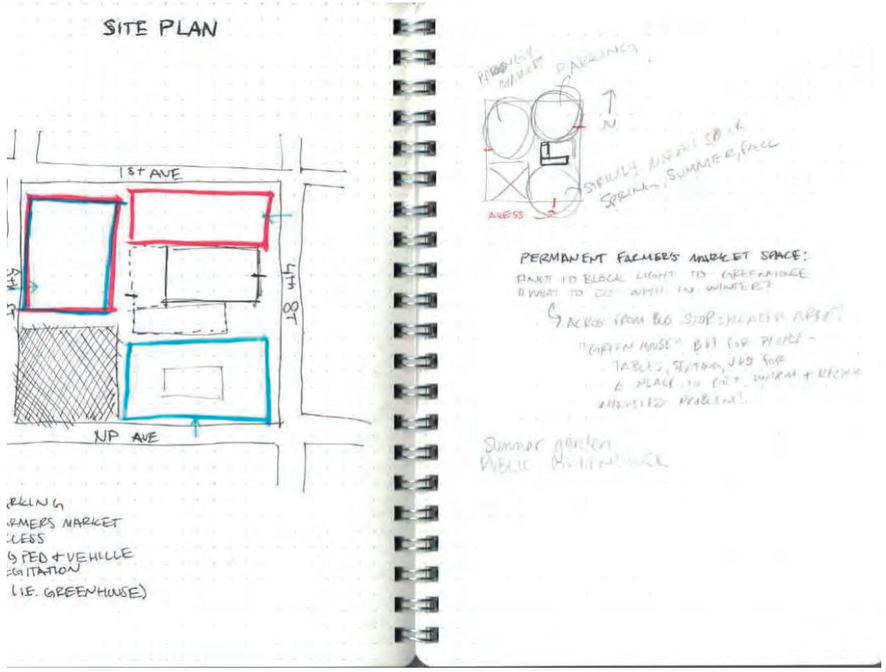


Figure 161 | Sketchbook 10

Circling back to the site plan, it was decided that the south side of the site would be used as permanent market space while the rest would be either shared market/ parking space or permanent parking space.

Figure 162 | Mid-Crit Iteration

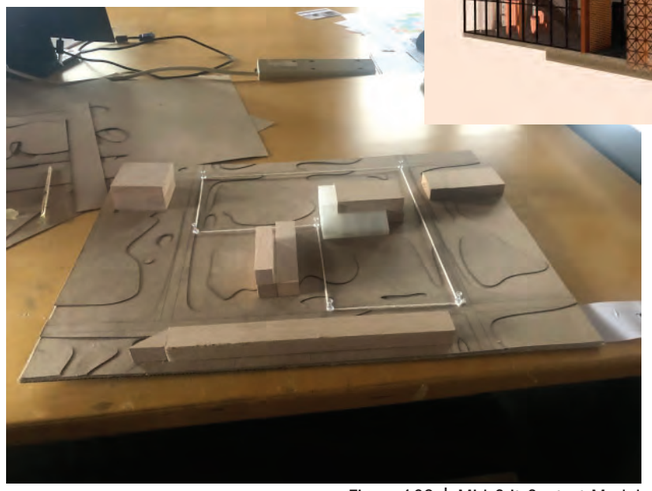


Figure 163 | Mid-Crit Context Model

At this time in the semester, at lot happened at once, within a 48 hour time span. In the midst of mid-crits presentations, it was announced that NDSU would be closing due to COVID-19, which was beginning to hit the USA hard in some major metropolitan areas. Mid-crits were cut short and we all moved our theses back home, in preparation to spend the next unforeseen amount of time at home, without all the resources Renaissance has provided us for the last 5 years. Nevertheless, we continued to work hard with the anticipation of finishing our hard work even during these unpredictable times.

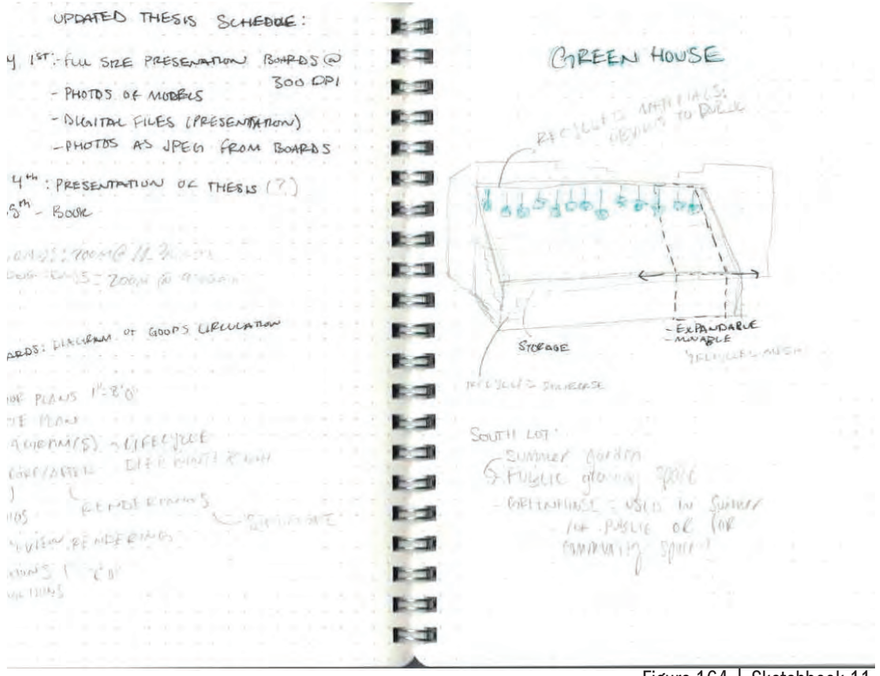


Figure 164 | Sketchbook 11

With major schedule changes, things changed a bit. The sun-blocking envelope was discarded and instead extended walls on the west side were put in, blocking the sun only on the west end instead. Multiple levels were put into the greenhouse to capitalize on the vertical space available.

DESIGN SOLUTION

DRAWINGS

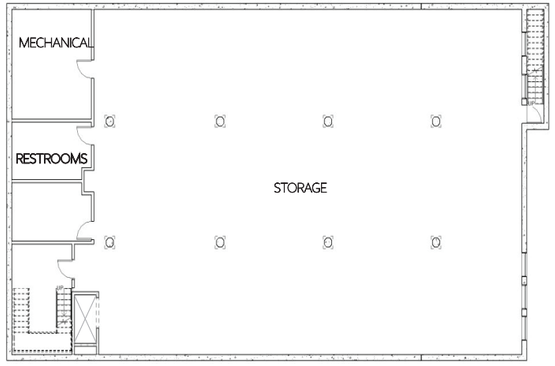


Figure 165 | Basement Floor Plan

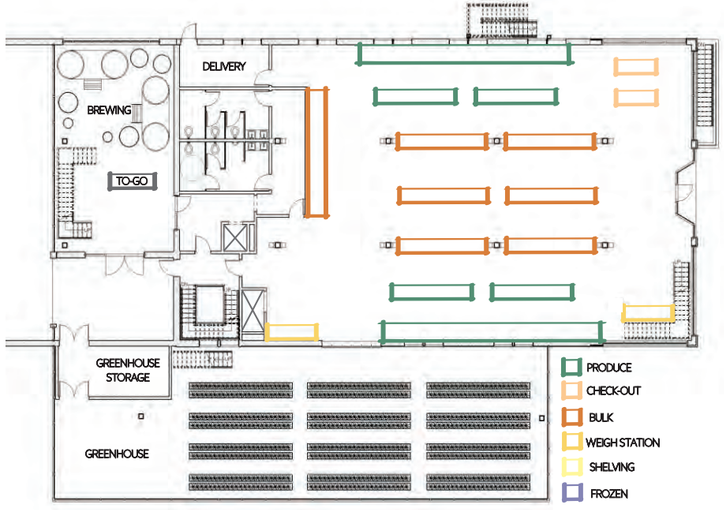
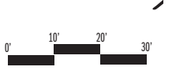


Figure 166 | First Floor Plan



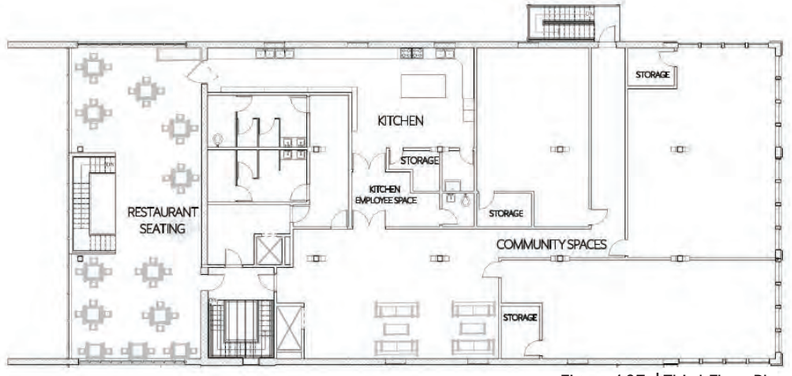


Figure 167 | Third Floor Plan

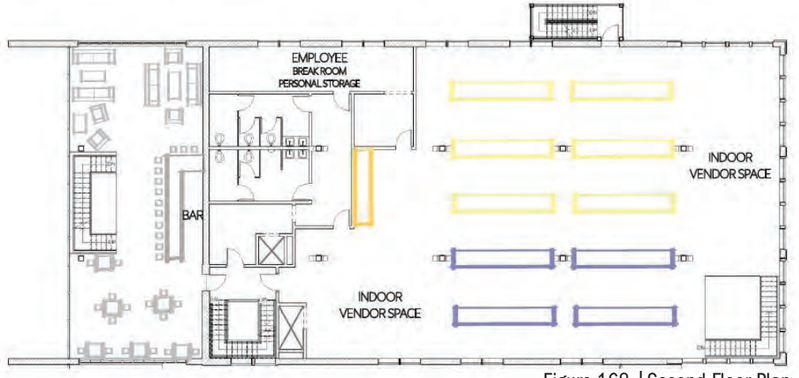


Figure 168 | Second Floor Plan

Figure 169 | East Elevation

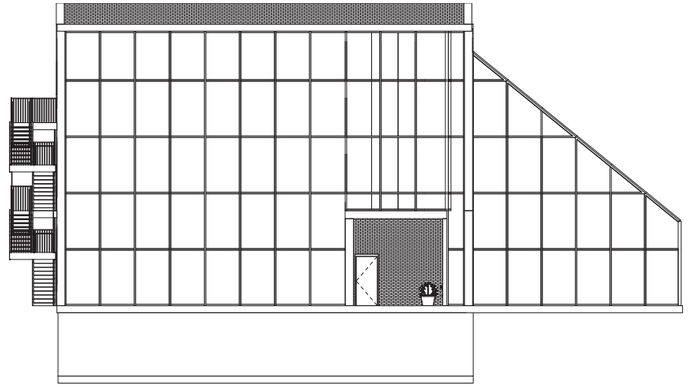


Figure 171 | West Elevation

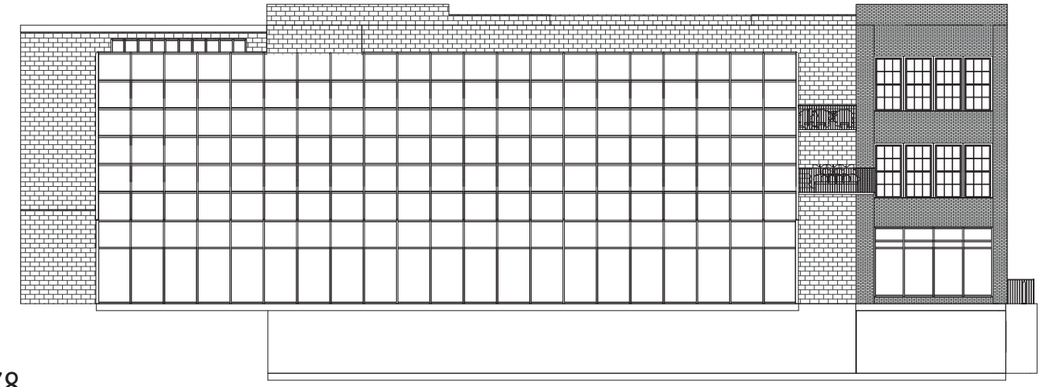


Figure 170 | South Elevation

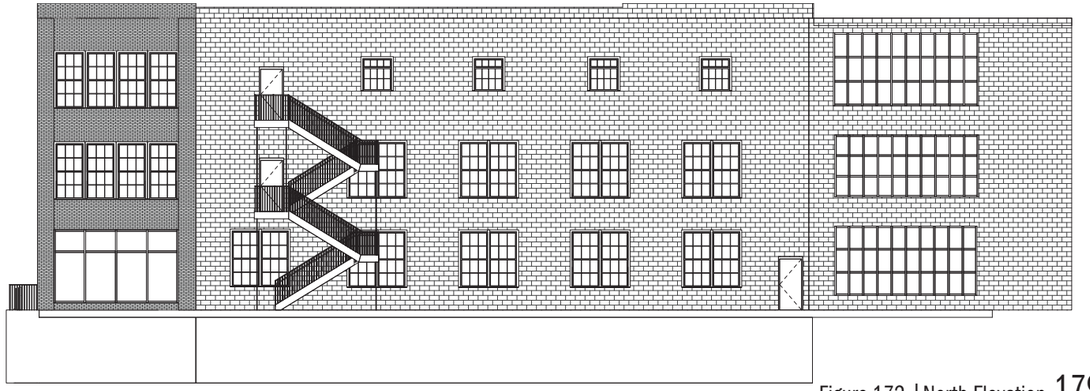


Figure 172 | North Elevation

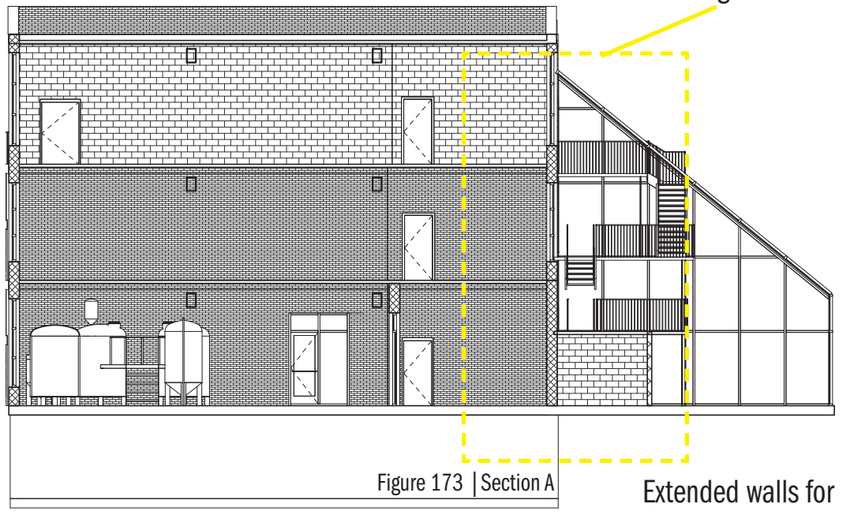


Figure 173 | Section A

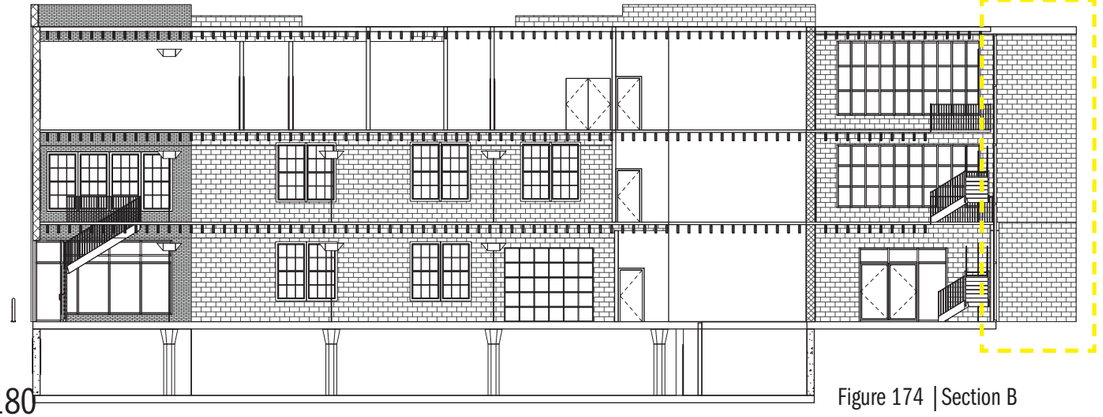


Figure 174 | Section B

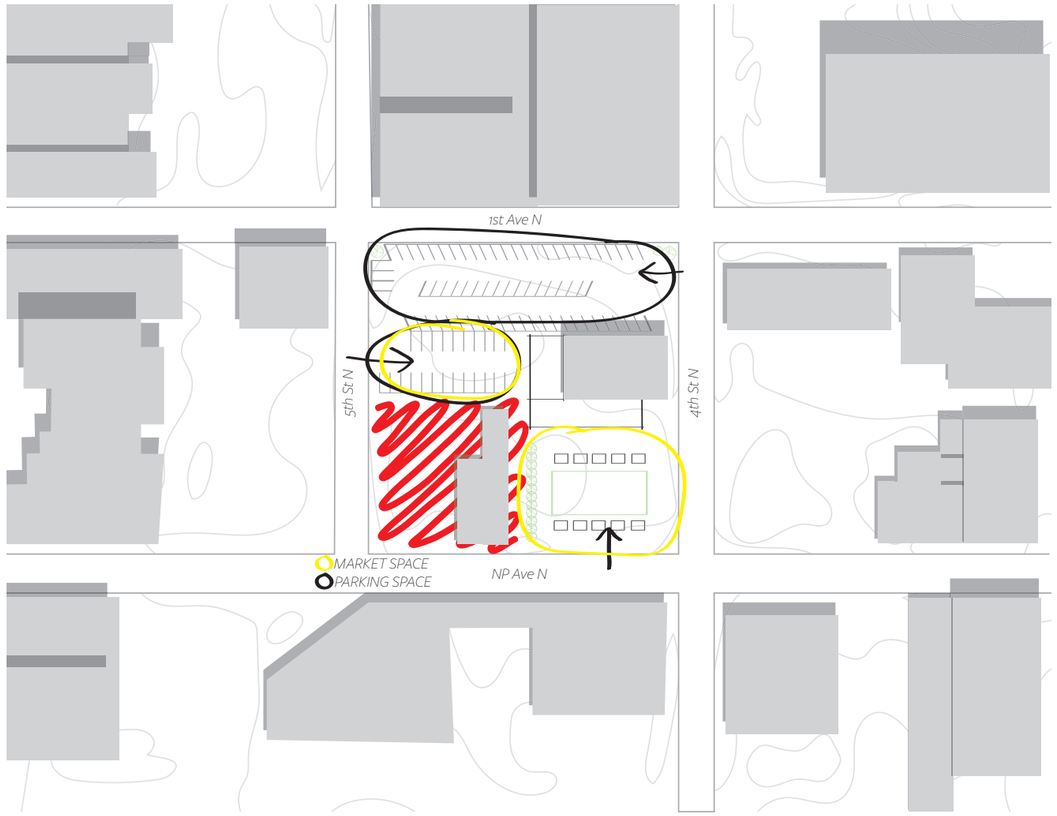


Figure 175 | Site Plan

DESIGN SOLUTION

DRAWINGS

The structure is the same system used in the existing building, pulled into the additions. It consists of a concrete foundation and columns, and timber elements throughout the rest of the building. Figure 178 shows this system pulled apart, noting the differing materials in the basement. Figure 177 is the rendering of the first floor space.

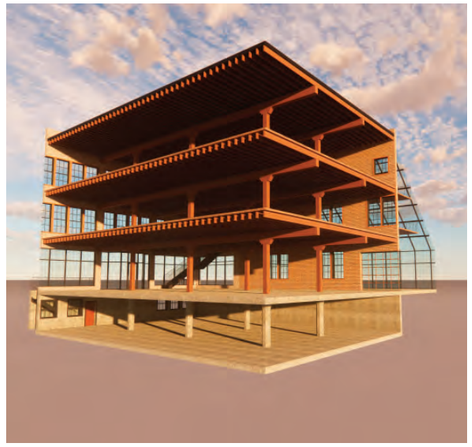


Figure 176 | Structure Section

Figure 177 | Structure Rendering

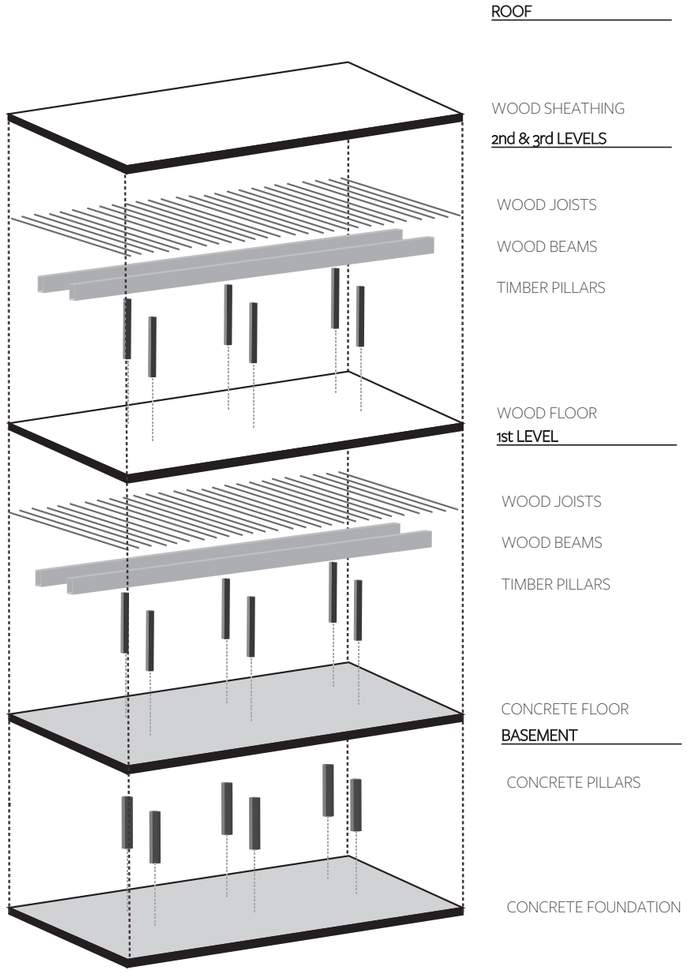


Figure 178 | Structure Diagram

Figure 179 | Key Rendering

Figure 180 | East Rendering

Figure 181 | South Rendering

Figure 182 | West Rendering

Figure 183 | North Rendering

Figure 184 | Addition Rendering 1

Figure 185 | Addition Rendering 2

Figure 186 | Greenhouse Rendering 1

Figure 187 | Greenhouse Rendering 2

Figure 188 | Recycled Rendering

As mentioned in the process work, the additions use recycled masonry and glass. Figure 188 emphasizes the recycled glass with discolored glass panels on both the south and north ends of the west addition. The recycled masonry plays on the numerous existing brick patterns and textures on Loudon but tells its own story, a story of its past and re-purpose.

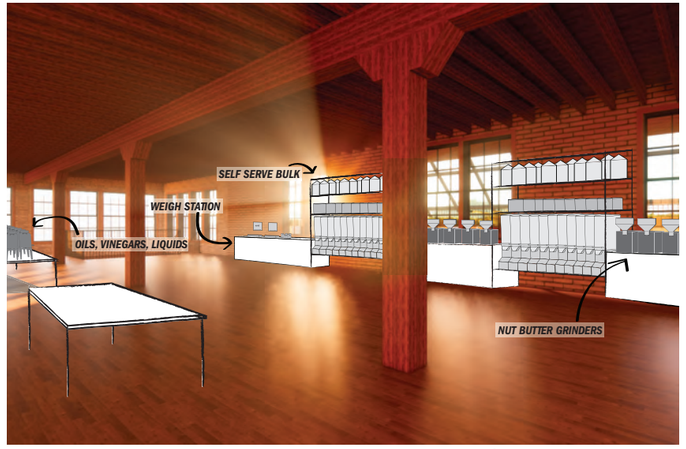


Figure 189 | Zero-Waste Rendering

Since the retail space is a zero waste grocery store, it was important to detail this further for better understanding. Figure 189 shows four of the most common bulk areas of a grocery store, noting that everything is to be measured out by individual customers. This is especially great for non-average sized households as some may need more or less depending on usage or size. This also allows for less food waste among households.

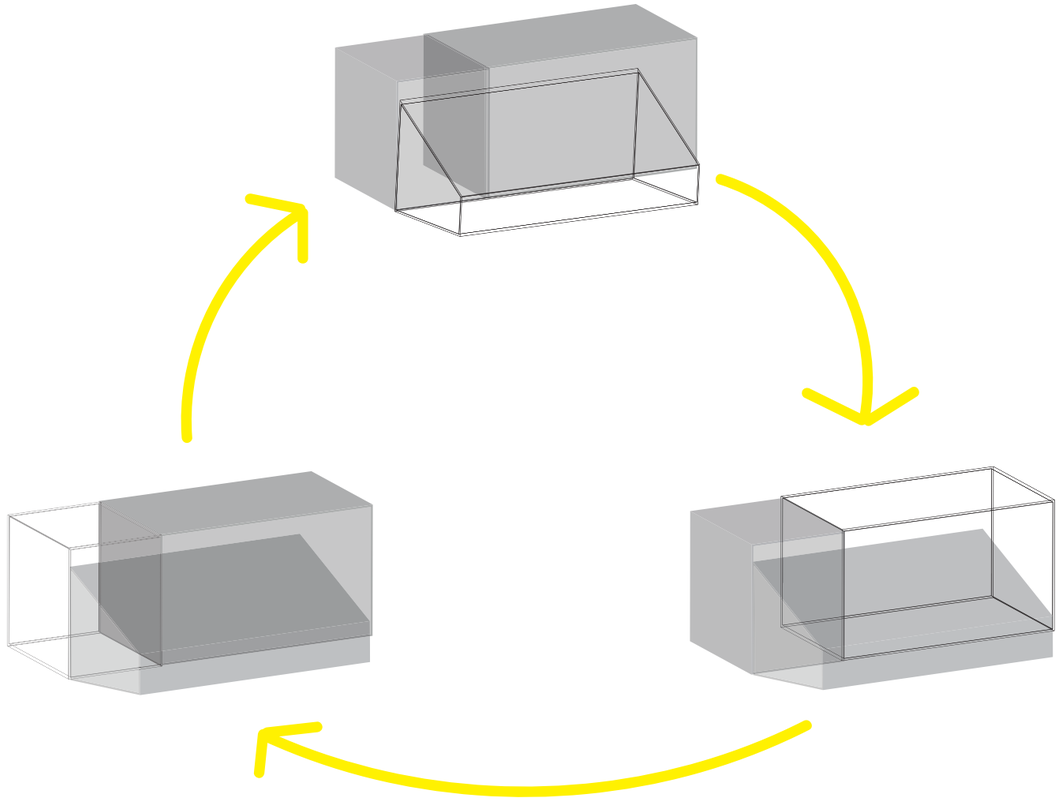


Figure 190 | Life-Cycle Diagram

The life cycle of a product typically involves transportation to and from each stage of development; excavation of raw materials, manufacturing, and distribution, ultimately increasing carbon dioxide levels. In comparison, this typology encourages locally sourced products and produce grown on-site in the deep winter greenhouse. From there, produce is transferred to the retail store, and any unsold products are sold in the addition. The addition houses a brewery, bar, and restaurant, where all its drinks and food are created from the unsold products, changing seasonally. This allows much less food waste and encourages citizens to do the same in their households.

This concept exists through the entire concept of sustainable convenience. Adaptive reuse alters the life-cycle of buildings, cycling through typologies over time. Once a building is demolished, its materials are to be recycled into a new project. Water used for the brewing can be reused in watering the greenhouse produce. The problem unbeknownst to society today is common misunderstanding that all things have a concrete life expectancy. Once a product has been used, its packaging is thrown out. Once a building has been vacated, its torn down. With a little more thought an effort, the reuse of once-considered-useless items can help shape a new mindset about sustainability.

Reduce, reuse, and recycle, an extremely common phase today, is not a list of options. It is a list of steps. First, must reduce what we are consuming, then reuse what we are consuming, and last, if we must, recycle what we are consuming. The hope is to have given you, the reader, fuel to help give your neighbors, friends, family, and community a better understanding of how capitalism is failing the health of the environment. Many small but conscious efforts from citizens lead to larger, substantial efforts from our leaders. Remember, consumers have the power, and we have the power to drive sustainable convenience.

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PREVIOUS STUDIO EXPERIENCE

2nd Year 2016-2017

Fall: Cindy Urness | Tea House | *Meditation space focusing on ritual & site responses*
| Montessori School | *Self-directed education system focusing on parti for design direction*

Spring: Milt Yergens | Dance Academy | *First project using digital modeling*
| Dwelling | *Client-based tiny home design incorporating first attempt at passive design*
| Bird House | *Inspired by Norman Foster, designed for needs of specific bird*

3rd Year 2017-2018

Fall: Mike Christenson | Art Gallery | *Switching projects with fellow colleague half-way through design process*
| Border Crossing Station | *Designed in collaboration with Passive Design class*

Spring: Bakr Aly Ahmed | Affordable Housing | *Sustainable remodel of greek-life housing*
| Culinary School | *Focusing on concrete design*

4th Year 2018-2019

Fall: David Crutchfield | Capstone Project | *Sustainable high-rise design encouraging green lifestyle changes*

Spring: Paul Gleye | Study Abroad | *"Energy Park" urban design project in Brussels, Belgium*

5th Year 2019-2020

Fall: Brittany Dawson | Performing Arts Center | *Adaptive green reuse of Fargo Civic Center*

Jessica Harter
Fargo, ND
[redacted]

Figure 191 | Personal Identification

Master's Thesis | 2019-2020

"Sustainable Convenience"