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RE USE FUL

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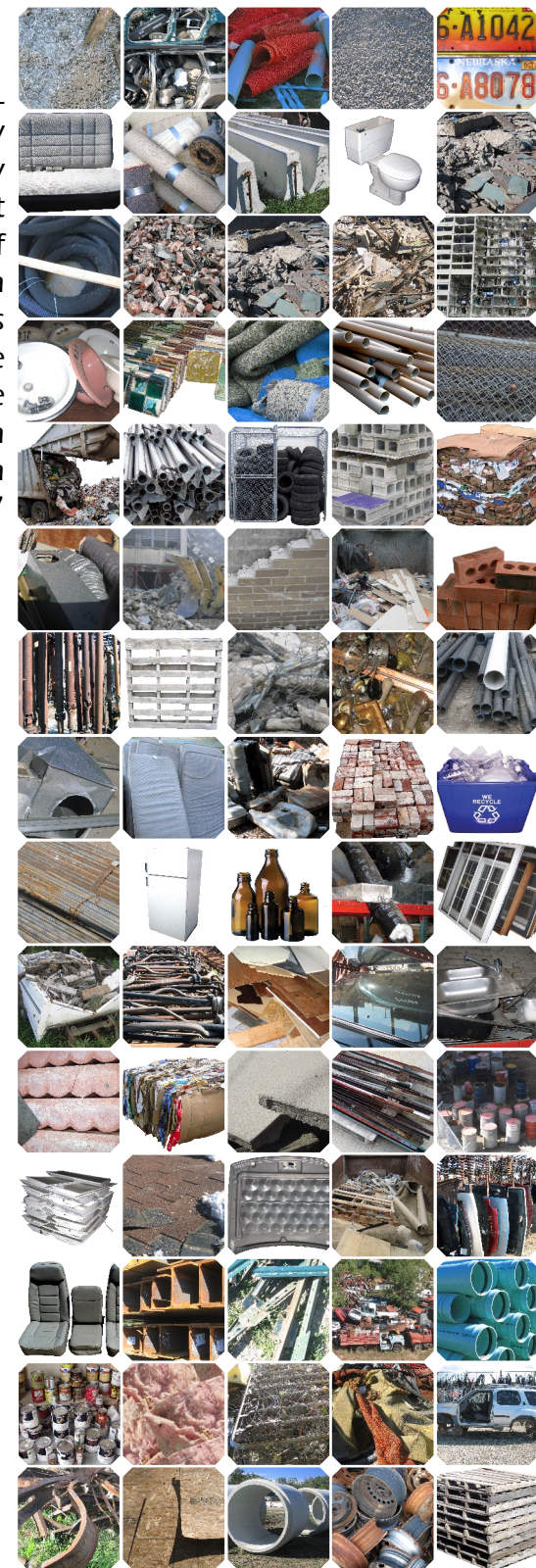
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RE USE FUL
by
Aaron Patrick Tvrdy
A Terminal Project
Presented to the Faculty of
The College of Architecture at the University of Nebraska
In Partial Fulfillment of Requirements
For the Degree of Master of Architecture
Major: Architecture
Under the Supervision of Professor Sharon Kuska
Lincoln, Nebraska
May, 2007



NAAB CRITERIA

This terminal proposal successfully met all NAAB Criteria. My idea is within the scope of the requirements, realistic and controversial. These conditions along with techniques I have learned over the past five years will assist me in satisfying the criteria for a successful terminal project. Some specific examples are listed below.

1. Speaking and writing skills:

Over the past five years I have developed a confident architectural dialogue. After researching the topic, my knowledge in this subject has also grown. I used proper literary resources, such as Turabian, when detailing my final proposal and book of work at the completion of the investigation.

2. Critical thinking skills:

This terminal project is a very legitimate and realistic proposal. The location of this project allows for diverse points of view, as well as requires abstract and unusual solutions. At the conclusion of the year, I implemented my project into the master plan proposed for Cabrini Green.

3. Graphic skills:

Beginning with sketching conceptual ideas, I increased the amount of detail and quality in my graphics as the year continues. Using programs such as AutoCAD, 3D-Viz, Illustrator, Photoshop, Indesign, and other similar programs will develop professional, clean looking drawings.

4. Research skills:

To ensure the appropriate level of knowledge entering the project, I began by gathering pertinent and factual information on my site and topic. This information was gathered from reliable sources based on various points of view.

5. Formal ordering systems:

I have created documents that are simply understood by the average client. Incorporating techniques I learned working in both Architecture and Design Firms over the past several years allow me to organize my presentation boards in a logical manner.

6. Fundamental Design Skills:

With the knowledge base I have developed over the past five years of studio and work, I implemented logical solutions for design challenges. I developed architecture with a specific purpose and program based on the needs of the community.

11. Use of Precedents:

Strong site analysis enabled me to develop a relevant structure that is fitting to the location. I used logical materials based on the geographic location and budget of the project.

12. Program Preparation:

To accomplish the proper program preparation, I spent time on the site speaking with consultants and finding specific information on materials used. The Chicago Housing Authority, IBC, local architects, local inhabitants, City of Chicago-Department of Buildings and Planning, and mentor meetings all contributed to the successful development of this program.

17. Site Conditions:

The site conditions of this project were a challenge to balance due to current transitions and controversy. Urban renewal and planning issues were also a major factor in this proposal.

PROJECT ABSTRACT

My terminal project is an exploration of reusing materials, developed in prototype and implemented into a practical scenario as part of an effort to limit waste in our society.

Limit the amount of waste we produce by reusing materials rather than discarding them.

I believe that the amount of waste we produce is a serious issue that must be addressed through creative reuses instead of larger landfills. I will utilize reused materials to create architectural components that can be adapted and inserted into any design solution. If we can gather materials in bulk that typically get discarded as waste, we can design new architectural components with them. With a clever and creative design approach these materials can be used to create attractive components that can either celebrate or conceal their original identity.

Revitalize Cabrini Green with a new identity and logical master plan.

As a case study to explore this approach I am using the Frances Cabrini Homes in south Cabrini Green, Chicago, IL. This is a low income residential community consisting of 54 two and three story buildings. This site has great potential; its surroundings are currently undergoing redevelopment, it's structures are seeking renovation and it pleas for a new identity. What legitimizes this site is that the federal government determined that the brick and timber structures will receive minor renovation over the next several years. I will use the techniques discussed in the previous bullet to create new architecture and re-identify the Frances Cabrini Homes. This is a three phase project where the solution for one building will be the model for the others to follow. This exploration consists of a library of architectural elements, made of reusable-materials, developed in prototype, and implemented into an existing building shell.

This terminal project has progressed in detail, however the main focus has remained the same. For over a year this investigation into reuse has influenced the final architectural solution.

"Of all living creatures, humans are the supreme creators of waste, yet only recently have we started to think seriously about the ways in which we waste. No longer can we ignore our wastes, send them to Third World countries, or bury them in deep and obscure places, for they will return to haunt us."
- Kevin Lynch

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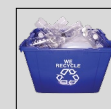
1 Research/Analysis

6-37



2 Conceptual Design

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3 Process Documentation

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4 Final Design Documentation

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5 Bibliography

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RESEARCH

A heavy portion of this terminal project was based on research and precedence studies. Listed below are several topics that were important in leading me to a final solution. These topics are defined in this chapter.

possible materials
prototype investigation
adaptive reuse
construction methods
prefabricated housing
automobile analysis
agriculture machinery
dumpster diving
waste and landfills
freitag bags
rural studio
tip top building
old market lofts
site analysis



POSSIBLE MATERIALS

The possibilities when considering reusable materials are unlimited. Basically anything produced in mass that is later discarded can be redeveloped with a new purpose given some creativity. Everywhere, buildings are being demolished, highways are being torn up and repaved, natural disasters are leveling cities, appliances and automobiles are being discarded for new, and all of these actions are filling landfills when they could be supplying a new generation with unique and valuable materials.

WOOD PALLETS

Pallets are rigid platforms made of wood, plastic, or paperboard used for shipping a variety of products including food, paper, and military supplies. Wooden pallets can be repaired or rebuilt with wood from old pallets.

“Roughly 50 percent of all wooden pallets are designed to make just one “trip,” but many pallets are durable enough for repeated use. Pallets in good condition may simply be reused; wood from broken pallets may be used to rebuild or repair others. There are many independent operations that will accept old pallets for reuse or repair. A standard pallet size is 48 x 40 inches; odd sizes may be difficult to reuse.”

New hardwood pallets sell for about \$9-10. Each year, roughly 500 million new pallets are manufactured in the United States. If pallets are broken or damaged beyond repair, they can be ground up for use as landscape mulch, animal bedding, compost, soil amendment, or core material for particle board. Pallet recycling avoids costs on waste disposal. Pallet recyclers often require 100 pallets or more for pick-up.



Reusable Defined:

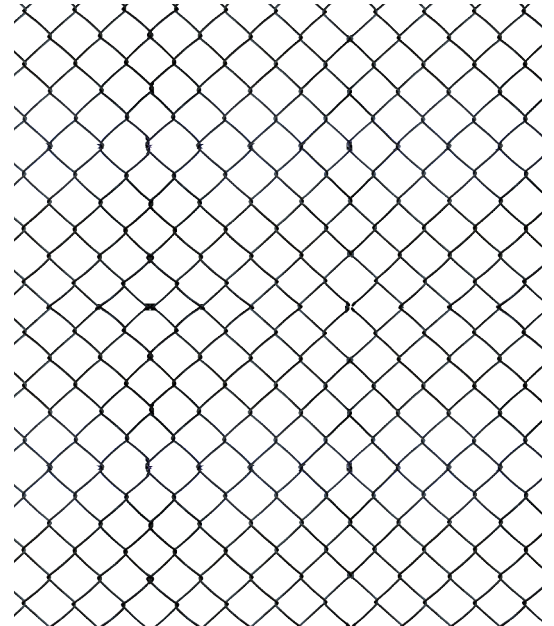
1. To use again, especially after salvaging or special treatment or processing.

The following section begins to gather materials that lend themselves to reuse in bulk, as well as materials that are self-sustaining and environmentally friendly. These materials will be evaluated and processed based on type, function, structural properties, durability, availability, and several other factors. Materials will also be analyzed on the process and cost it takes to reuse them.

CHAIN LINK FENCE

“Chain link fencing has been the product of choice for security fencing for over 60 years because of its strength, corrosion resistance, transparency, ease of installation, versatility, variety of product selection and value. A chain link fence is one of the primary building blocks for a facility’s perimeter security system.” - codewriters.com

Chain link fence is composed of heavy gauge high quality industrial steel. It is designed so that it can be twisted and knuckled so to limit the number of knots and maximize the strength. Chain link fence is predominantly used for security, applied to site perimeters. The fence is easily removed from its original application, allowing it to retain its structural properties. Chain link fence is aesthetically appealing because of its simple design and clean look.



AUTOMOBILE RIMS

Automobile rims are constructed of heavy duty materials, made to withstand heavy loads and repetitive use.

The automobile rim is an extrusion that is butted into itself to form a circle. Most rims are made of aluminum alloy, while some very high-end rims are made of carbon fiber, and some old or very low-end rims are made of steel. Steel wheels were heavy, added unnecessary weight to the car and reduced performance.

As the size of the vehicle increases so do the size of the car rims. Car rims sizes can go up to 27” and beyond as many manufacturers are developing larger sizes for newer jeeps and SUVs. Front Wheel Drive sizes are slightly smaller than Rear Wheel Drive types by about 2 inches.



TIRES

Tire piles are an infamous part of our culture. Their size is incomprehensible and unmanageable. Some tire piles are estimated to contain more than 25 million tires. Most tires are retreaded and reused, some are shredded and recycled, yet others are salvaged and implemented into design. However most tires sit in salvage yards and in piles across the countryside. Tires come in standard sizes based on the diameter and width, from countless different vehicle types. Tires can be reused in both their original form and by stripping them down to their raw materials. The mass amount of tires discarded every year, in itself, lends this product to a new use. The shape and physical properties of a tire can create unique products to implement into design and construction.



INSULATION

Insulation and carpet padding can be created from various recycled materials. The function of carpet padding is to provide a padded base to the floor prior to laying carpet. It is produced of miscellaneous foams and carpet shards. Insulation is predominantly fiberglass. Proper insulation can lower energy uses dramatically, creating a successful sustainable building. Several techniques are used to provide insulation in buildings, to include batts, blankets, loose-fill, spray foams, and rigid panels. Pillows, blankets, car seats, couch cushions, mattresses, packaging foam, clothes, and other products can easily be implemented as insulation materials.



AUTOMOTIVE GLASS

Automobile windshields and windows are available in large numbers. This material is also very easily removed from its original application. Large units can be removed from trucks, buses, trains, industrial equipment, and other larger vehicles. This material is durable and widely available. It can be conformed to several architectural applications with a high rate of success.



CARDBOARD TUBES

Cardboard tubes are predominantly used to package rolls of paper. Larger cardboard tubes are used at printing presses to spool rolls of paper. Standing vertical and filled solid, this material can be rather structural.



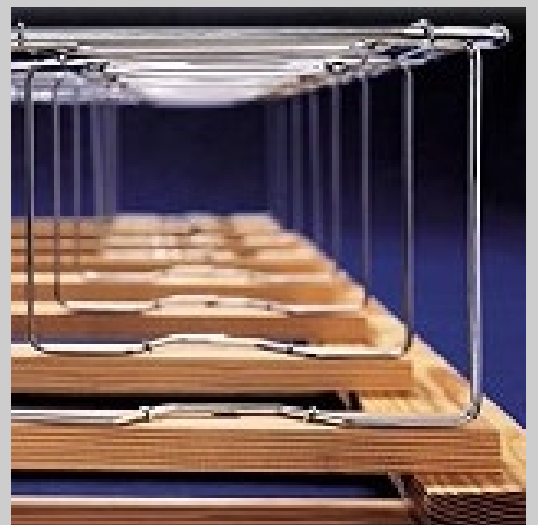
CONSTRUCTION FENCE

Construction fence creates a boundary between construction and public space. The purpose of orange construction fence is to keep people out of the construction site, rolls of fence can be found at nearly every construction site. The color orange will be forever associated with construction. It stands out in color, demanding people's attention. The fence comes in heights roughly 4 feet tall, made of plastic. The fence is made with holes to allow the wind to pass through without letting debris pass through the fence. The fence is reused at multiple locations before being discarded for a new fence. It must be transported along with other tools and machines once the job is completed.



BOX SPRING

Box springs and mattresses have consistently dominated landfills. Box springs are created of steel, wood, or both. They provide a structural frame with flexible guts. They use springs to conform to the contour of the body, however must be structural enough to support the weight of the body. Box springs sit on the frame of a bed, support the mattress, and provide comfort during sleep. The mattress sits on top of the box spring, is more comfortable and much softer. They come in standard sizes determined by the size of your bed frame. They typically come in king, queen, twin and single sizes. A mattress and box spring assembly can easily adapt to architectural practice. The materials in a mattress can be used for insulation while the structure of a box spring can be used as the framework for a cast in place concrete unit.



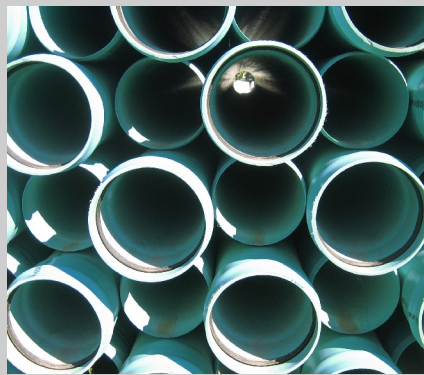
VEHICLE AXLES

Axles, struts, rear differentials, and rocker arms are just several of the structural components that support an automobile. These pieces are constructed of metal to allow for abuse and wear-and-tear. The parts stated above are implemented into the design of every vehicle type. They are produced in unbelievable amounts all over the world, parts are identical based on vehicle type and year. Many parts are reused to fix vehicles that have been in accidents, the others site in salvage yards until they are crushed and recycled with the rest of the car. The parts can be removed from the vehicle intact with minimal labor, or cut free with even less labor. Body damage and failure of complex engine components are the main reason for vehicles being retired, rarely are the structural components affected by the previous problems. A lot of resources including time and money is spent fabricating these parts, it seems a waste to spend even more money returning them back to their raw material when they can be salvaged as a structural building material.



PVC

PVC pipe is used to channel plumbing through the guts of a building. It has been found that PVC contains materials that are hazardous to our health. However, the lifespan and cost of PVC continues to make it a desirable building material. PVC is widely used in all building types, however only .25% can be recycled. Being able to reuse the material in its natural form, in a safe manner, may be beneficial to our environment.



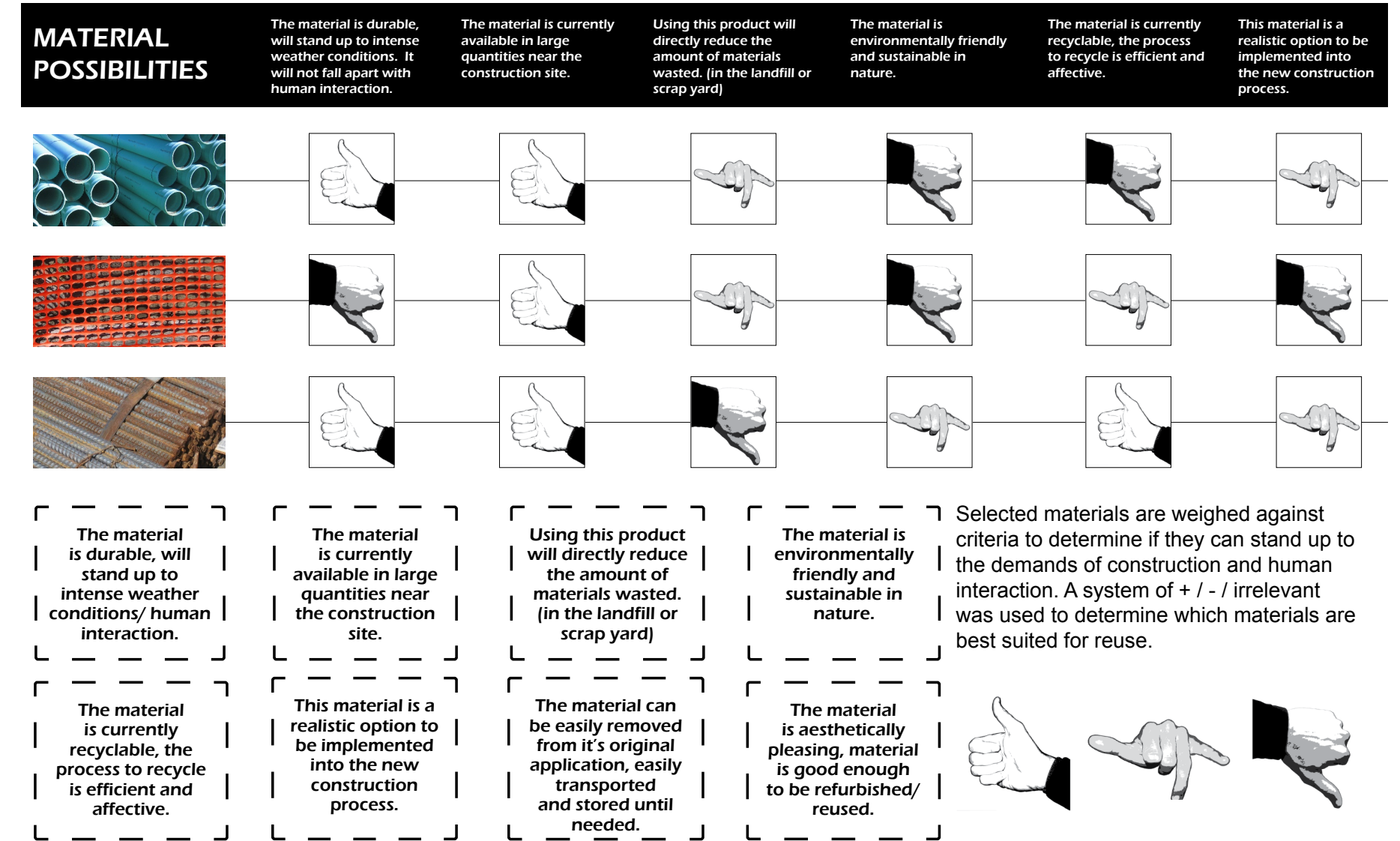
CARDBOARD BOXES

Cardboard boxes are used in virtually every commercial business. Cardboard is a versatile material that is predominantly used to contain products in storage and transportation. Cardboard is currently being recycled in large amounts in mainstream America.



MATERIALS CHART

Above is a sample of the method chosen for analyzing materials. Each item was weighed against a set of criteria to determine the possibilities for reuse. After each material was analyzed I began determining hard structural facts, numbers of materials in specific locations and possible component reuses.



PROTOTYPE INVESTIGATION

Through time, many architects have tried to create pre manufactured structures that can be assembled in a factory or on-site with fewer parts. The rationale behind modular assembly is that you can produce a structure faster, cheaper and with less materials. One major flaw that many of these designers have overlooked in the past is a key characteristic of our human nature. We as humans expect some sense of individuality or customization. Many of the previous pre manufactured buildings failed because they manufactured a complete building with little variations and options to customize.

The question that I ask myself is, can large building components, much like automobiles, be constructed off-site in controlled conditions and still allow for customizing by the owner? Modular production has been adopted by the automobile and ship industries, and implemented with a very high rate of success. Creating buildings in chunks made off-site from reusable materials can limit cost, parts, and time. This strategy will allow for building components to be constructed and interchanged as wholes.



Prototype Defined:

1. The original or model on which something is based or formed.
2. An original type, form, or instance serving as a basis or standard for later stages.

“There is no reason why all levels of architecture should not take advantage of the process that enable us to build faster, cheaper, and with the potential for higher levels of quality.”

ADAPTIVE REUSE

One of the most vital subject areas within my thesis project, one I must have a complete knowledge and understanding of, is adaptive reuse. In order to have this understanding, I must study, tour, and analyze several adaptive reuse structures. The idea of adaptive reuse has always made a great deal of sense to me. The amount of money, time and materials saved using adaptive reuse techniques is well worth the effort it takes to understand the structure being retained.

“Adaptive Reuse of existing structures offers many opportunities to return value to outdated, even contaminated, structures while enhancing the historic fabric of the neighborhood. By retrofitting the uses of the building to fit the needs of the community, it ensures that the structure will continue its long and productive life. Carefully working through the challenges inherent in these projects can result in great rewards.” - Celeste Allen Novak

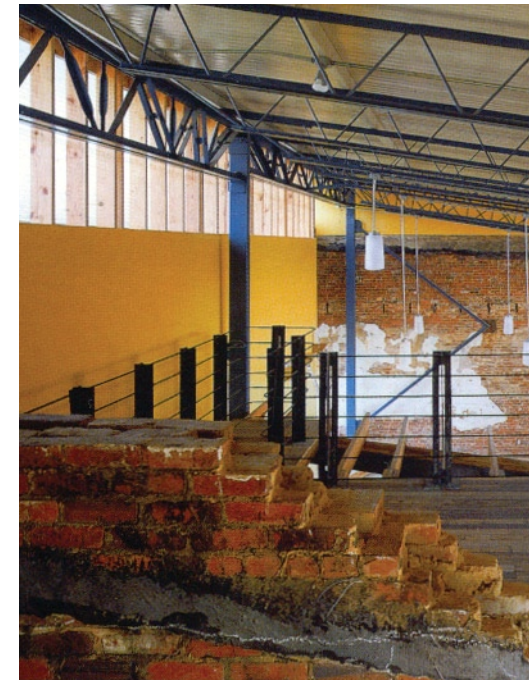
“Architectural salvage yards feed the demand for old building parts in building renovation, especially antique fixtures, ironwork, and hardware, or bricks, moldings, doors, and windows.”

Akron Boys and Girls Club, Alabama

This small project is a perfect example of a new program complementing an old structure. A new roof was applied to the original brick shell.

Soldier Field, Chicago

The adaptive reuse of Soldier Field preserved the historic exterior and colonnades of Soldier Field but replaced most of the existing interior with a 61,500 seat facility. The improvements reclaimed 17 acres of paved surface as parkland. Other infrastructure improvements included: a children’s garden, a sledding hill, areas for outdoor exhibits, new roads, and pedestrian and bike trails.



“Most buildings were designed to meet the building code in place at the time of construction. Codes only certify the minimum requirements for safety. To change a building’s use, a structural analysis of the strength of the existing materials must be complete.”

CONSTRUCTION METHODS

In order to design working models and drawings of architectural elements I must have an understanding of how materials will attach to each other. Working hands-on with actual materials will help the exploration process. I am going to develop a library of elements that will be created using salvaged materials. Components that lend themselves to further investigation may actually be detailed in working drawings and prototypes may be built.

The benefit of creating architectural components in controlled conditions will save time, materials and money. Building materials could be shipped pre manufactured in to components rather than as individual units. This would allow for a quicker construction while adding individuality in the joints between larger elements.

Elements of construction and design that lend themselves to being built of reusable materials include, staircases, framed walls, trusses, columns, windows, doors, bearing walls, fixtures, sheathing, insulation, ventilation, as well as various other components.

“Demolition is usually an afterthought, a minor event between site acquisition and new construction. However, it has steadily become more difficult due to the reinforcement of the materials used to create buildings. Demolition contractors plead that building designers consider the eventual break-up of their fabric, and file specifications for its dissolution as well as its creation.”

“The ship, plane, and car are framed incrementally, and each increment is completely fitted out with systems, exteriors, and finishes, either in a remote location or near the site of final assembly, as grand blocks, modules, or chunks. Relatively few parts are installed during the finale assembly; most are completed elsewhere and transported to the construction site for joining to other grand blocks, modules, or chunks.



PREFABRICATED HOUSING

In order to design working models and drawings of architectural elements I must have an understanding of how materials will attach to each other. Working hands-on with actual materials will help the exploration process. I am going to develop a library of elements that will be created using salvaged materials. Components that lend themselves to further investigation may actually be detailed in working drawings and prototypes may be built.

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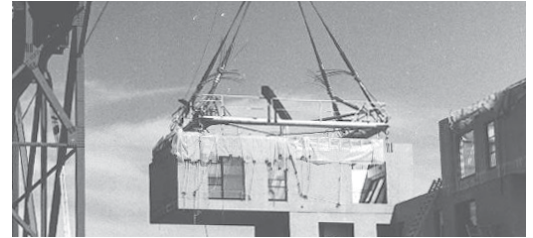
GLIDEHOUSE

The Glidehouse™ modular home is a modern home designed by Michelle Kaufmann Designs for clean, simple living in collaboration with nature. It offers an affordable, low-maintenance, well-designed green housing alternative. Designed for clean, simple living, the Glidehouse™ modular home allows some customization by the owner. The Glidehouse™ is built in a factory, using the most modern and environmentally-friendly building methods and materials. It can be built in as little as eight to fourteen months, at a cost comparable to or below traditional site-built homes.

HABITAT 67'

“This extraordinary housing development comprising 158 units of from one to four bedrooms, with many small gardens and decks, was planned as a prototype for a system that would streamline the building process and cut costs. It was assembled from 354 reinforced-concrete building modules, ingeniously stacked so as to give privacy and views to each unit. Unfortunately, construction costs proved to be prohibitive.”

— Sylvia Hart Wright



“The difference today that will enable modularization and mass production to succeed is its ability to be customized. No longer does mass production have to produce the same repeated product; now flexible production methods allow for customization on a large scale.”

AUTOMOBILE ANALYSIS

With an interest in the adaptive reuse of salvaged materials in architecture, this journal is a prelude to my thesis project which incorporates reusable materials into adaptive-reuse structures.

The purpose of this document is to address the issue of waste in our society. We are a culture that puts a major emphasis on material items. This trend leaves us with excess materials that have no use other than to rot over time. A lot of these materials can be broken down and reused in bulk. Other materials take time and money to be manipulated and reused, it is important that we differentiate between materials that can be recycled, and materials that will no longer serve a purpose in everyday life.

The challenge of this document is to determine if something as complex as an automobile can be broken down and recycled into a non-automotive application after it has finished contributing to society. If a motor vehicle can be reused in ways outside its original intent, maybe other products can do the same. I will be analyzing motor vehicles over the last several years through text, diagrams and images to determine whether or not they can be logically reapplied in future building construction.



AGRICULTURE

A material often overlooked in rural America is farm machinery. Site specific materials such as farm equipment, discarded pasture materials, semi trailer lots, and other site specific materials could be utilized to create unique character inexpensively.



DUMPSTER DIVING

Even in a small town like Lincoln, NE the opportunities for limiting waste could make a big difference over time. Below are several images of sites I have photographed throughout the course of the year trying to get an idea of excess materials in the region.





CASE STUDIES

TIP TOP BUILDING

The Tip Top building was designed by Albert Kahn and built in 1916 as a Ford Model T factory. The structure is a combination of cast-in-place concrete and brick. At the time little was known about the structural properties of cast-in-place concrete. After core samples were taken, engineers determined that the structure could support much more than originally thought. This structure has a rich history, after it's days as a model T manufacturer it was bought by Tip Top cosmetic company that produced hair products such as the bobby-pin and barrette. Later Western Electric and Goodmore Tires Company used the factory for storage. Eventually the building was bought by Inplay, a sports bar and arcade chain out of Illinois.

When the project began the building was adjacent to a hobo camp, there were many squatters that called the building home. Working in collaboration with Nustyle, Alley Poyner, and Archrival the building was adapted into mixed use commercial and residential. The buildings program consists of a sports bar, arcade, conference rooms, 150 parking stalls, and 95 market rate apartments. The buildings skin was renovated and windows were replaced, however the structure remained exposed raw and sealed. Much of the original character remained, two of the four stair shafts were reused, the elevator head house was converted into a loft for the owner and the water tower remained on the roof.

Developer and Contractor: Nustyle
Architect: Martin D. Kluck, Alley Poyner Architecture
Branding: Charles Hull, Archrival

Project: Tip Top Building
Address: 1524 Cuming Street, Omaha, NE
Number of units: 96
Type: Market Rate Housing & Commercial
Commercial Square Feet:
Completed: 2005

CASE STUDIES

OLD MARKET LOFTS

This project was the renovation of four buildings comprising one square block of the Historic old market in downtown Omaha. These buildings were built in the early 1900's as industrial warehouses and factories. The renovation took place in four phases, these buildings were converted from industrial warehouses to mixed use commercial and residential during the late 1990's and early 2000's. These buildings structure is a combination of heavy timber, cast in place concrete, and brick. Because of the history of these buildings, they were placed on the Historic building registry and thus lend themselves to several tax incentives.

The reason this adaptive reuse project was so successful was due to many simultaneous additions and renovations in the Old Market area. The Omaha Park 4, adjacent parking structures, and 10th street renovation all added accessibility and parking to the four building renovation. The adaptive reuse of these old factory structures was quickened due to pressure by the Omaha planning department. The structures served a minimal task for the amount of very valuable space they consumed. When the project began, the factory buildings were active, being used to store thousands of bottles of Tide brand fabric detergent. The southernmost building (formerly the butternut coffee building) once stood two stories tall, later five stories were added. In order to do so, they had to beef up the columns. Like most adaptive reuse structures, the process to cleanse the building was fairly typical. Asbestos, and lead paint were cleared, the building was gutted, core samples were taken and windows were replaced.

Upon adaptation this complex featured 58 unique floor plans, an indoor parking garage, a state of the art security camera, a rooftop deck with spa and pool, fitness center, community room, a 6 story atrium with waterfall, glass elevators, as well as numerous shops and restaurants. After all was said and done nearly 303,530 square feet were renovated and reused.



Developer and Contractor: Nustyle
Architect: Martin D. Kluck, Alley Poyner Architecture

Project: Ford Warehouse Apartments
Address: 1024 Dodge Street, Omaha
Number of units: 59
Type: Market Rate Housing & Commercial
Commercial Square Feet: 13,000
Completed: 1998
Total Cost: \$8,274,000

Project: Old Market Lofts Phase I & II
Address: 1023 Jones Street, Omaha
Number of units: 182
Type: Market Rate Housing & Commercial
Commercial Square Feet: 28,000
Completed: 2000
Total Cost: \$25,000,000

Project: Old Market Lofts Phase III
Address: 1020 Leavenworth Street, Omaha, NE
Number of units: 84
Type: Market Rate Housing & Commercial
Commercial Square Feet: 15,000
Completed: 2002
Total Cost: \$12,000,000

PRECEDENTS

FREITAG BAGS

Research on the topic of reuse is not limited to previous architectural projects. Many aspects of life have successfully taken previously wasted materials and found a new use for them. The company *FREITAG* has taken discarded truck covers and seat belts to create very fashionable and expensive bags.

The purpose of this product is to illustrate how materials can serve a different purpose in their afterlife. *FREITAG* didn't use old bags to make new bags, they sought to use an entirely different material, and in doing so created a very successful driving concept for their business. They have applied the same techniques to several bag types, as well as ipod cases and other accessories. These bags work because they are marketed to a young hip audience.

This model can be directly transferred to replacement architectural materials, we must look beyond the typical demolition rubble to other aspects of waste in order to make a difference and break into something new.



PRECEDENTS

Rural Studio - Samuel Mockbee and an Architecture of Decency

By Andrea Oppenheimer Dean and Timothy Hursley

This text refers to the Auburn University, Rural Studio project ran by the late Samuel Mockbee in Hale county, Alabama. Architecture students would spend a year working with a lower class family in rural Alabama, these students would use reusable materials, and salvaged parts with a limited budget to create a livable space for people who had no resources to help themselves. Mockbee once said, "the architectural profession has an ethical responsibility to help improve living conditions for the poor", and the profession should "challenge the status quo into making responsible environmental and social changes."

Wasting Away

By Kevin Lynch

This text was highly influenced by Kevin Lynch of MIT, it was produced after his death in 1984 by a former student, Michael Southworth. "This book is not a warning, but a plea to acknowledge most waste and the processes of wasting as valuable and necessary in the life of people, things, and places." It is about the phenomenon of waste in our society, it details the health and safety, efficiency, and adaptability when dealing with waste.

refabricating ARCHITECTURE - How Manufacturing Methodologies Are Poised to Transform Building Construction

By Stephen Kieran James Timberlake

Among many other issues, this text spells out the idea of modular construction. This text draws parallels between the construction and development of airplanes, ships, automobiles and buildings. This book compares the modern architect and process engineer, claiming the architect remains content in focusing on the appearance of things, while the process engineer goes deep beyond the appearance, into a complete life-cycle of products. "While the world of architecture has grown ever more wasteful, disposable, splintered, and specialized, the process engineer flourishes in the fluid integration of makers by dissolving, not reinforcing, boundaries between thinkers and makers."



SITE ANALYSIS

CABRINI GREEN

Through site analysis I will create architecture that is not only fitting to a site, but also fulfills a vital role in the community. Site analysis and selection will help guide the program of my terminal project. After examining the site I will be able to determine the most valuable resource for the specific community. I have taken the opportunity to work outside Lincoln in a larger urban setting, I believe a larger city will allow for more intense research and diverse conditions.

I have researched the area of Cabrini Green in Chicago. It has all the elements to make for a very intriguing site and is currently the topic of much debate and controversy. Cabrini Green is a public housing development on Chicago's North Side, bordered by Evergreen Avenue, Sedgwick Street, Chicago Avenue, and Larrabee Street. At its height, Cabrini Green was home to 15,000 low-income people living in mid and high-rise apartment buildings. Over the years, gang violence and the city's neglect created terrible conditions for the residents. It was not long before the name "Cabrini Green" became symbolic of the problems associated with public housing in the United States. However, this once blighted neighborhood is now ripe with new construction. While buildings in the Cabrini Green housing project are being torn down and the residents scattered throughout the Chicago metro area, this "prime real estate" is one of the hot spots for new, high-end residential housing.

Cabrini Green's is located close to Downtown Chicago, (only one mile northwest of the Magnificent Mile) drawing high-end clients and young professionals to the area. Currently large-scale, mixed income, residential structures are being constructed in the area. This influx of population will require new infrastructure and allow for urban renewal within the constraints of one of the nation's major cities.

Due to vast amounts of buildings being demolished, there will be a large amount of potential reusable materials in the area. If a valid effort is made to keep the original structures, and to work with many of the original materials, the community will maintain its roots and gain revitalized living conditions and economy.



"Cabrini-Green residents were well aware of their coveted property. It had always been attractive because of its proximity to the Brown Line, Michigan Avenue, the Loop, and expressways."

"The neighborhood surrounding Cabrini-Green has gone through a dramatic metamorphosis, fashioning it into one of the city's fastest-growing and most-attractive neighborhoods."

"The plan is to replace all of Chicago's projects with beautiful new "mixed-income" developments - rich and poor living side by side. So what do you get when you take the country's most disadvantaged families, add in some young professionals, and build them a brand new neighborhood? Chicago is finding out. All over Chicago, they're tearing down the cinder block dinosaurs known simply as "the projects." They have been a disaster - with generations of children raised in the squalor. But by the end of 2009, all 53 of Chicago's public housing high-rises will be gone."



SITE ANALYSIS

POSSIBLE SITES

218 HALSTED
Contractors Access Equipment Inc

The building shown below is currently being renovated at the corner of Crosby and Oak street. It is a three story brick structure with a unique floor plan. This building has been purchased by a church and looks to be a combination of church and classrooms.



CHURCH
Evangelical Church in south cabrini

There are several churches within cabrini green that appeal to the current demographic. With many new residents coming in, these churches may move along with their residents. These buildings remain structural and could be used with a different program. However, a church will look like a church regardless of what you do to the inside.



SCHOOLS

The addition of new schools in the area has left several old schools without a program. Walter Payton High School, Jenner Elementary School, Franklin High School and Manierre High School have all been built or seen renovations in the current site renovation. One of the abandoned schools is being leased by the Chicago Police Department for training, the other sits empty. These schools could be an interesting exploration of reuse, however because of their size and layout limit the possible new programs.



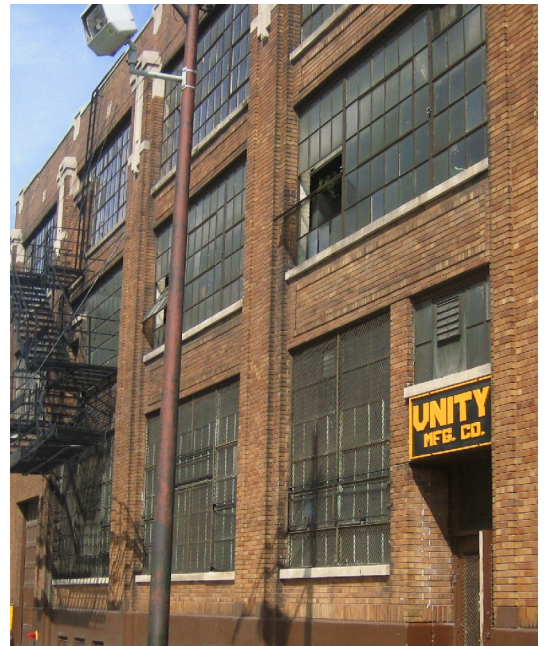
WHITE WAY SIGN COMPANY
1401 Clybourn

This two story factory built in 1930 is located at Larrabee and Clybourn. The current resident is looking to build elsewhere which leaves this large space vacated. This factory uses a variety of brick, stone, and concrete, with windows and glass blocks. The building is in poor condition aesthetically, a major renovation must be undertaken before this structure will be ready for a new program.



1260-1266 CLYBOURN
Unity Manufacturing Company

This factory was built in three stages from 1927 to 1947, it consists of 148,000 square feet with several interior courtyards. This building sits on a perfect site adjacent to the grocery store and several new developments. The current tenant produces aftermarket vehicle lighting and has no intention to leave the building. However, new development is bearing down on the site from all sides and there will be pressure put on the owner to move out of the building.



SITE ANALYSIS

POSSIBLE SITES

FRANCES CABRINI HOMES

This residential development consists of 54 two and three story brick structures. These row houses built in the early 1940's appear the same on the interior and exterior. The federal government has determined that these structures will be renovated rather than demolished.

The oldest housing on the site dates from 1941, not long after the Housing Act of 1937 that signaled the first involvement of the federal government in funding housing for what there then called the deserving poor. Frances Cabrini Homes was named after a soon-to-be-canonized Chicago nun, famous for her charitable work, and it was built on the site of a notorious Italian-American slum known as Little Hell.

The new housing consisted of almost 600 dwellings in two- and three-story brick buildings; the total area of the project was relatively small: sixteen acres. The unassuming architecture of these row houses, every dwelling had its own front door on the street was not substantially different from the popular urban housing then being built by the private sector in the surrounding city. The brick facades even incorporated some decorative elements. The overall design, like that of most prewar public housing projects, is modest but unremarkable; it was taken for granted that poor people would prefer to live lie everyone else.



SITE ANALYSIS

MASTER PLANNING

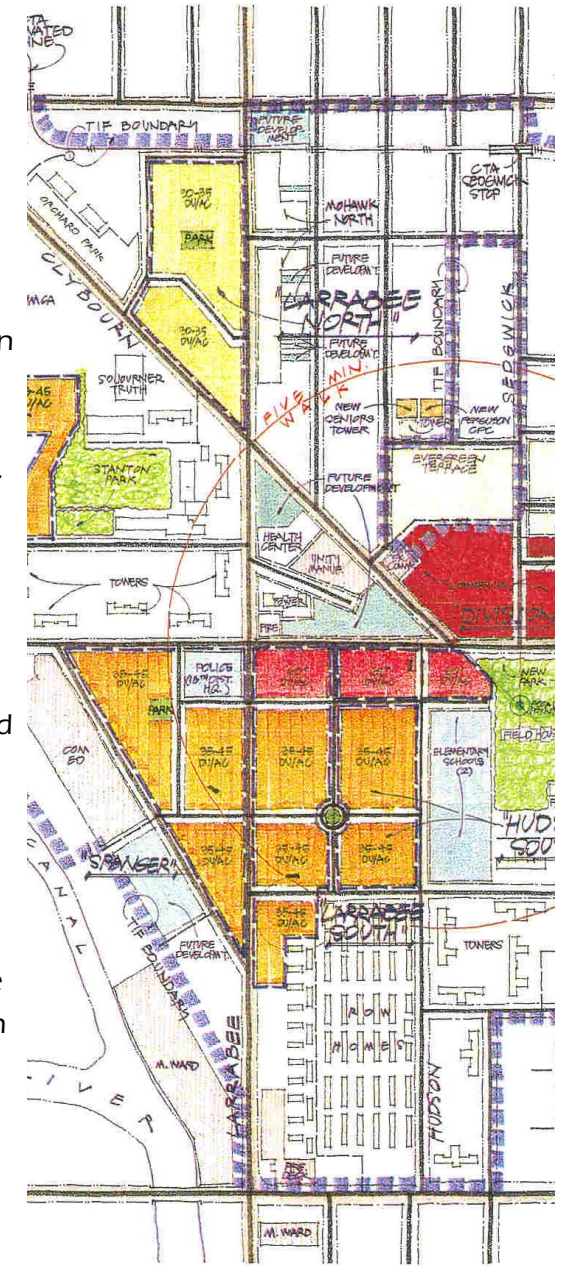
In late 2004, the Chicago Housing Authority (CHA) initiated a public relations campaign to put a new face on their plan for transformation, a plan that drastically reshapes the state of public housing in Chicago. Currently, massive organizational restructuring within CHA and the tearing down of all high-rise public housing buildings. The plan for transformation is a \$1.6 billion blueprint that includes the demolition of 14,000 public housing units and the displacement of over 20,00 people.

Today, Cabrini-Green is a high-density combination of high-rise buildings and row houses. There has been plans for the Cabrini Green area for several years. The current plan for the renovation of the site is called HOPE IV.

The neighborhood surrounding Cabrini Green has gone through a dramatic metamorphosis, fashioning it into one of the city's fastest growing and most attractive neighborhoods. The radical pendulum has swung from black to white. Property has transferred from poor renters to middle and upper class homeowners. Developers have transformed blighted property and vacant lots into luxury condominiums and well know retail outlets.

Cabrini Green is currently being rapidly developed, forcing residents off-site and causing tension within the city. Even in the year that I spent studying this site, I have noticed many new structures, as well as more people on site.

In meeting with a member of the Chicago Planning department personally in charge of Cabrini Green, the master plan is constantly changing and money is short. Many good things are happening with new, youthful businesses moving to the area, however with every new person in the site, a current resident is displaced.





SITE ANALYSIS

CURRENT DEVELOPMENTS

As part of site analysis, I research past, current and future developments within Cabrini Green and its surroundings. I interviewed with several new housing developments within Cabrini, including The Parkside at Old Town development. This future residential development is located directly north of the Frances Cabrini Homes. From the first day I was on the site to the final day, this project went from nothing more than a trailer house used for a leasing office, to breaking ground and framing several of the phase I townhouse buildings.

HELMUT JAHN RESIDENTIAL

A sustainable Helmut Jahn housing structure is virtually complete, located at Clybourn and Division in the heart of Cabrini Green. This structure is a benchmark for the community, proving that the revitalization is moving forward at full speed. I can speak first hand in saying that this structure is out of its element. Surrounded by condemned high-rise buildings, this modern form with wind turbines sticks out like a sore thumb.

HIGH-RISE DEMOLITION

On my second site visit, I watch in amazement as a 13 story concrete monster was being demolished by wrecking ball. No more than a hundred meters away, a similar building stood with boarded up windows, yet many faces watched from behind the chain link from their condemned rooms. In speaking with one of the local demolition men, it takes about two months to tear down a high-rise. He told me, when the project begun they were getting shot at from the adjacent buildings in the middle of the afternoon as they did their job. He grew up in the development and said that this was something that should have been done years ago. His only regret was that now, "all these monsters will be spread out across the city," referring to the criminals that sold drugs out of the buildings.





FAR LEFT

Site image shows the proximity of Cabrini Green to downtown Chicago and the access of the train system.

ADJACENT

This site analysis shows the current developments on Cabrini Green along with services and amenities on the site.

NEXT LEFT

Site image shows Cabrini Green as it existed in 1999

NEXT RIGHT

Site image shows the development on site up to 2005



CONCEPTUAL DESIGN

The conceptual design phase of this project was heavily influenced by the research conducted. Throughout the conceptual phase, research continued to be gathered on materials, components and the site.

material overlays
material exploration
component mock-ups
new processes
housing requirements
hand sketches



MATERIAL OVERLAYS

As a brainstorming exercise in the conceptual design phase I began overlaying materials to determine possibilities. Realizing that many waste materials did not have all requirements needed to transfer directly to architecture, I overlaid structural, insulation, sheathing, weatherproofing, functional and aesthetic materials. Many materials were able to have multiple uses, while others were discarded. Within this phase, nothing was beyond reason, I remained as creative as possible while considering reuses for possible materials.

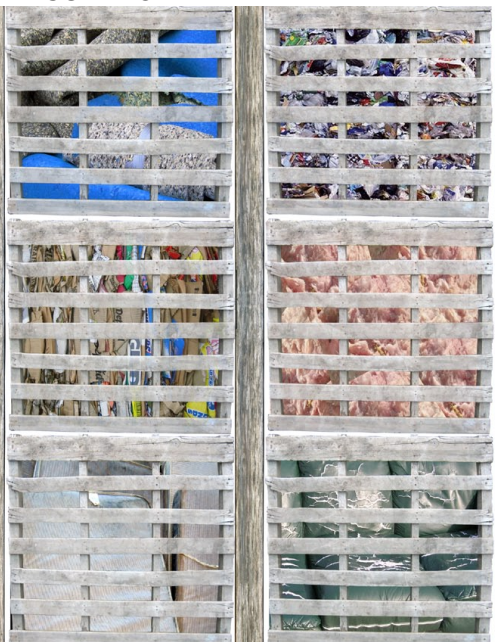
SHEATHING



STRUCTURAL

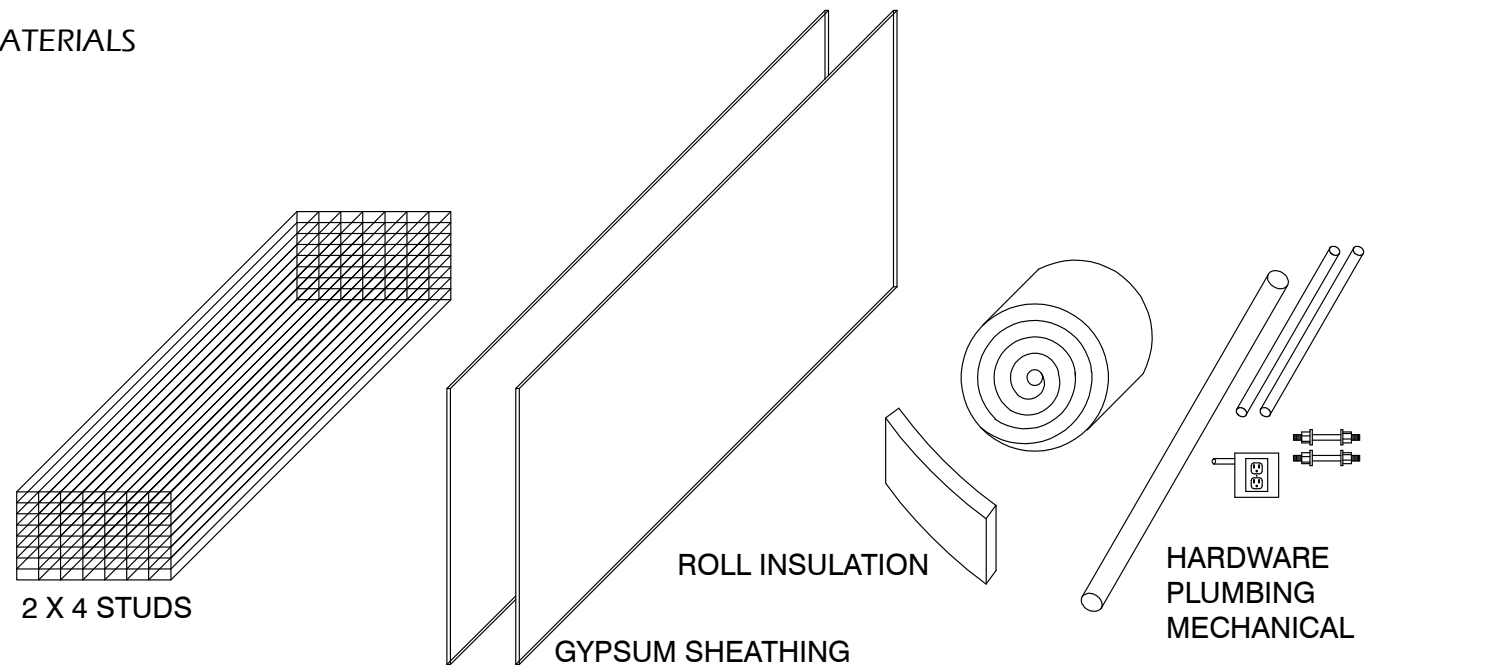


INSULATION

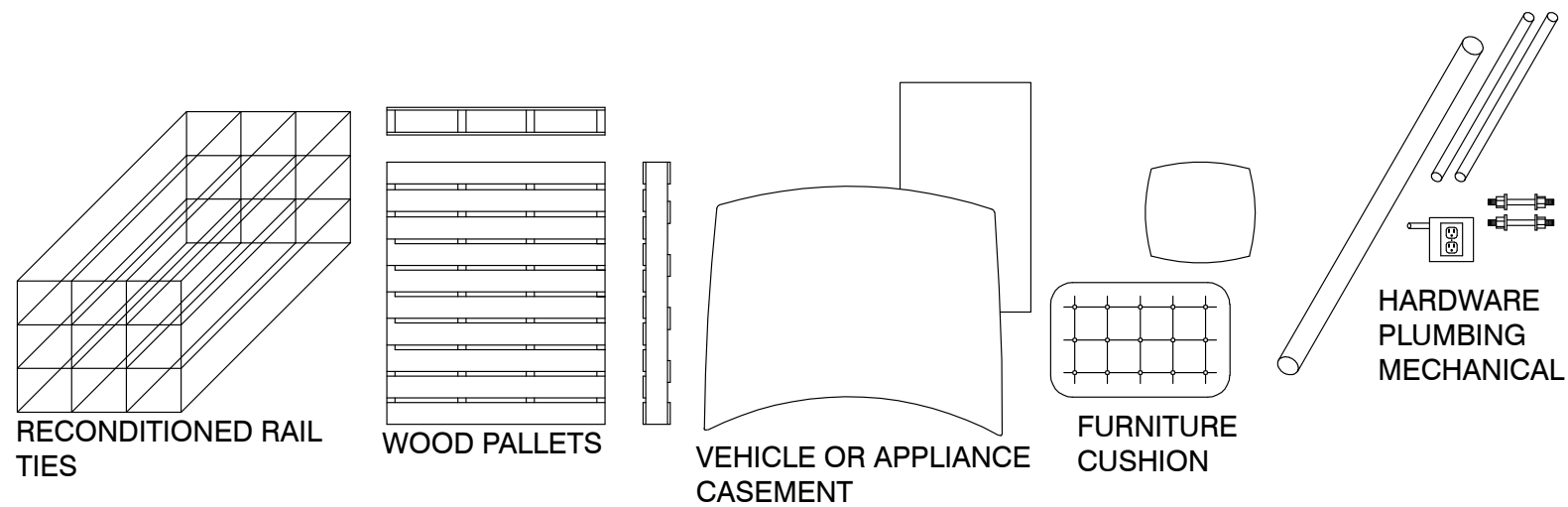


MATERIAL EXPLORATION

WALL MATERIALS

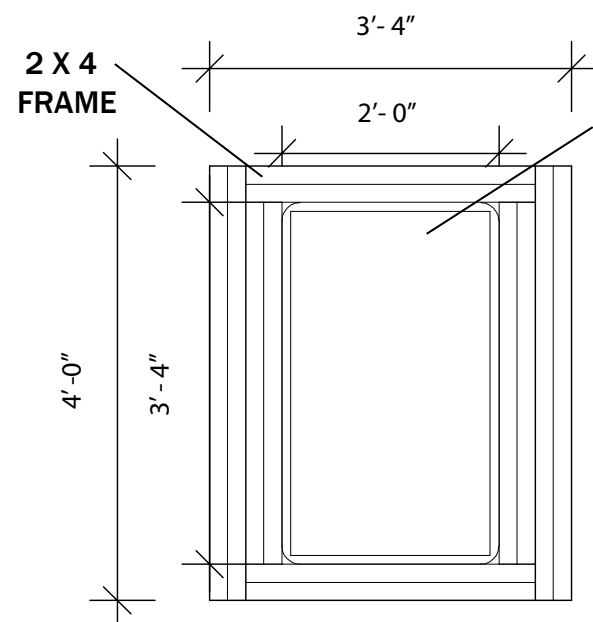


EXISTING METHOD

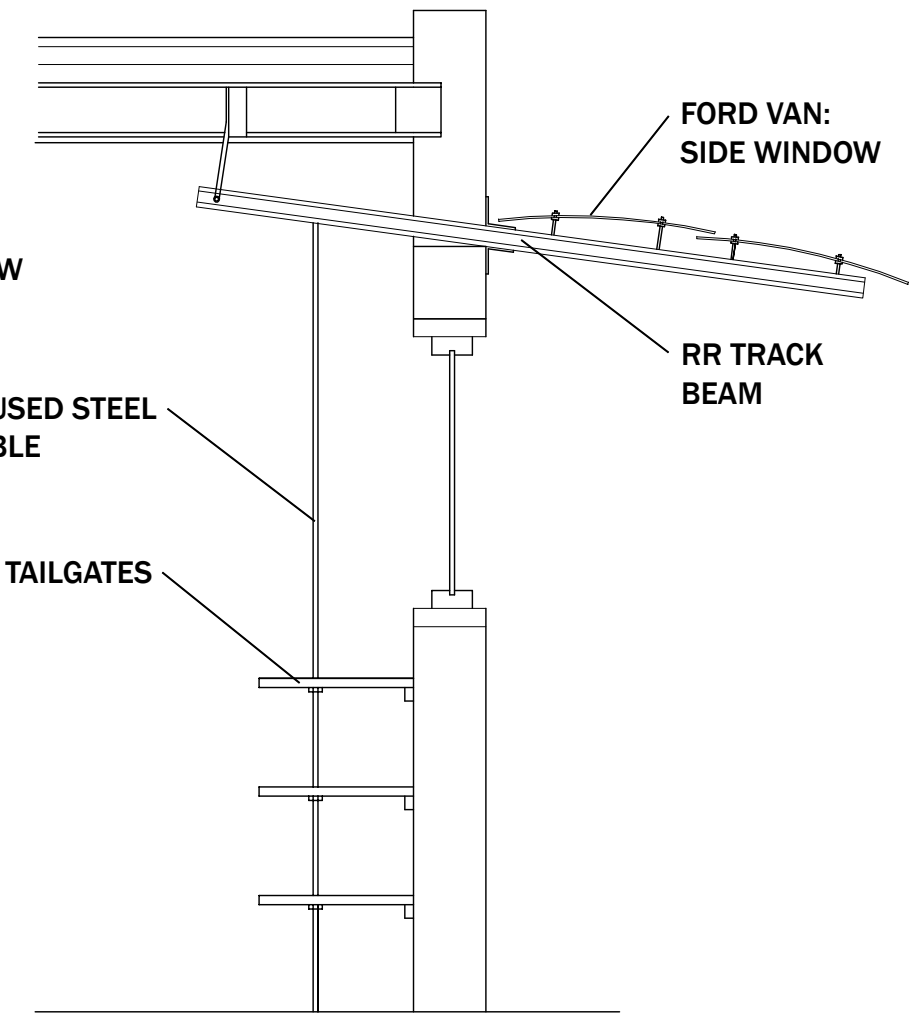


ALTERNATE METHOD

COMPONENT DESIGN EXPLORATION



WINDOW



AWNING / SHELF

COMPONENT MOCK-UPS

CARDBOARD TUBES

Cardboard tubes were used for several components including counter tops, doors, wall systems, and windows. These tubes were cut into two inch sections and holes were drilled at 90 degrees to string rope or cables to connect them together.

LAMINATED CARDBOARD

One method of reusing cardboard was to cut it into strips and laminated it together into a sheet using some form of adhesive. This layering technique would be used to make the cardboard structural, flexible and light weight. It could be used for many of the same applications as the previous technique.

LAMINATED WOOD

This table top was created by splicing wood strips taken out of the shop trash can. After all the wood was cut to similar widths, it was jointed together, sanded and finished. This technique creates interesting patterns of wood while limiting waste. The same technique could be applied to make wall cabinets and counter tops.



PALLET WALL

The wood pallet mock-up was used to give this project a sense of scale. The standard wood pallet is 40 x 48 inches. I sheathed this pallet in drywall on one side and old clothing on the other to illustrate the how this structural material could be celebrated or hidden from the human eye.

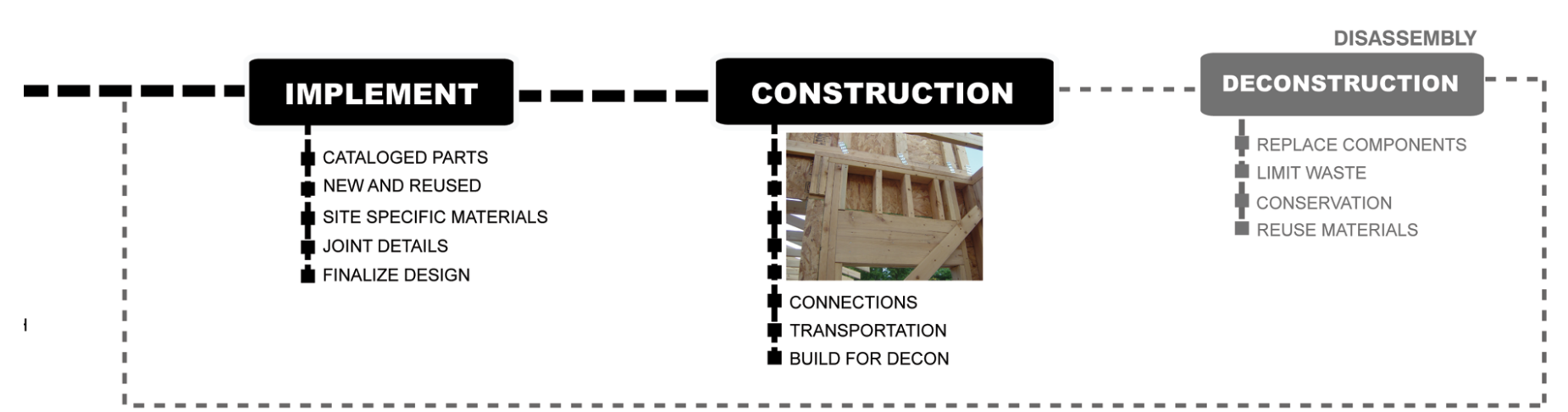
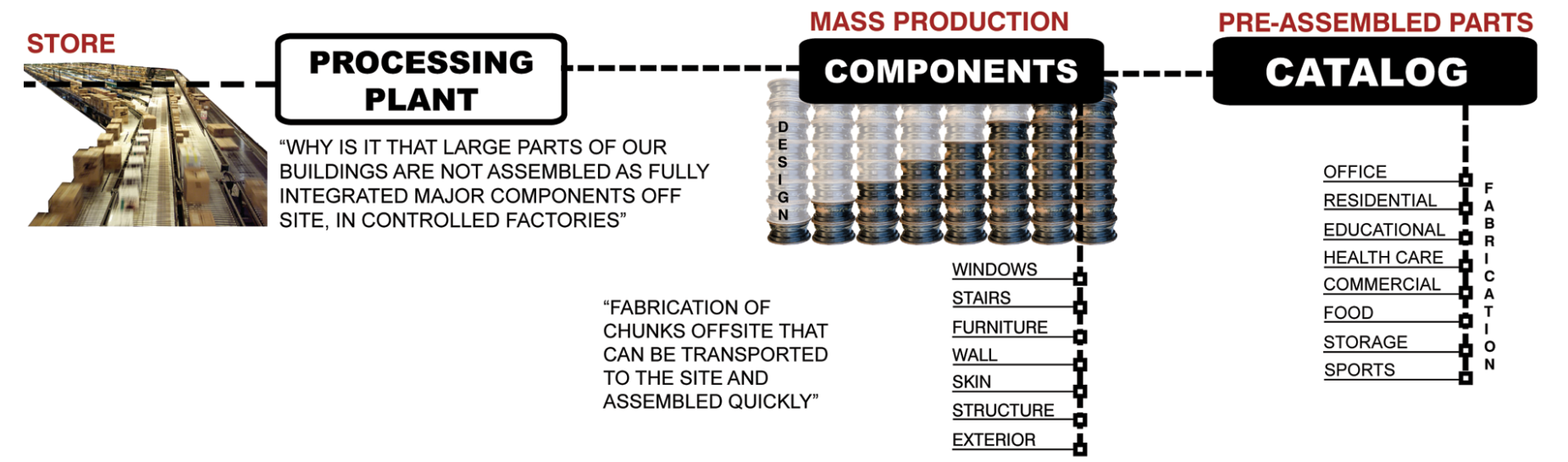
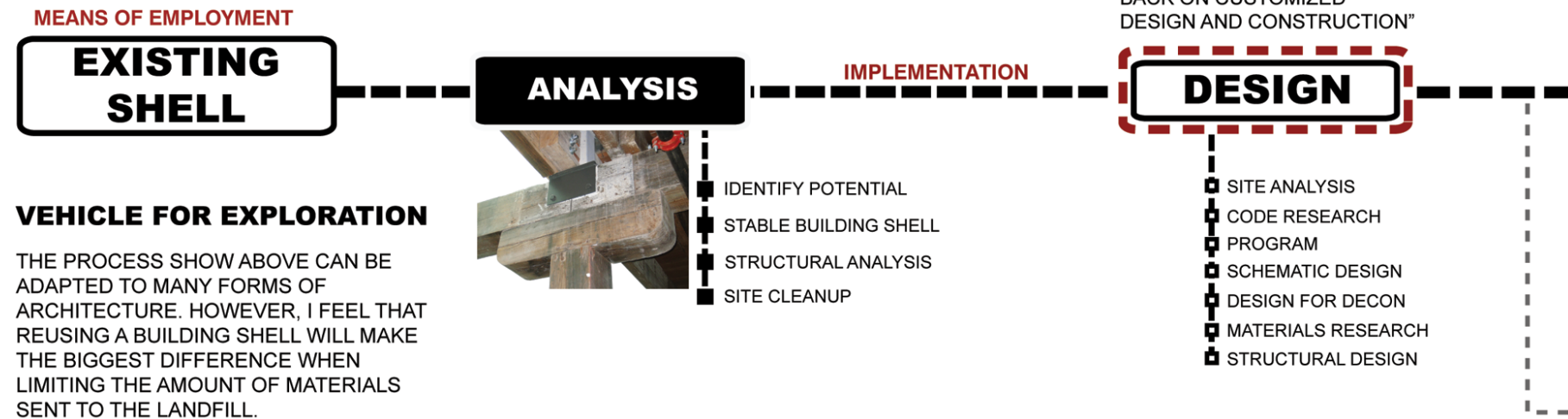
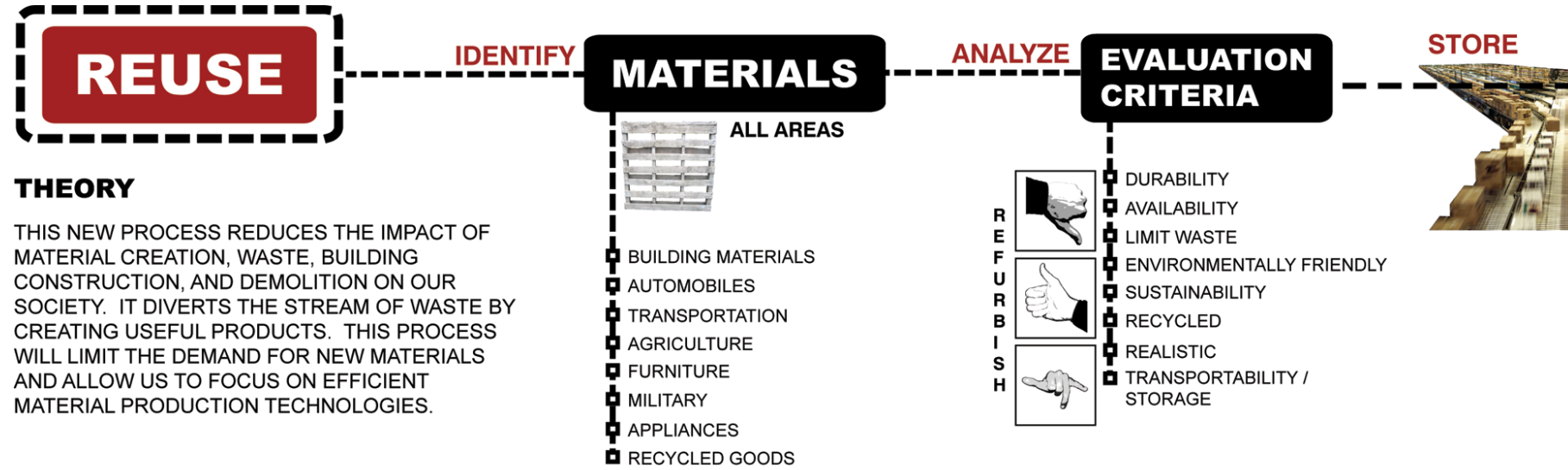
CAM SHAFT TABLE

Give an old cam shaft, transmission gear and a pulley I made a end table that was a great conversation starter. Because making footings and doors were not very practical I experimented with more manageable pieces that could be used later in life. This table ended up very structural with a modern design.

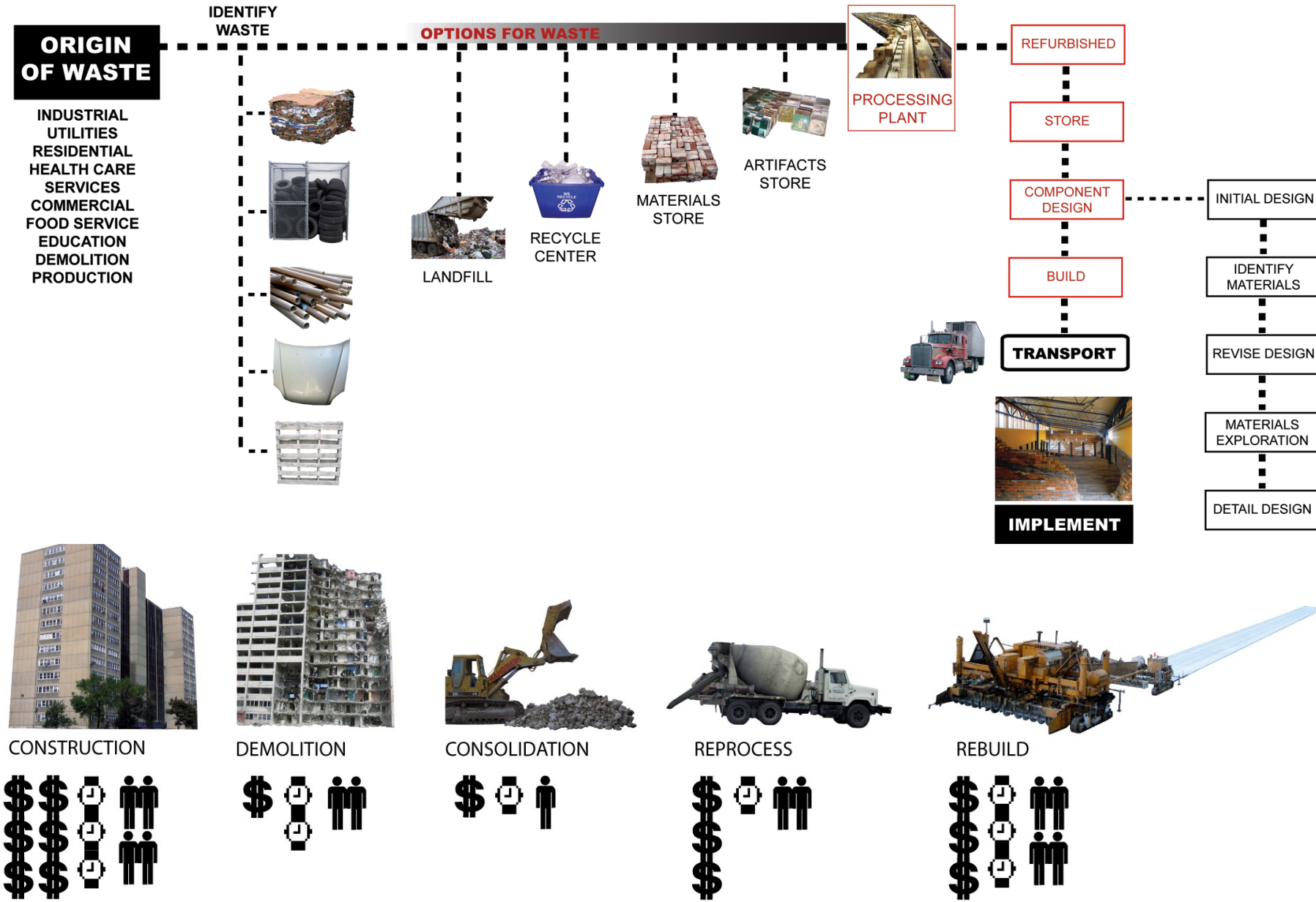


NEW PROCESSES

BIG IDEA



MATERIAL DESTINATION

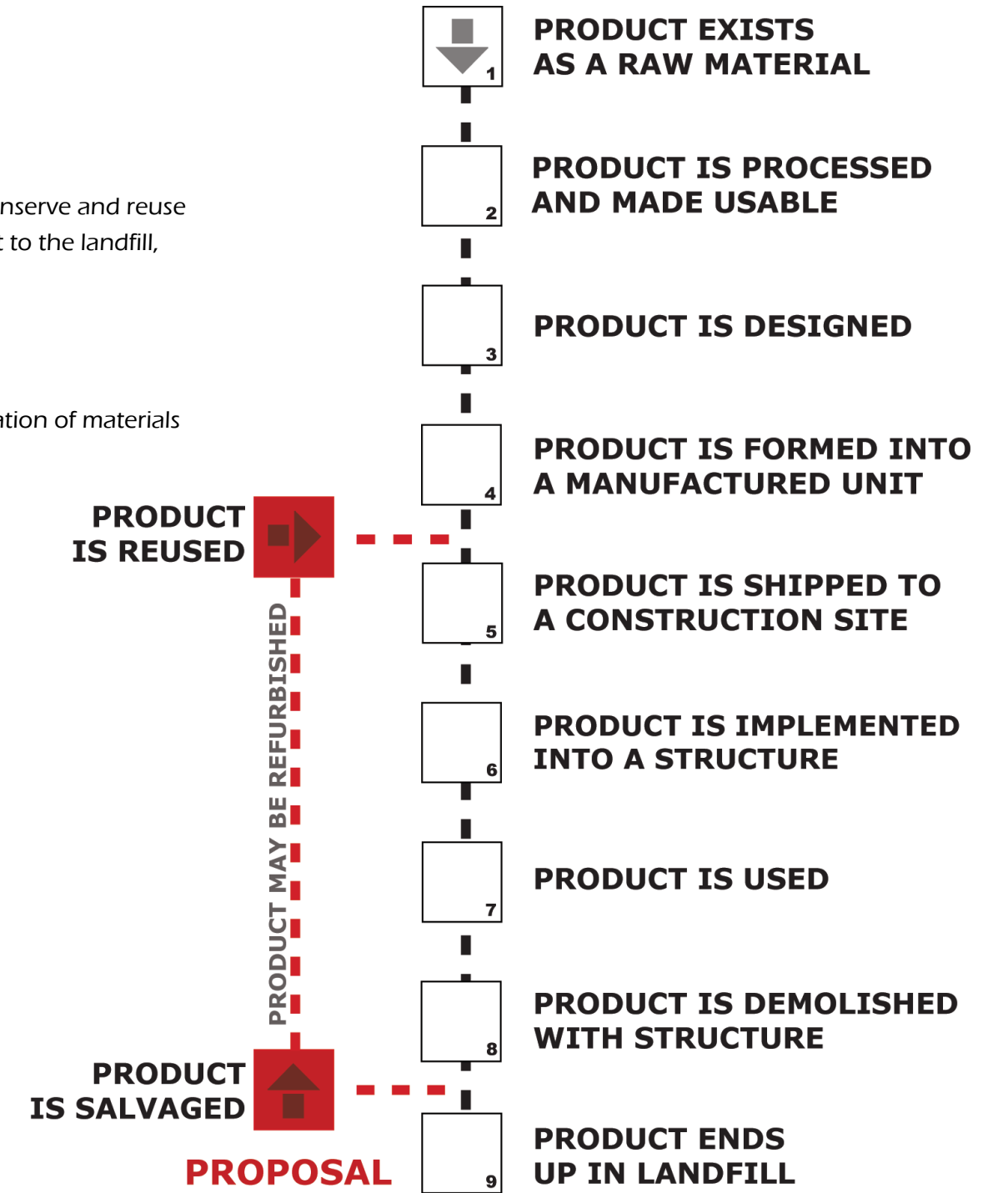
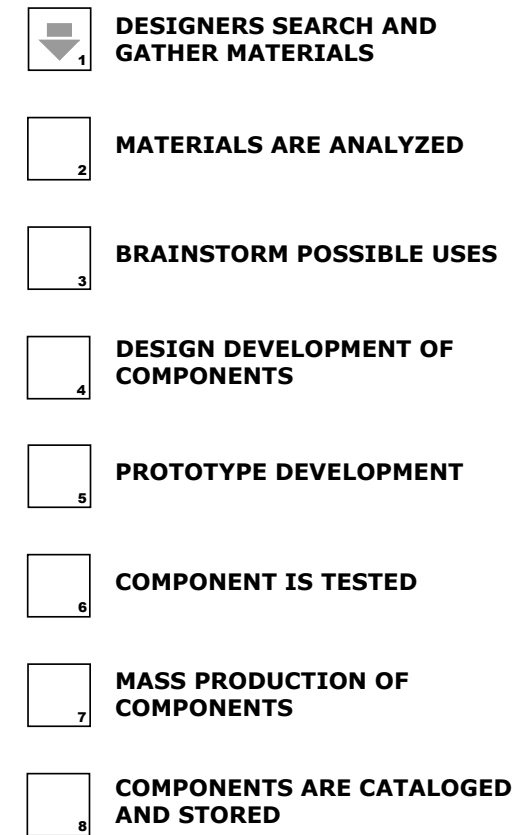


NEW MATERIAL LIFE CYCLE

This diagram defines a new process to conserve and reuse materials. Rather than sending materials straight to the landfill, they will be reintroduced into the building cycle.

DESIGN CENTER

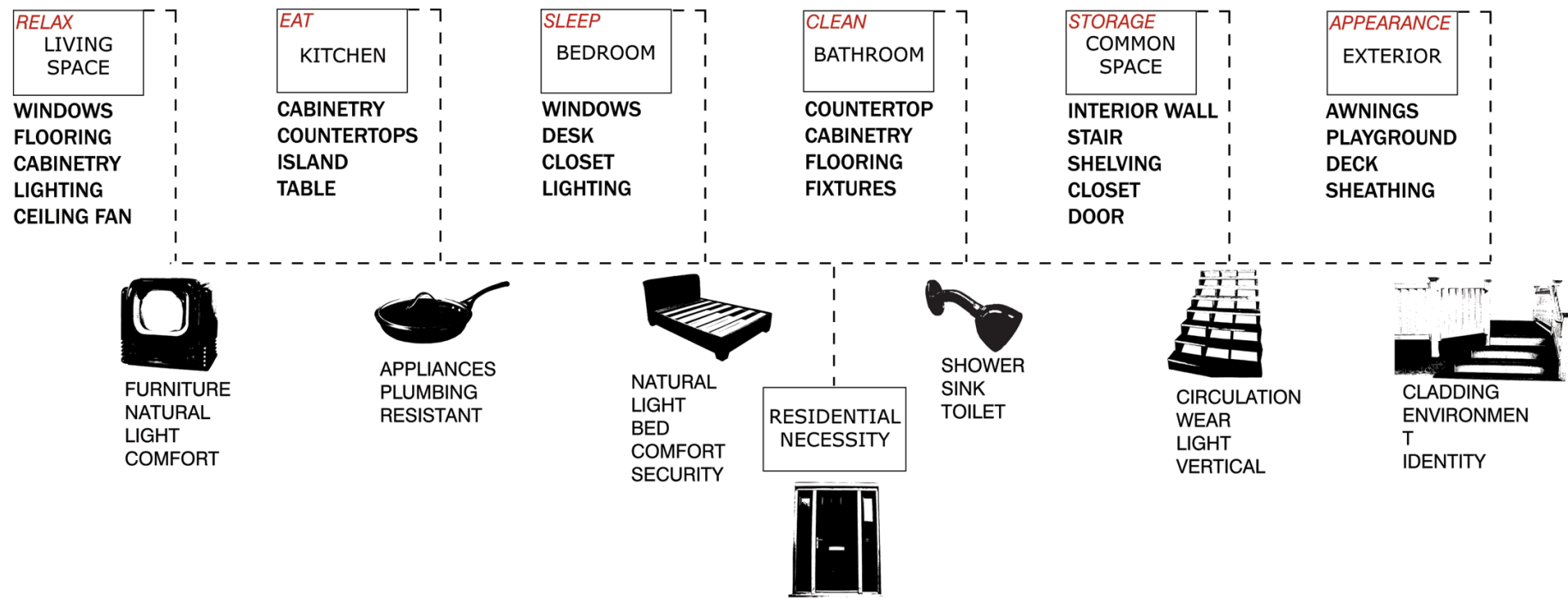
This diagram illustrates the basic organization of materials within the design center.



HOUSING REQUIREMENTS

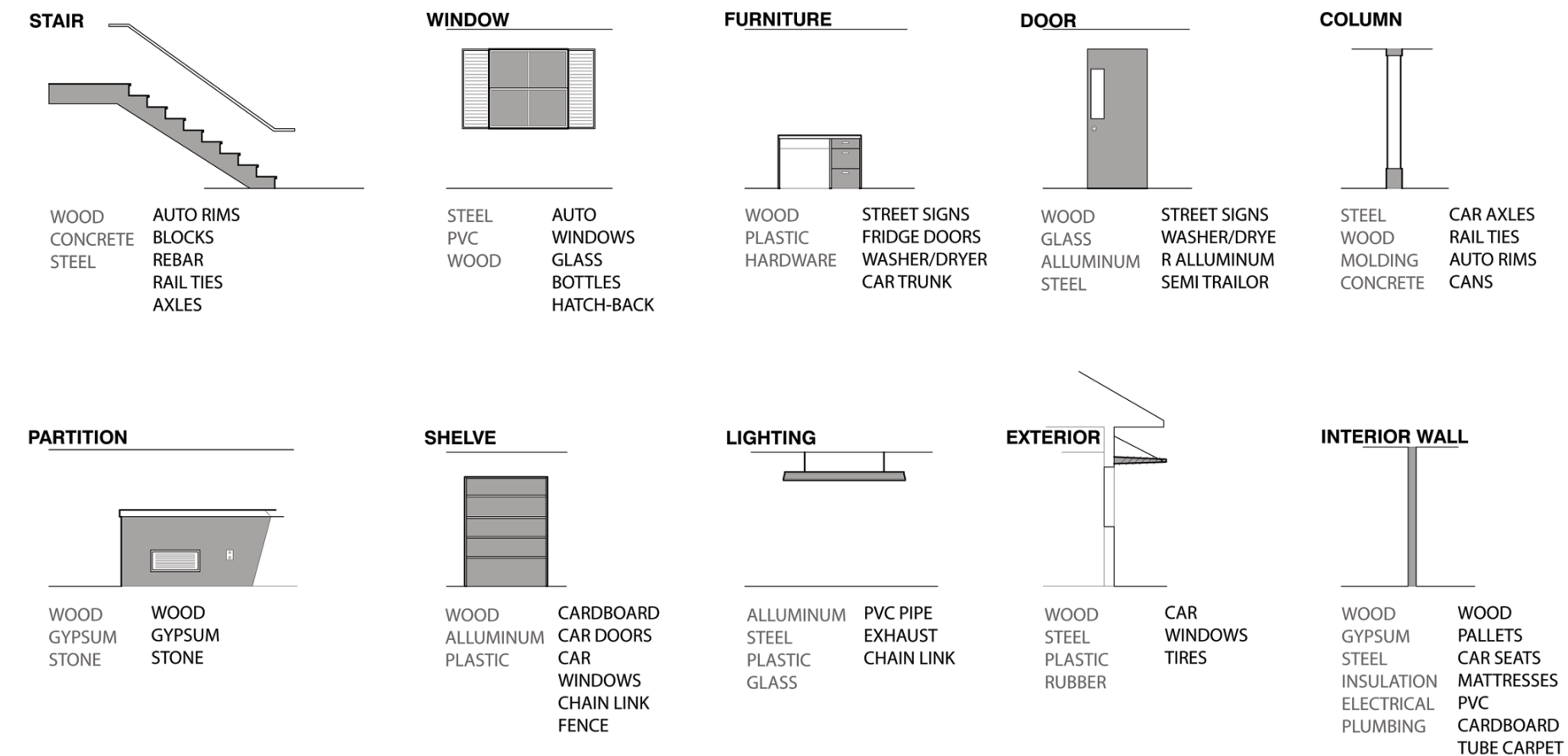
HOUSING PROGRAM DIAGRAM

This diagram begins to break down the basic program of a home. Components are listed based on the program of the space then matched with words describing their function. This diagram was helpful in defining which components were important to the overall solution.



HOUSING COMPONENT DIAGRAMS

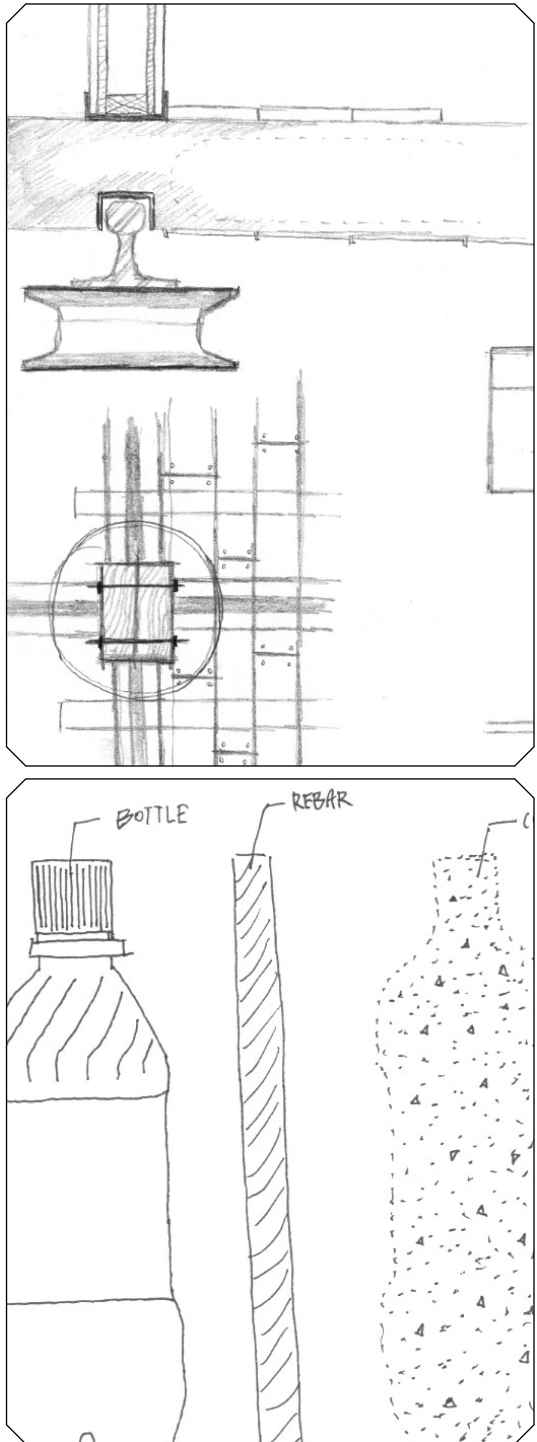
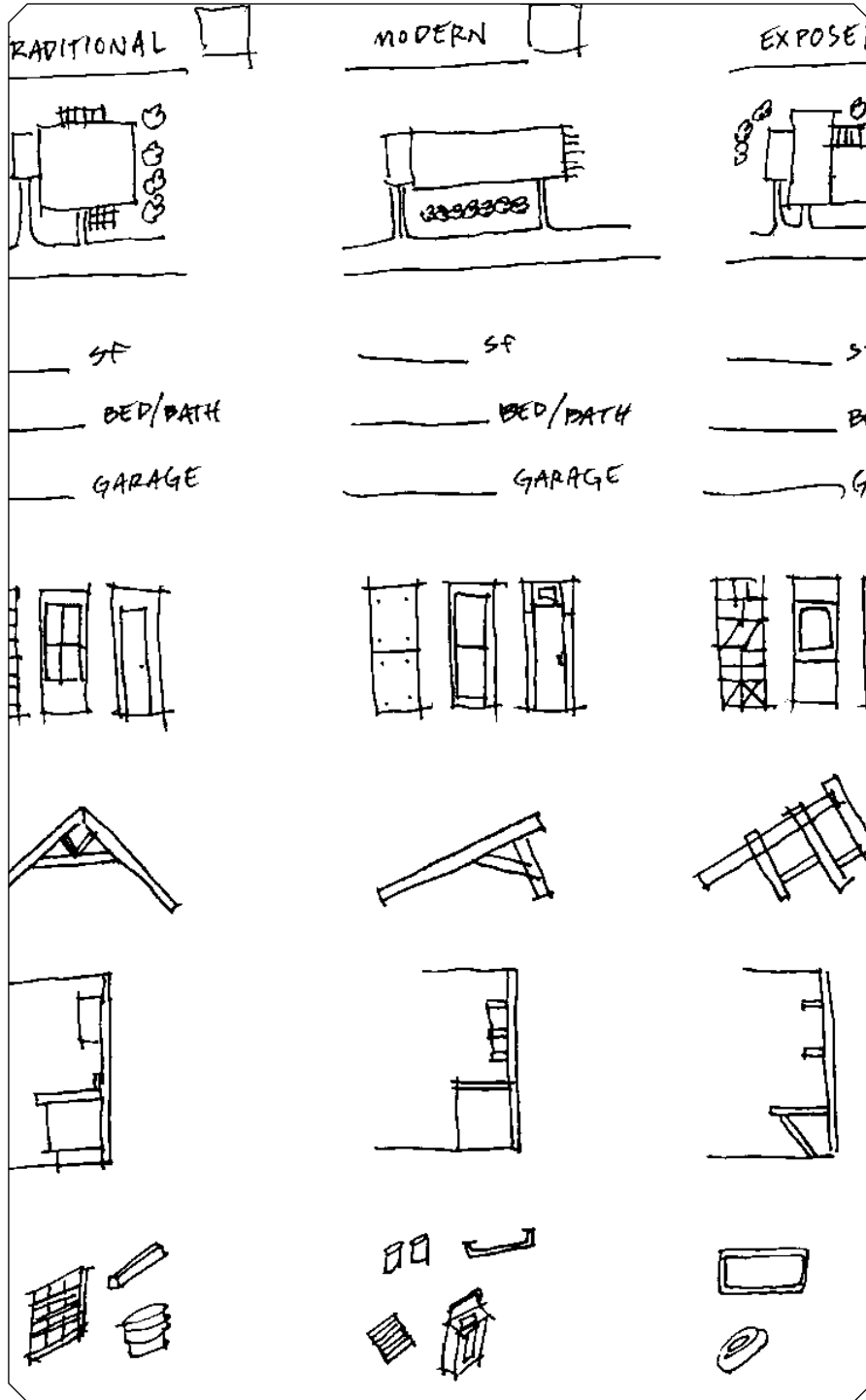
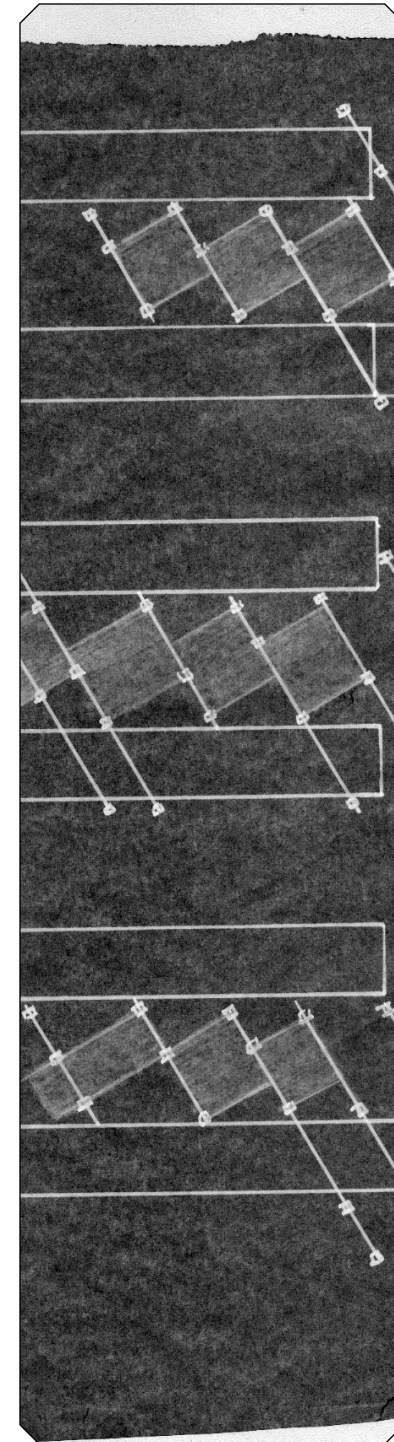
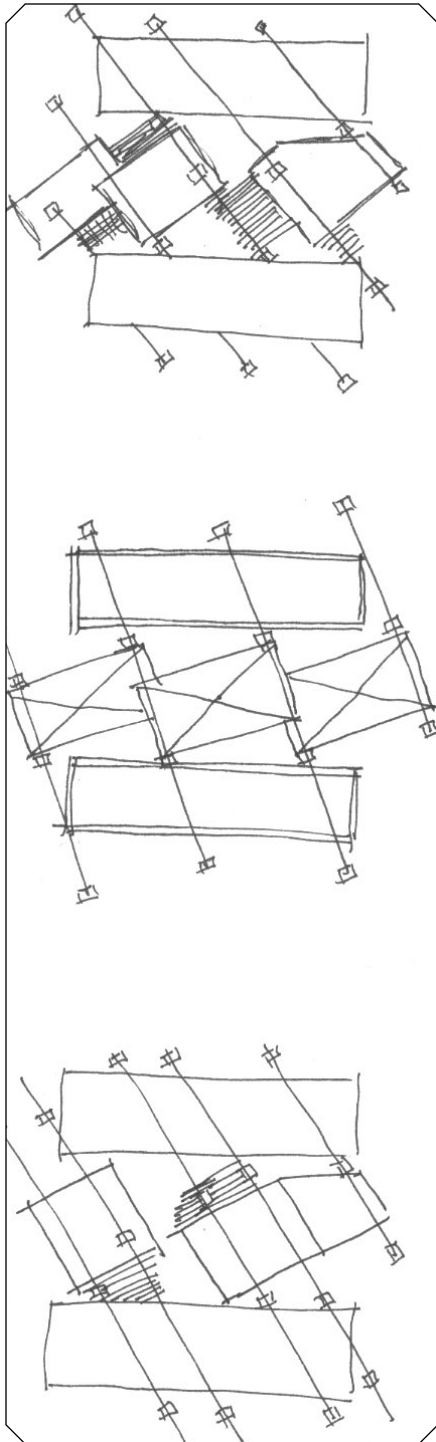
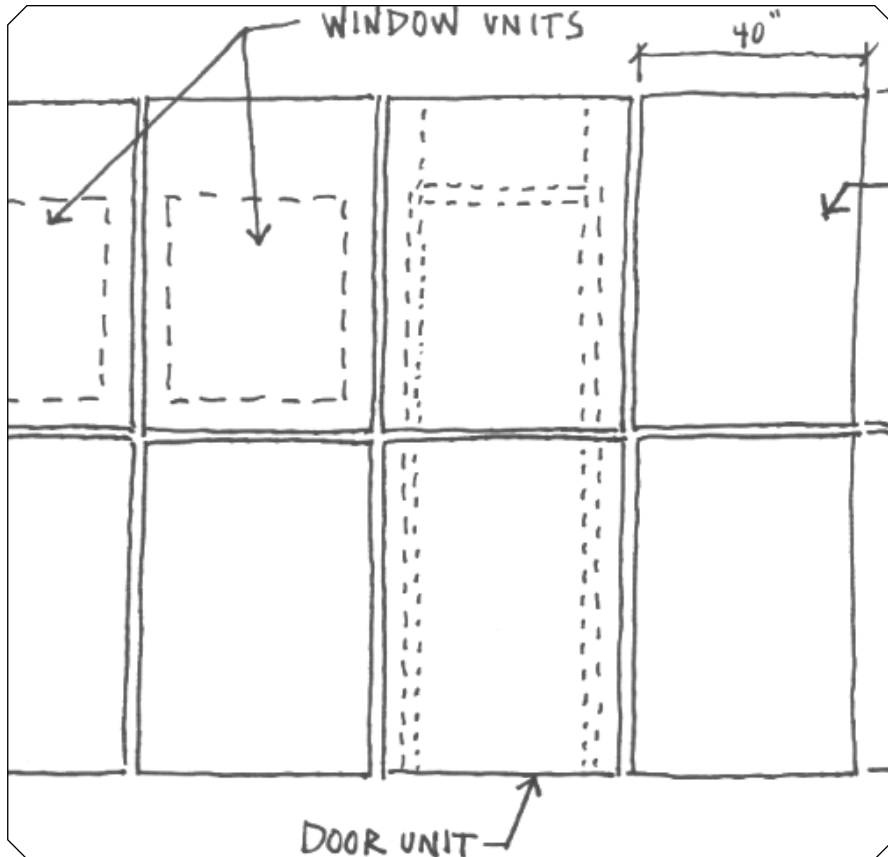
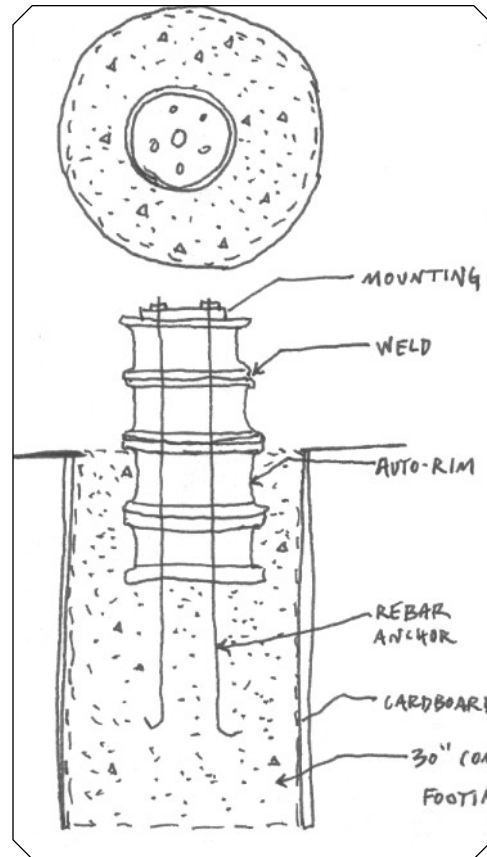
This diagram illustrates how basic components could substitute reused materials with standard materials. This was a brainstorming exercise to match materials with possible component.

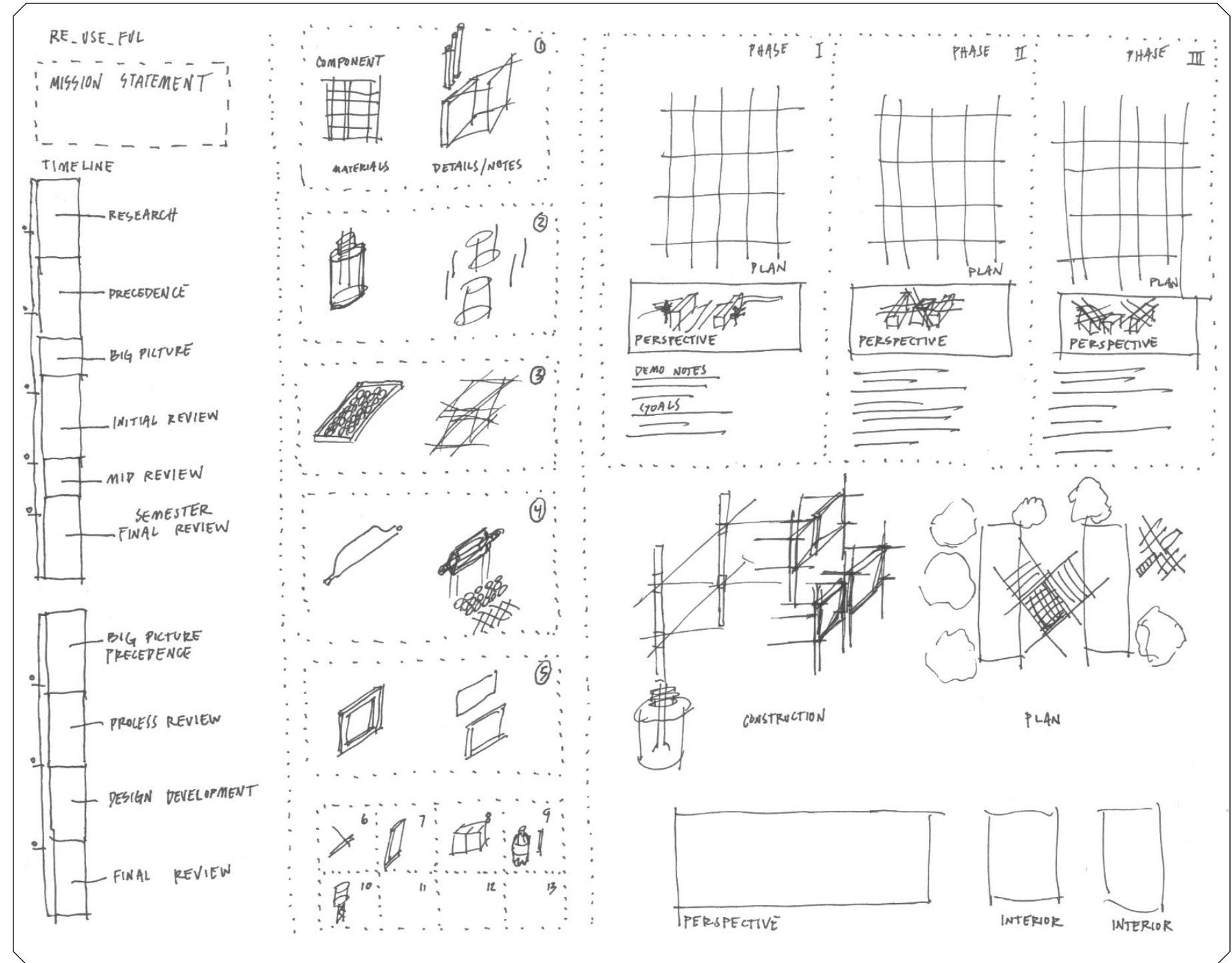
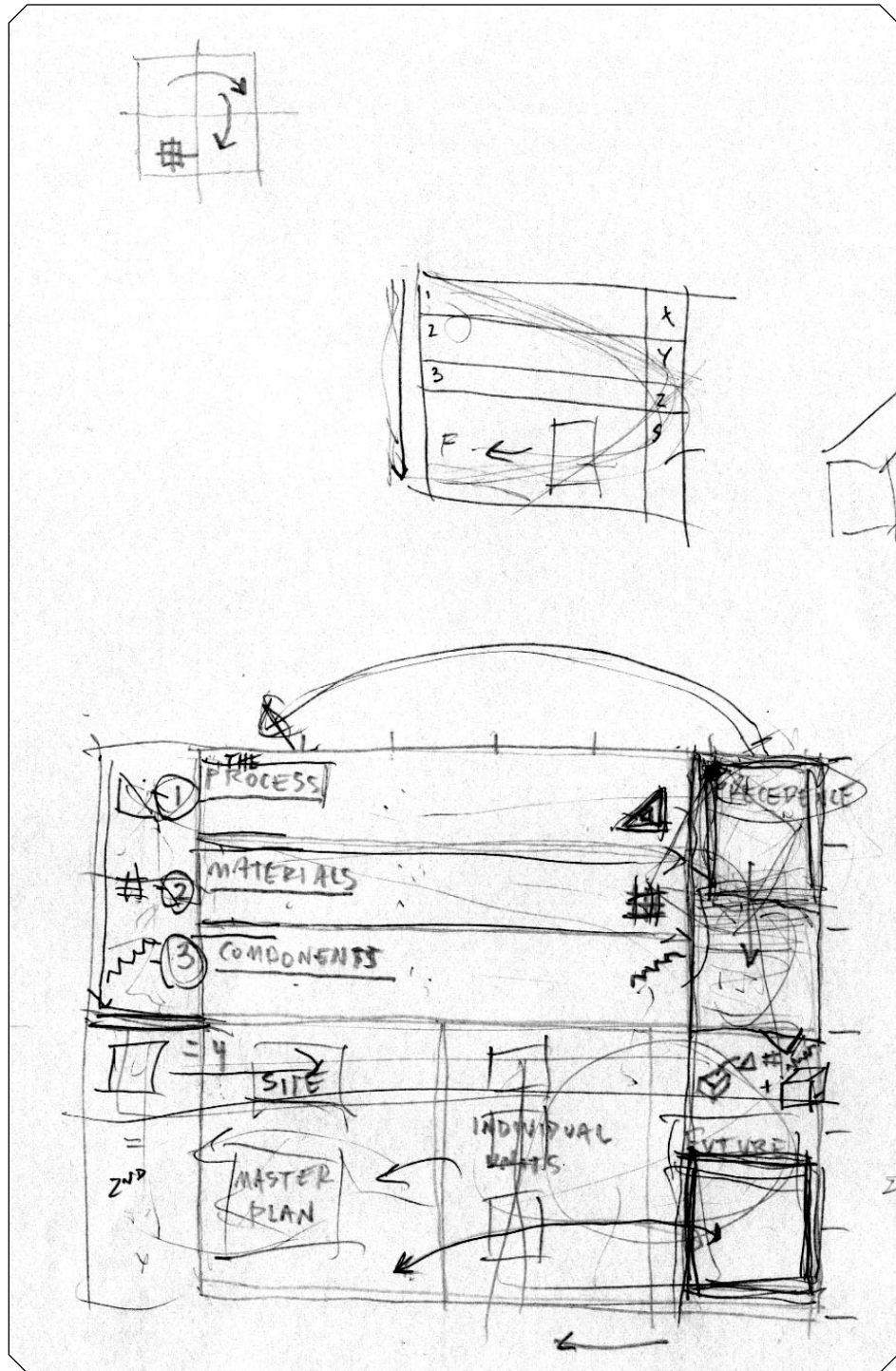
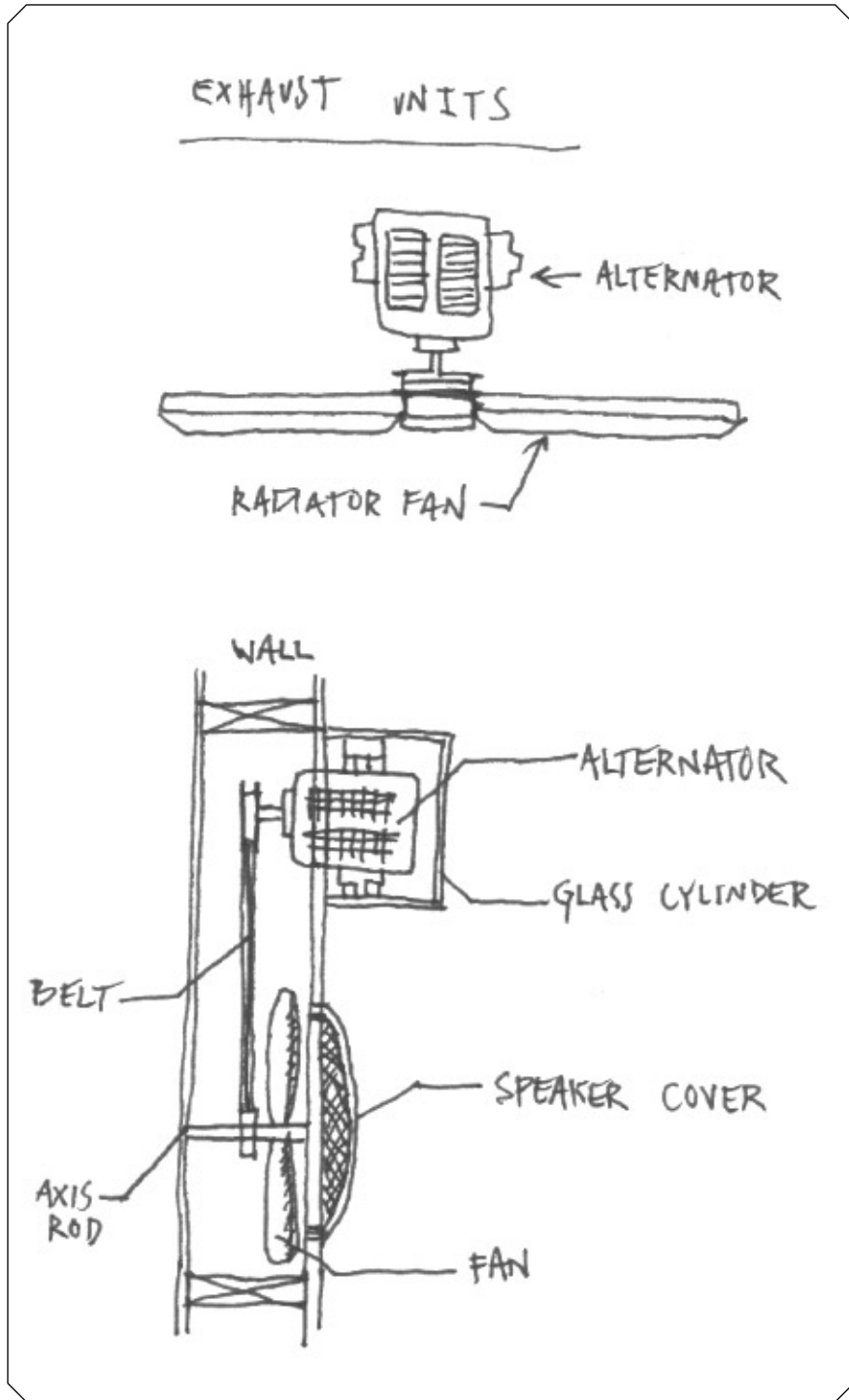


HAND SKETCHES

DETAILS

Over the duration of the entire project, sketches were done to help develop certain ideas. Conceptual diagrams were first figured out using hand drawing before they were imported into CAD or 3D drawings. Everything from components, to master plans and floor plans, to presentation layouts were worked out with a pencil and paper prior to the final solution.





PROCESS

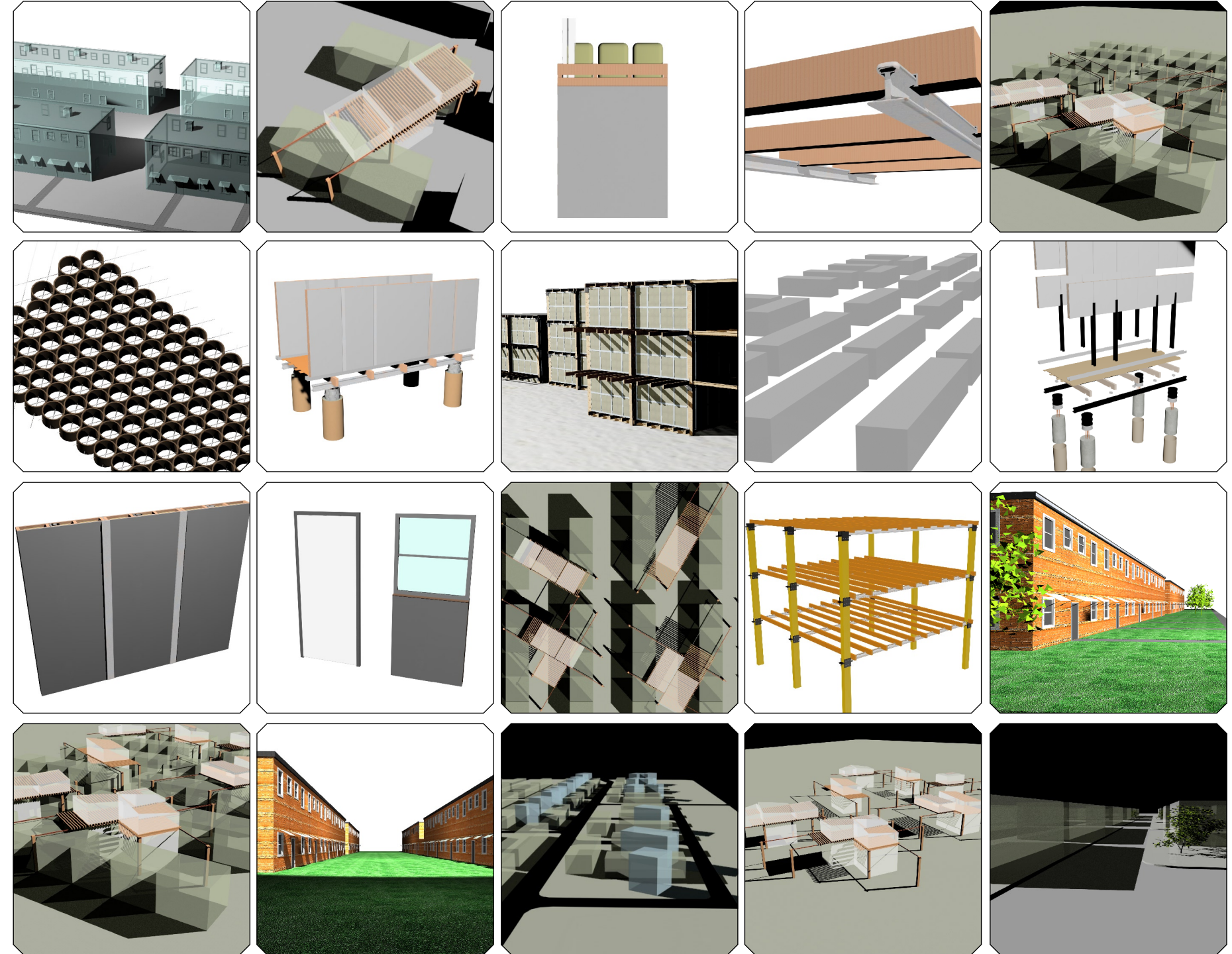
Process documentation was a long and detailed phase of this investigation. Many interviews were conducted with material experts, Cabrini Green developers, as well as faculty and architectural professionals.

program analysis
means of employment
master planning
interviews
reviews

PROGRAM ANALYSIS

The pendulum of this investigation has visited each extreme. Because the implementation for this idea is broad enough to adapt to any project type and the need for facilities in Cabrini is so large, I explored multiple project types. This project began with an adaptive reuse, in-fill purpose. With each review, the project became larger and larger in scale. Commercial, residential, community service, new architecture, in-fill, prototype, and modular housing were just several of the project types explored in this terminal project.

Once settled on Cabrini Green, the major decision was to keep the existing shells or discard and build new. Housing on Cabrini Green is currently run down and being renovated. The decision was made to construct this project with as many local materials and residents as possible. Renovating this development in phases allowed me to use a large variety of local materials, especially the rail road ties and tracks from the renovation of the brown line adjacent to Cabrini. In this section you begin to see the project formulate into an architectural solution while other aspects of the design are still in a fluid development.



MEANS OF EMPLOYMENT

Over the course of this project, the site and program has varied from crit to crit. Below are the first three investigations using the Unity Manufacturing Building.

HARDWARE STORE

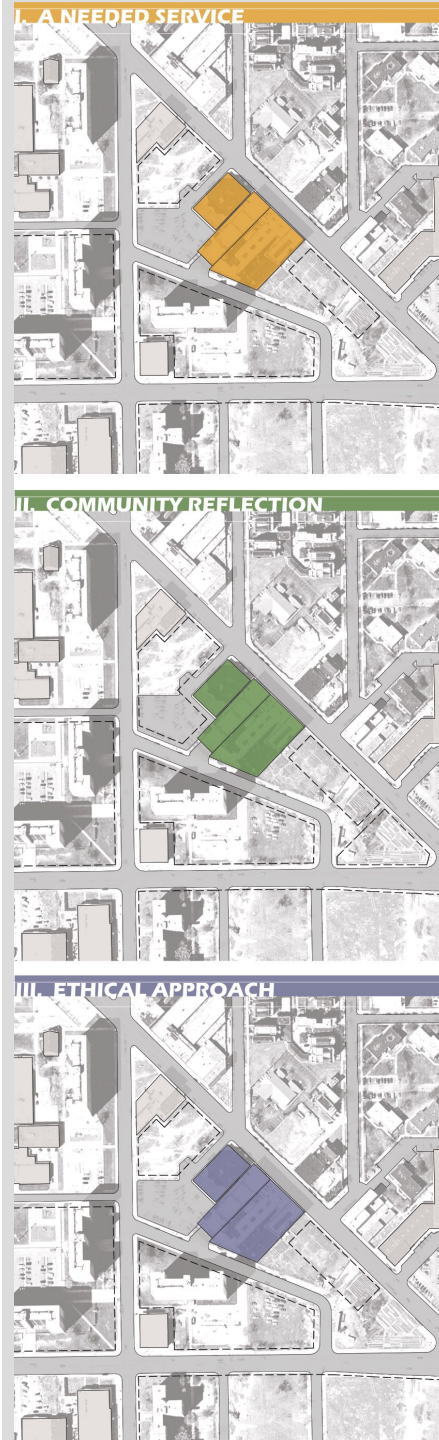
In reviewing the current and future plans in Cabrini, one service was excluded from the area. A hardware/All-In-One store was not found for miles. With the influx in housing I feel that a hardware store would fit the site very well. The sites proximity to the grocery store could allow for a one stop shopping experience. I believe that the raw techniques I am proposing would lend themselves to this application. A hardware store would require the addition of shelving and storage to this structure. Windows and lighting would also be major considerations in the reuse of this structure.

COMMUNITY CENTER

The empty space to the northwest of my site is currently slated for a new community center. If this plan goes through the method most likely taken will be to build a new structure as proposed, demolish my site, turning it into green-space. I propose converting my site to the community center, keeping character and a visual link of what was on site. This proposal would limit waste by reusing a building shell rather than demolishing it. This renovation would free up the space to the northwest and allow for an addition to the reused structure, or the addition of an outdoor green space/playground. Within this proposal I would convert the existing structure to the northwest into an outdoor pavilion. The space to the south of this development could be slated for a community garden to complement the community space to the north.

RESIDENTIAL

This proposal keeps locals on the site. A major issue surrounding Cabrini is the displacement of it's residents. Converting this structure to apartments, or studio lofts will set the example for the upcoming developments. Using salvaged materials will lower the cost of construction, implementing these materials in components will allow for them to be replaced when needed. With the addition of residential units, a public parking garage would be proposed to the south. These residential units would be in an ideal location, close to the grocery store and the CTA brown line.



STARTER HOMES

A method to show the versatility of this construction technique is the idea of producing several starter homes. This idea was explored to create an exciting, youthful solution to a young person's concept of building to fix a problem we will personally have to address. These homes could be constructed from components local to the region and customized based on the owners intent.

HOUSING IN FILL

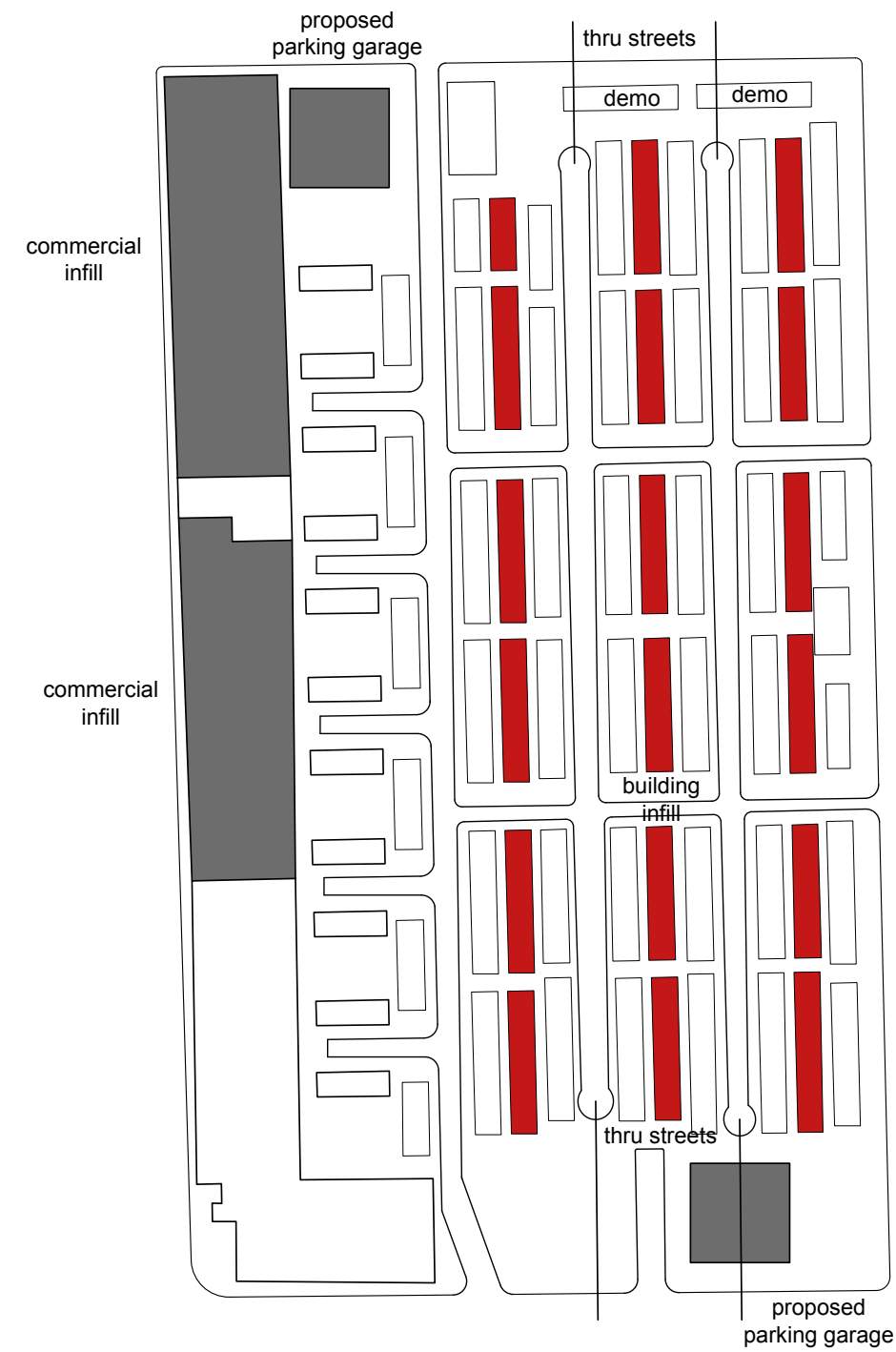
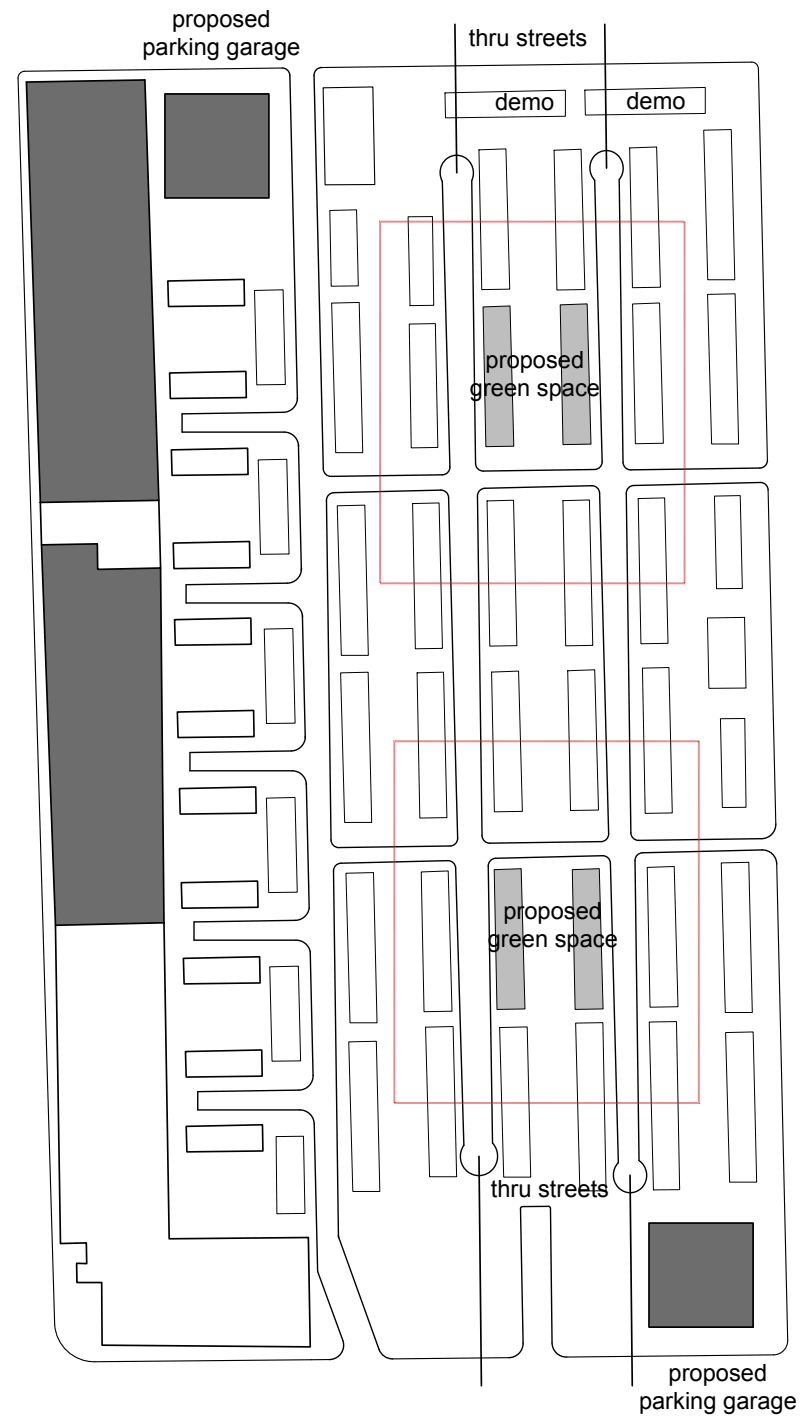
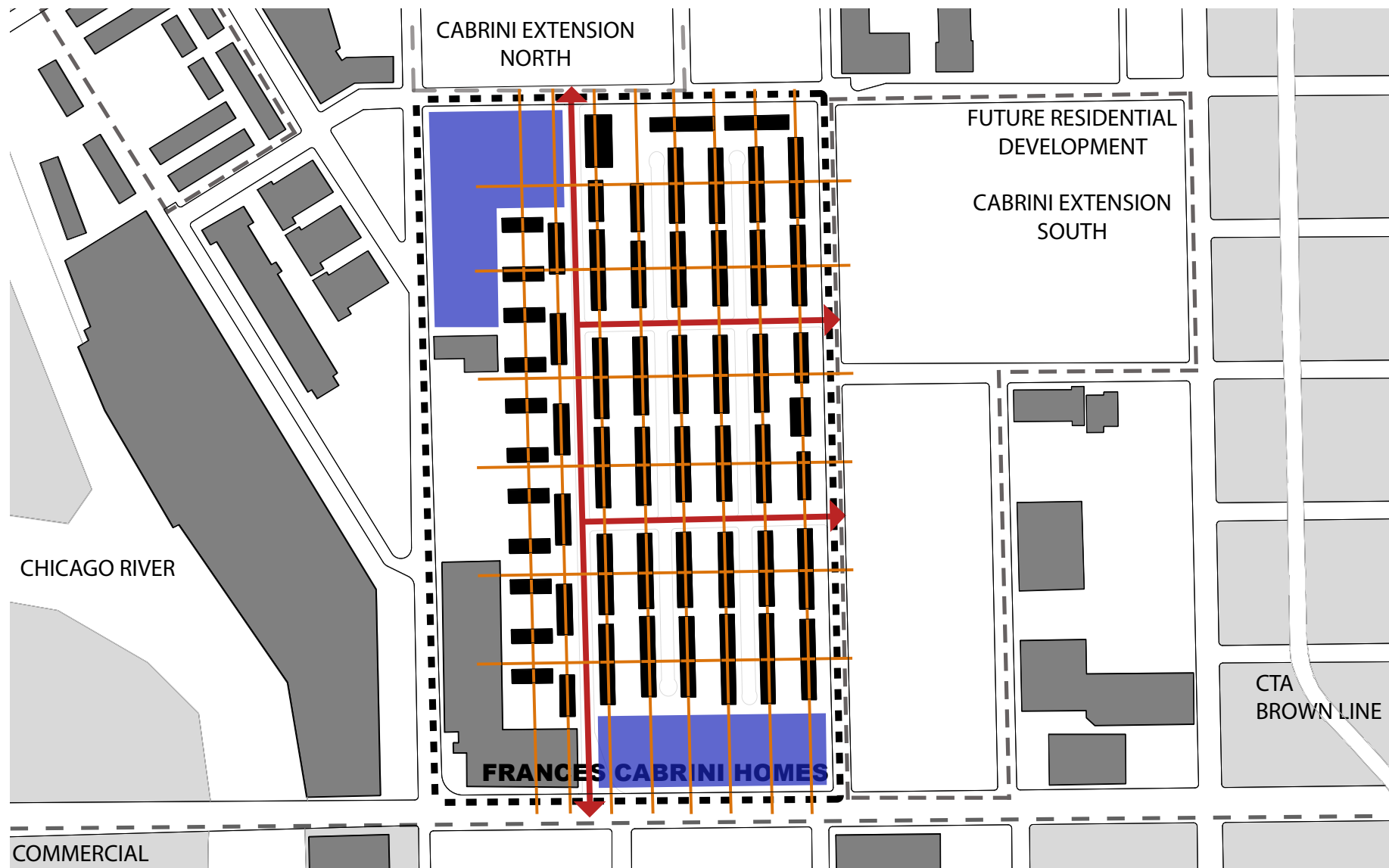
54 units of the Frances Cabrini homes currently appear similar in materials, design, and function. This housing development is 65 years old and in much need of a renovation. In order to assure that this development does not follow the same path as the previous, new planning techniques must be put in place. One technique is to involve the community in the renovation of the development. Allowing their homes to differ from their neighbors, creating a sense of identity for themselves as well as Cabrini as a whole.

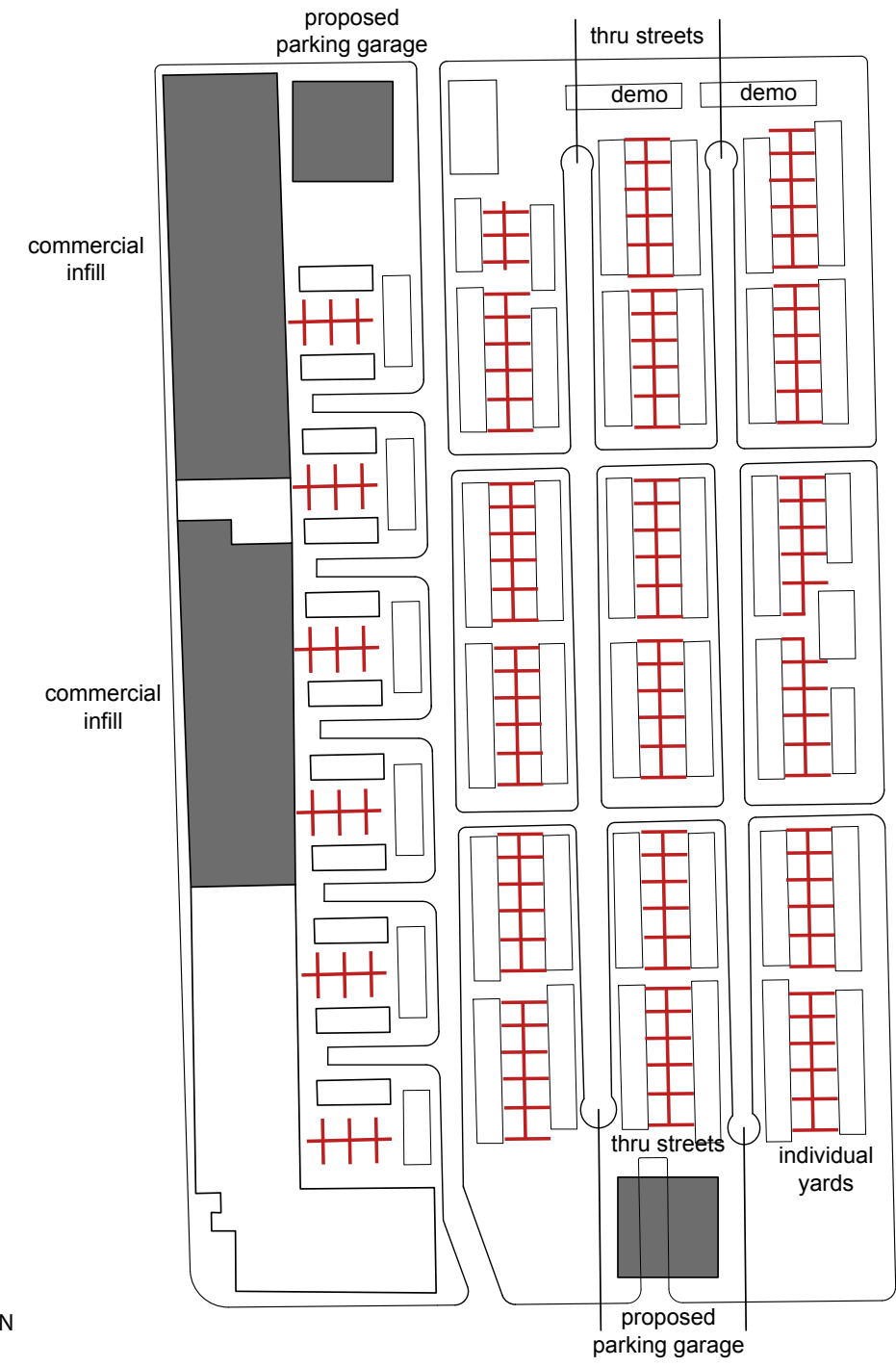
This neighborhood could be completely redeveloped, slightly renovated, or a combination of both. A new master plan and housing solution could provide internal infrastructure to the community while giving it a sense of identity and a major face lift.



MASTER PLANNING

This section includes diagrams of several different master plan ideas. Community space, green space, density, identity, community axis, services were all important within this brainstorming section.





INTERVIEWS

PARKSIDE OF OLDTOWN

Meeting with this housing developer helped me familiarize myself with the future of Cabrini. The company which was residing out of a temporary trailer house is now breaking ground on several of their townhouse and apartment buildings.

CHICAGO HOUSING AUTHORITY

Charnette Brown of the CHA explained to me the much of the history and political issues surrounding Cabrini. Charnette detailed the Hope IV plan for transformation as well as many issues surrounding the displacement of residents.

CHICAGO PLANNING DEPARTMENT

Bennet Haller is the lead on Cabrini Green for the Chicago Planning department. He was able to explain the master plan and a lot of the new projects around Cabrini. Bennet explained the consent decree as well as other legalities with Cabrini.

UNITY MANUFACTURING

Employees of the Unity manufacturing building gave me a tour of the structure built in three phases from the early 1900's to WW2. Later I learned that the building was made an offer from Target because of it's ideal location.

CHICAGO POLICE DEPARTMENT

Speaking with members of the Chicago police department I was able to get an understanding of the security and stability of the site. I was able to tour one of the tall concrete structures with an armed police officer, the buildings are slated for deconstruction and have not been maintained for 20 years.

REVIEWS

RESEARCH

The first review of the initial semester was based on the initial research conducted. In this review I concentrated on materials and a basic site identification.

MID CRIT

The major focus of this review was to begin to look at a projected implementation of my components. At this point I was focused upon the Unity Manufacturing building because of it's size and prime location.

SEMESTER REVIEW

The semester review was a silent pin-up that ultimately decided if we would remain working on the terminal project the second semester. From the mid-crit to the semester review I moved my focus from the Unity building to the Frances Cabrini homes which was residential and much more manageable.

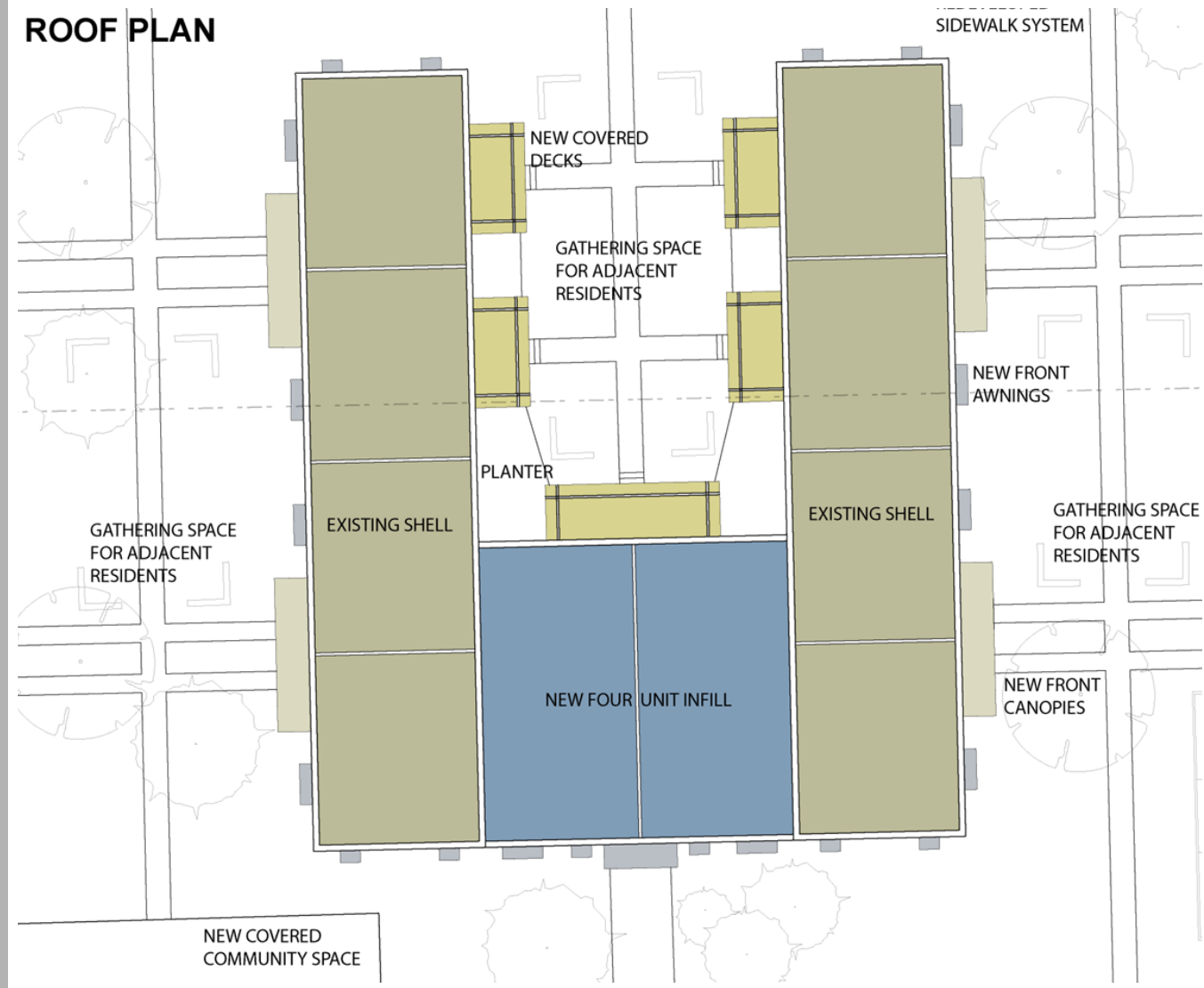
MID CRIT

At the beginning of the second semester I reevaluated the implementation of my components and decided to experiment with new and exciting architecture. This decision reenergized my project and ultimately steered it to the final solution.

SEMESTER REVIEW

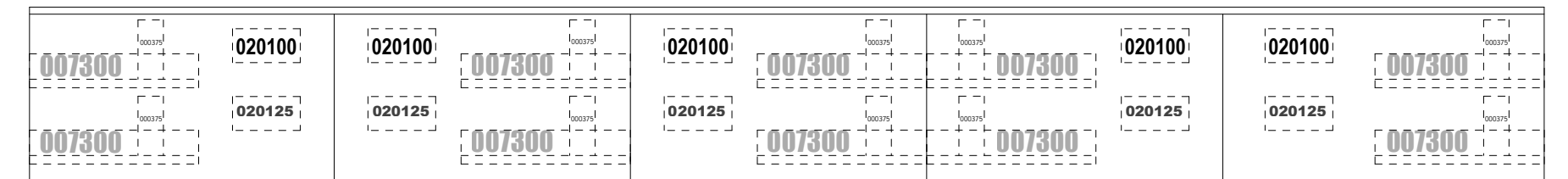
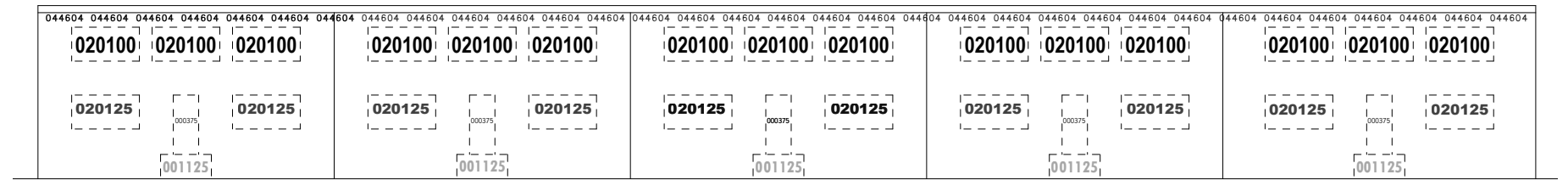
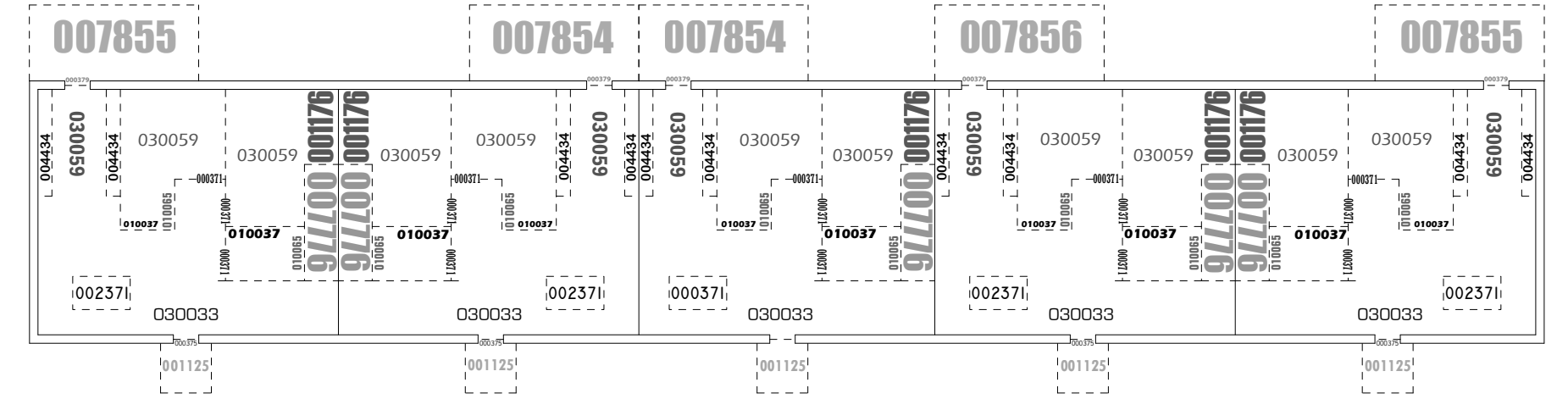
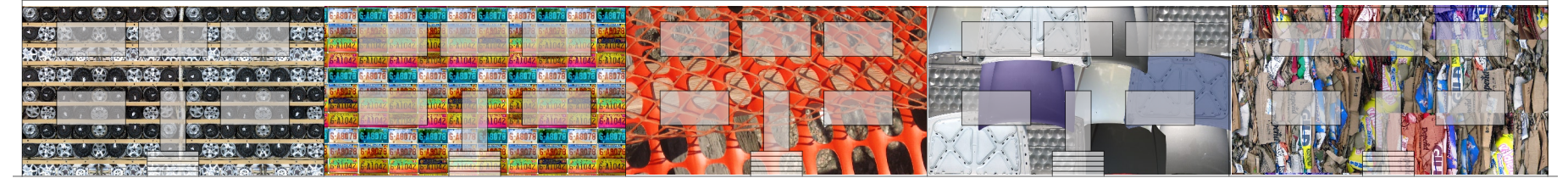
Site identity, catalog diagrams, site diagrams and floor plans were all included in the semester review boards.

ROOF PLAN



FIRST FLOOR





FINAL DESIGN

The final design phase of this explorations was extremely intense and fluid. Each decision effected multiple aspects of the whole. From master planning to floor plans, each aspect was integrated into the next.

- component inventory
- phased implementation
- master plan
- structure
- building envelope
- floor plan
- final solution



COMPONENT INVENTORY

This section details the various components designed, detailed and modeled through the course of my terminal investigation. Components were designed in a clever, creative manner, however they were also realistic solutions to a challenge of limiting waste. A variety of components were designed and detailed using hand sketches and working with materials. Several of the components in this section were fully detailed in construction documents, notes, material analysis, and finally 3D imaging. Once components were fully designed, they would be cataloged based on region.

CATALOG OF COMPONENTS
2007-2008

IN ASSOCIATION WITH THE NATIONAL DEPARTMENT OF REUSE

Standard Pile Footing
#0123456

Materials Used:
Vehicle Rim [3]
Chain Link Fence [4]
Cardboard tube form [2 R]*
Concrete [400lbs Portland cement]
Steel Rebar [9]

General Notes:
1. Automobile rims to be welded full connection
2. Chain Link to be welded at each intersection
3. Rebar to run vertically through existing holes in rims
4. Footing depth to start below frost line
5. Concrete has cured a minimum of 14 days prior to delivery.

* Replacement option: Round Steel Trash Can

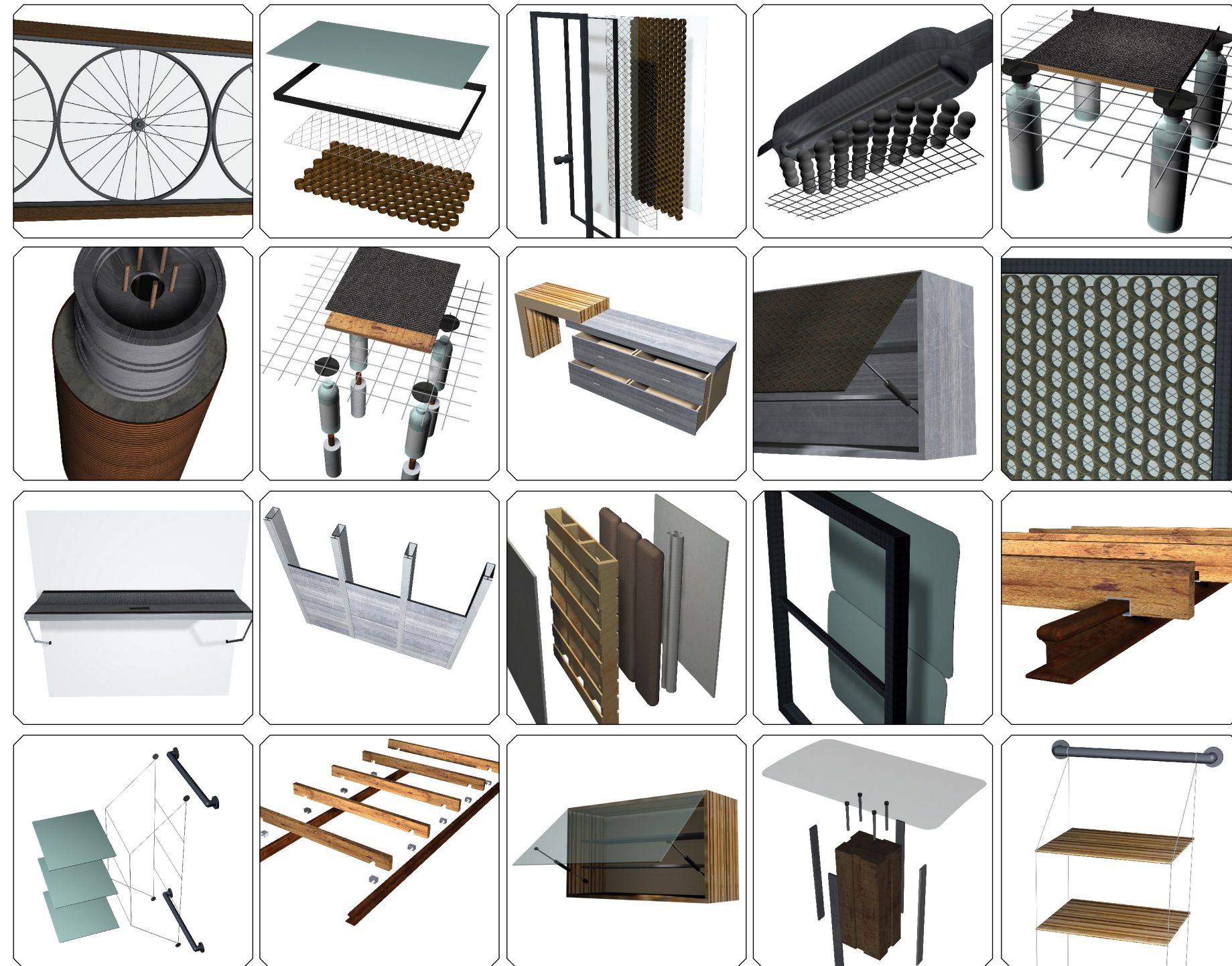
Upgrade/Replacement Options:
Additional Vehicle Rims are available to increase overall footing height. Aesthetic covers are available to wrap component when open to conditions.

Demolition Recommendation:
Component can be removed from the ground and used for dock piles. Component may also be sent in to manufacturer and redeveloped as a wrecking ball.

STRUCTURAL COMPONENT #0123456

RESIDENTIAL EDITION
midwest listing

Nebraska
Kansas
Colorado



FOOTING

Materials Used:

Vehicle Rim
Chain Link Fence
Cardboard tube form *
Concrete
Steel Rebar

General Notes:

1. Automobile rims to be welded full connection
2. Chain Link to be welded at each intersection
3. Rebar to run vertically through existing holes in rims
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5. Concrete has cured a minimum of 14 days prior to delivery.

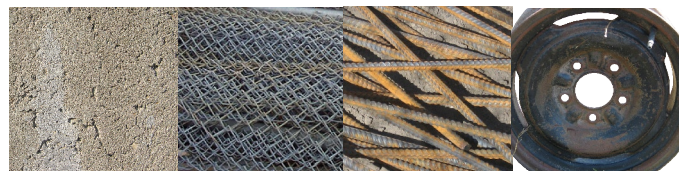
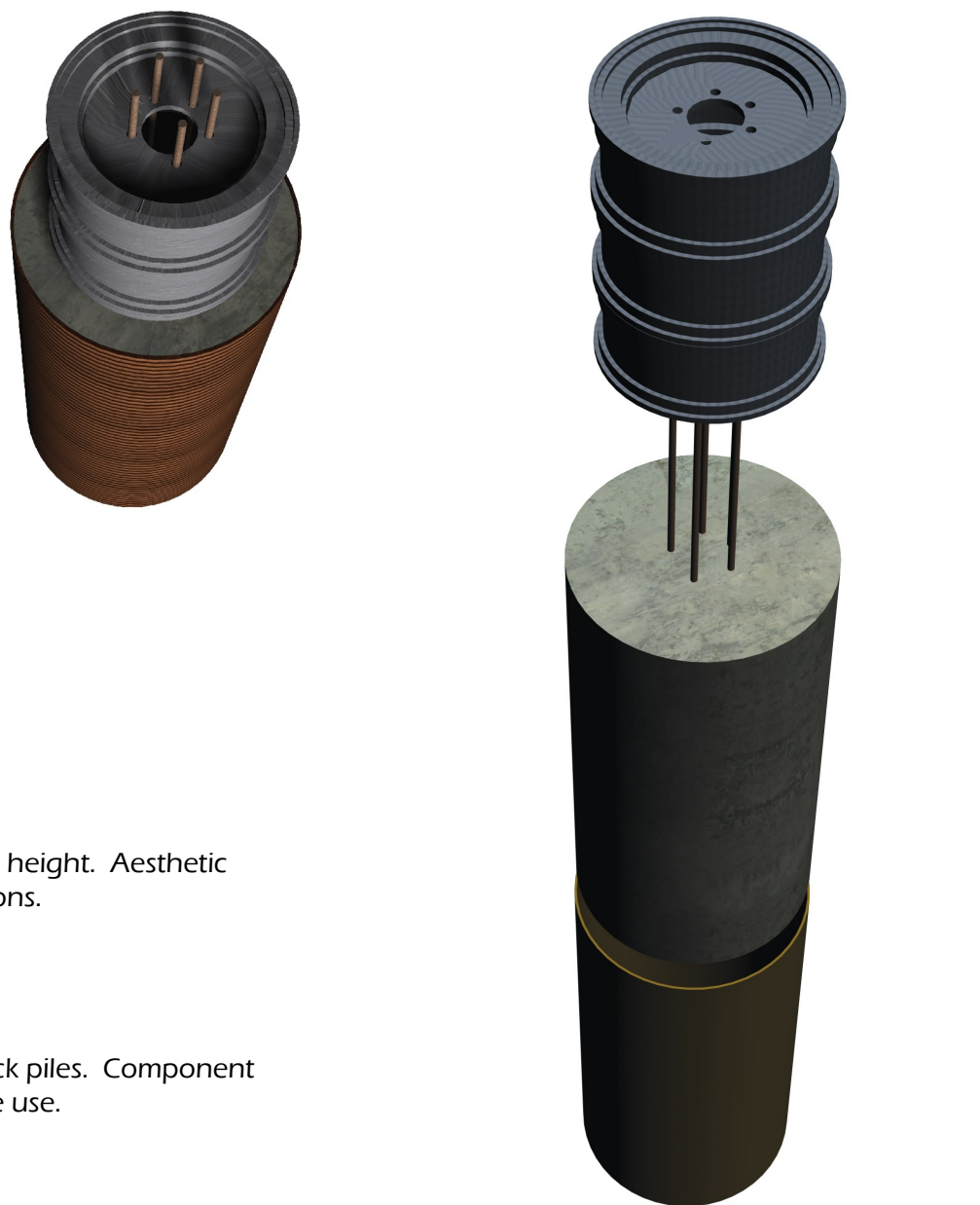
* Replacement option: Round Steel Trash Can

Upgrade/Replacement Options:

Additional Vehicle Rims are available to increase overall footing height. Aesthetic covers are available to wrap component when open to conditions.

Demolition Recommendation:

Component can be removed from the ground and used for dock piles. Component may also be sent in to manufacturer and redeveloped for future use.



WALL

Materials Used:

Standard Wood Pallet
Gypsum Board
Reclaimed PVC
PVC Hookups
Reprocessed Seat Cushion Insulation
Aluminum 'H' Channel
Wood Connection Block

General Notes:

1. Wood pallets to be standard 30"x48"
2. Aluminum 'H' channel to be spaced as needed
3. PVC used for plumbing or electrical
4. Seat insulation to be reprocessed in bulk
5. Standard Gypsum board used in 30"x48" module*

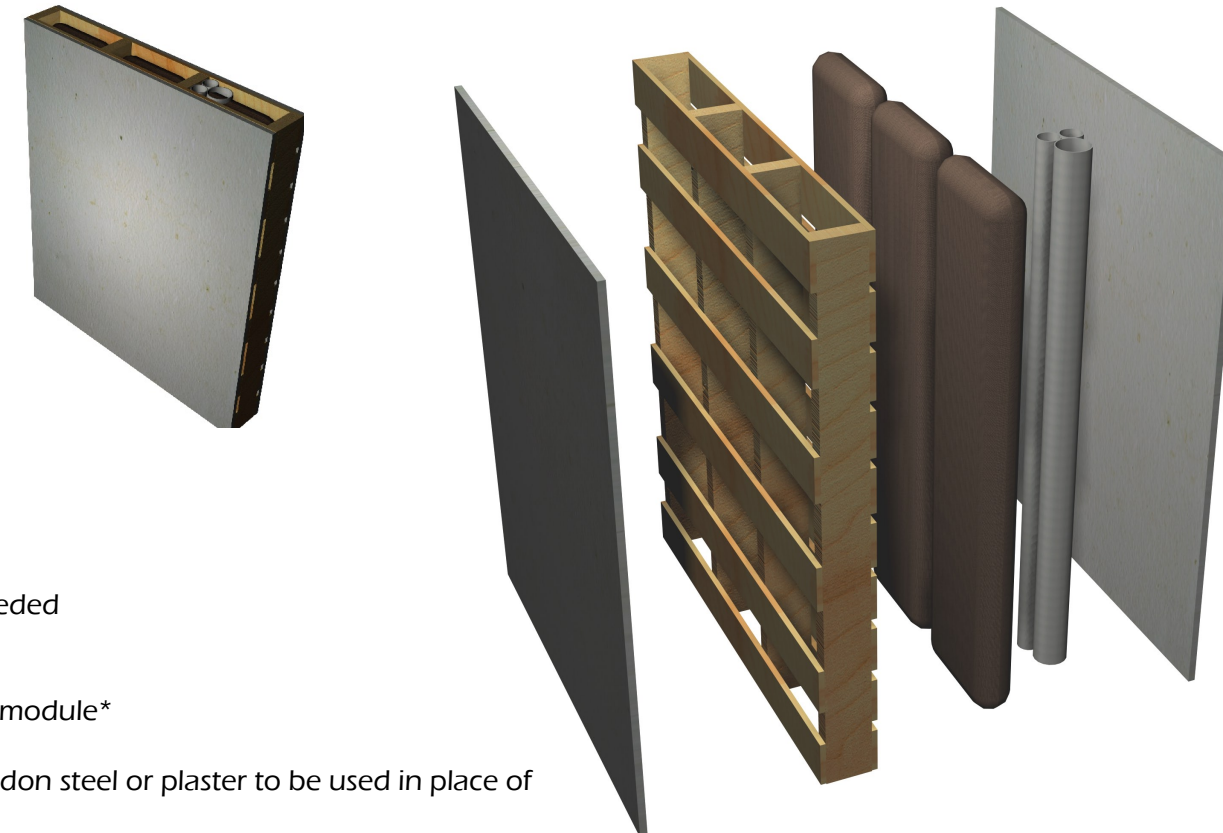
* Replacement option: Wood in-fill strips, cordon steel or plaster to be used in place of gypsum board when needed.

Upgrade/Replacement Options:

Replacement components are available to include doors, windows, and structural columns. Vertical and Horizontal spacers are available to accommodate off-sized room dimensions. Insulation upgrades are available at the discretion of the client.

Demolition Recommendation:

Deconstruction of the wood pallet wall will allow components to be stacked, packaged and removed from the site. PVC and insulation will be removed and collected to implement in other component walls if the pallet's structural integrity has been compromised.



MACHINE DOOR CURTAIN WALL

Materials Used:

Washing Machine Doors
Steel/Wood studs
Aluminum Channel
Insulation
Weather Barrier

General Notes:

1. Washing machine doors to be gathered in similar sizes*
2. Aluminum 'H' channel to be fabricated as track
3. Aluminum or wood studs to be spaced at width of doors
4. Insulation to be provided as needed per application

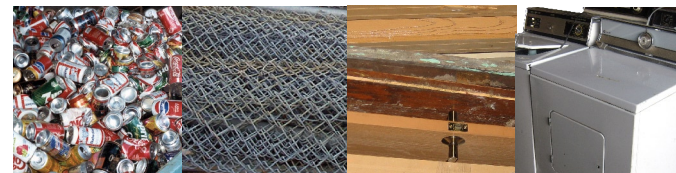
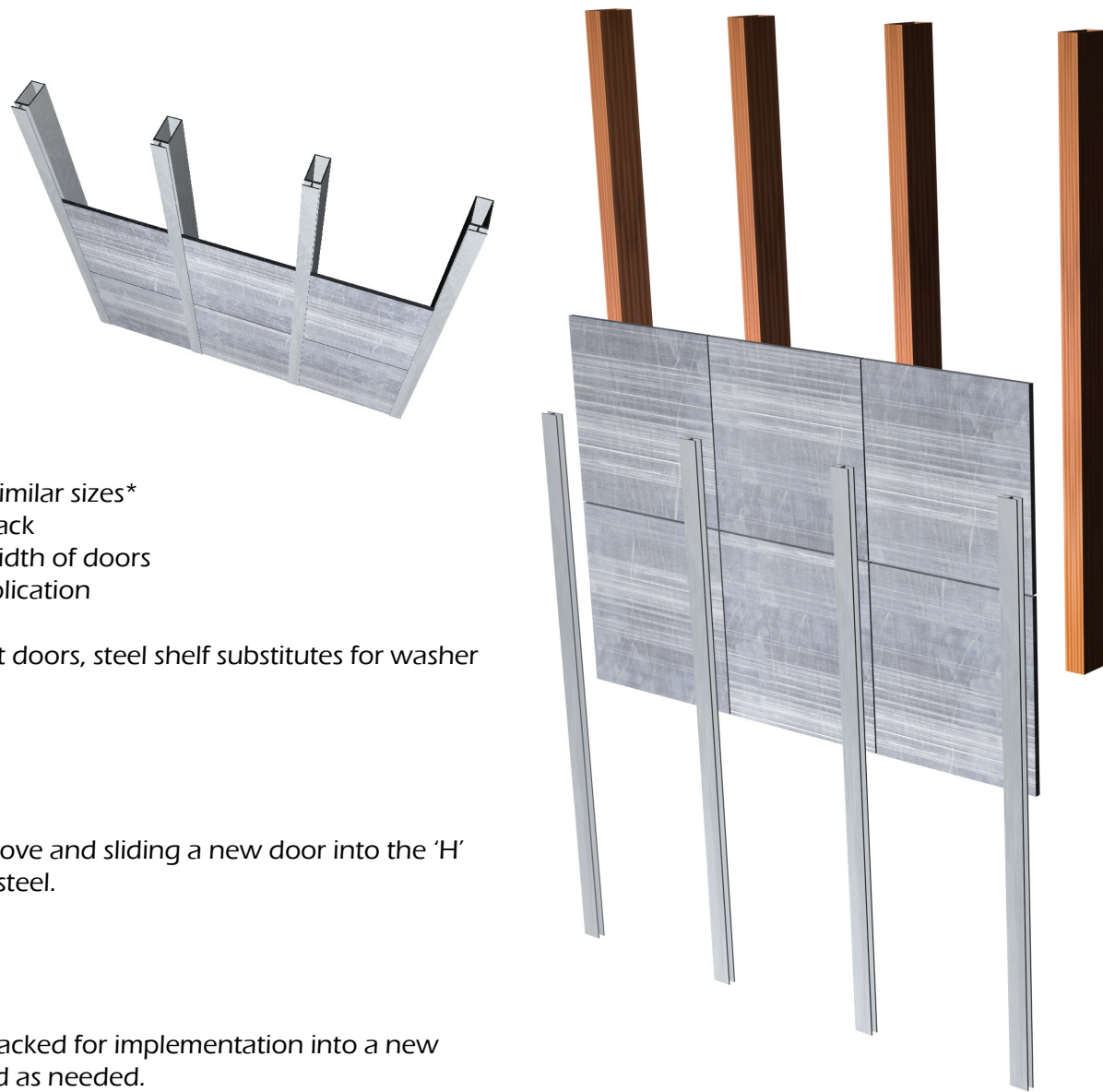
* Replacement option: Dryer doors, file cabinet doors, steel shelf substitutes for washer doors under the same principles.

Upgrade/Replacement Options:

Doors are replaced by removing the panels above and sliding a new door into the 'H' track. Door finishes to be painted or polished steel.

Demolition Recommendation:

Door panels to be removed individually and stacked for implementation into a new system. Insulation to be gathered and recycled as needed.



RAISED FLOOR

Materials Used:

Particle Board Panel
Carpet squares
Steel Cap
Rebar*
Pop/Water Bottle
Concrete
Chain Link

General Notes:

1. Rebar to be cut to fit bottle sizes
2. Concrete to be filled to stabilize rebar
3. Chain link will be fixed to stabilize the bottles
4. Steel caps to be fabricated to fit bottles
5. Wood and carpet panels to fit predetermined grid

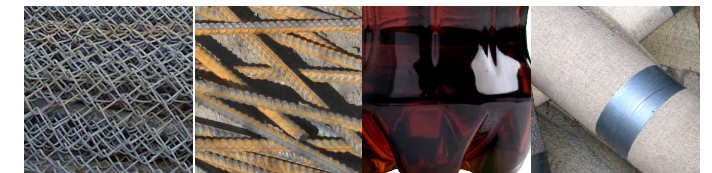
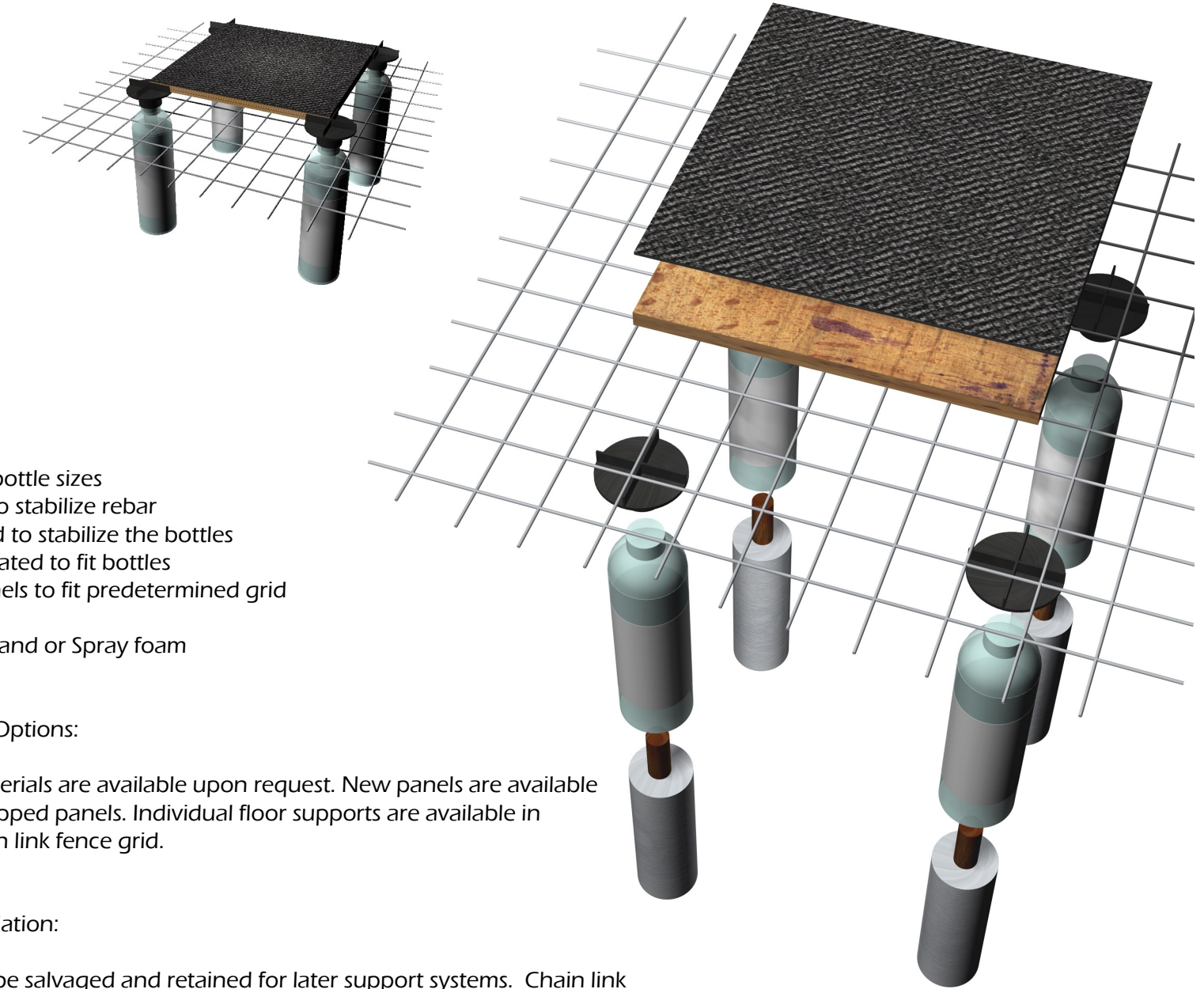
* Replacement option: Sand or Spray foam

Upgrade/Replacement Options:

A variety of flooring materials are available upon request. New panels are available to replace broken or chipped panels. Individual floor supports are available in replacement of the chain link fence grid.

Demolition Recommendation:

Bottle components will be salvaged and retained for later support systems. Chain link fence will be rolled and retained for future components. Wood panels will be stacked and cut into strips for future components.



VEHICLE WINDOW

Materials Used:

Vehicle side window*
Hollow Metal Steel Frame
Rubber seal
Corner Supports

General Notes:

1. Automobile window tint to be matched per window unit
2. Hollow metal frame to be 30" wide to match wall component
3. Rubber seal to be fabricated from old tires
4. Corner supports to attach to H.M.F. corner per snap connection

* Replacement option: Train car windows

Upgrade/Replacement Options:

Tinted windows are available based on quantity. Built in window blinds are available for extra charge. Double pane windows are available for extra charge. Operable windows with screens are available upon request.

Demolition Recommendation:

Window unit will be removed intact and stored for future use.



CARDBOARD TUBE DOOR

Materials Used:

Hollow Metal Frame
Steel Frame
Cardboard Tubes*
Steel Cable
Plexiglas
Door hardware

General Notes:

1. Door size will depend on the H.M.F. size
2. Door frame to be welded corners, 2" thick
3. Plexiglas to fit within frame in contact with cardboard tubes
4. Steel cable to be connected with splice joint hardware
5. Cable to be in tension based on metal properties

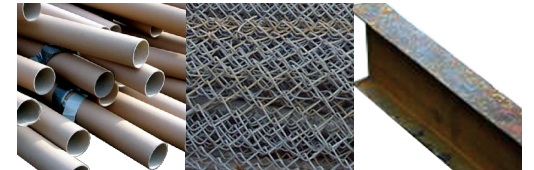
* Replacement option: Laminated cardboard or plastic tubes

Upgrade/Replacement Options:

Multiple door finishes are available in several finishes. Door thickness varies depending on interior or exterior application.

Demolition Recommendation:

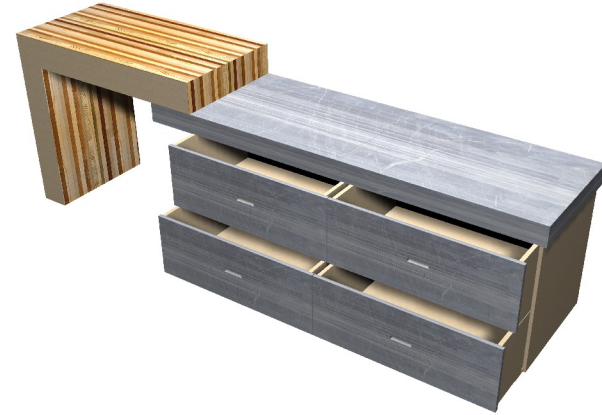
Door unit shall remain intact when possible. Hollow metal frame will be salvaged and used in future construction. Door can be reused as a shelf or counter top if needed.



KITCHEN ISLAND UNIT

Materials Used:

Reclaimed Laminated Wood Strips
Reclaimed Counter tops
Reclaimed Hinges or Tracks



General Notes:

1. Wood strips to be cut to 6" when possible
2. Kitchen unit to be used as an island or up against a wall
3. Available in 4" or 9" toe-kick
4. Available with drawers or doors
5. Sink unit available, located in wood counter top centered

* Replacement option:
Door hardware is available upon request.
New 'L' shape wood component is available in several replacement materials.

Upgrade/Replacement Options:

Counter tops are available in multiple materials and finishes. Doors can be replaced with drawers with a minor hardware adjustment. Adjacent base cabinets are available to increase the overall size of the island.

Demolition Recommendation:

Counter component can be de-constructed to minimal pieces to allow for easy transportation. 'L' shape wood component can be cut and used for scrap lumber. Counter tops can be removed and refinished for future products.



HYDRAULIC WALL CABINET

Materials Used:

Laminated Wood Strips
Reclaimed Van Side Windows
Reclaimed Steel Grate
Reclaimed Trunk Hydraulic Arm



General Notes:

1. Wood strips to be cut to 3/4" typical
2. Van side windows to be used for glass doors
3. Steel doors to be used in utility/garage applications
4. Hydraulic trunk arm housing to be reclaimed when possible
5. All shelves are removable and adjustable

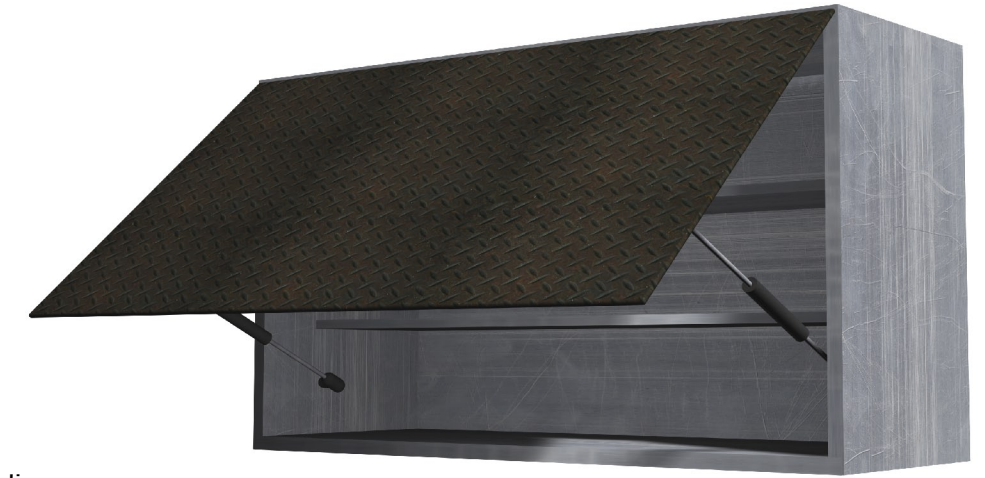
* Replacement option: Steel, wood and glass doors are available.

Upgrade/Replacement Options:

Additional shelves are available in steel, wood, and glass. Hydraulic arm replacements are available and easily replaced with a snap joint.

Demolition Recommendation:

Doors can be removed and salvaged for a different application. Hydraulic arms can be rebuilt and refurbished. Wood and steel box can be stripped down and used for storage units.



GRAB BAR STORAGE

Materials Used:

Vehicle Side Window*
Steel Cable
Cable Connection Elbows
Reclaimed Grab Bars
Connection Snap Rings

General Notes:

1. Vehicle Windows to be gather based on size
2. Windows to be fitted with 90 degree supports
3. Recycled steel cable to be used when possible
4. Grab bars to be refinished in bulk
5. Connections fabricated in the distribution center

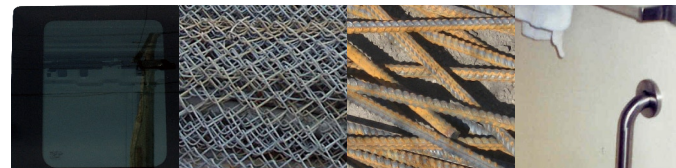
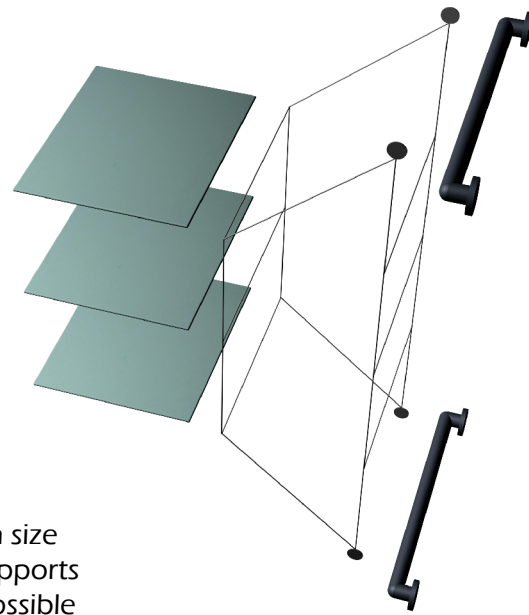
* Replacement option: Train cab side windows, steel panels, and laminated wood panels are available.

Upgrade/Replacement Options:

Additional shelf and snap ring combinations can be purchased to increase the number of shelves. Broken windows can be replaced upon request. Parts can be ordered from your local reused parts catalog.

Demolition Recommendation:

Component can be de-constructed and the parts will be reclaimed for several other applications. Glass window shelves can be stored for railing system components or window component. Grab bars may be used for closet hanging storage.



TAILGATE SHELF

Materials Used:

Truck Tailgate
Tailgate steel support
Wall connection support
Wall connection brace

General Notes:

1. Try to match tailgate with original steel support
2. Refinish tailgate finish as necessary
3. Anchor wall brace to wall studs*
4. Top of tailgate to be 40 inches A.F.F. typical
5. Tailgate finish to be painted or polished steel
6. Decals to be removed if unfit aesthetically

* Replacement option: Rear bumper can be retained and replace the wall brace if desired.

Upgrade/Replacement Options:

Tailgate supports can be replaced if connections fail or bend.

Demolition Recommendation:

Tailgate to be packaged with supports and stored for future use. Wall brace to be removed from wall and refinished as necessary.



CARDBOARD TUBE COUNTER TOP

Materials Used:

Cardboard Tubes
Steel Cable
Reclaimed Plexiglas
1 1/2" Steel frame

General Notes:

1. Cardboard tubes to be cut and drilled in mass
2. Steel Cable to be tack welded
3. Plexiglas to be connected with bolts
4. Cardboard tube size to vary with application
5. Steel Cable to be as tight as possible

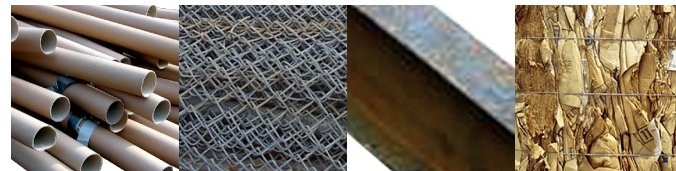
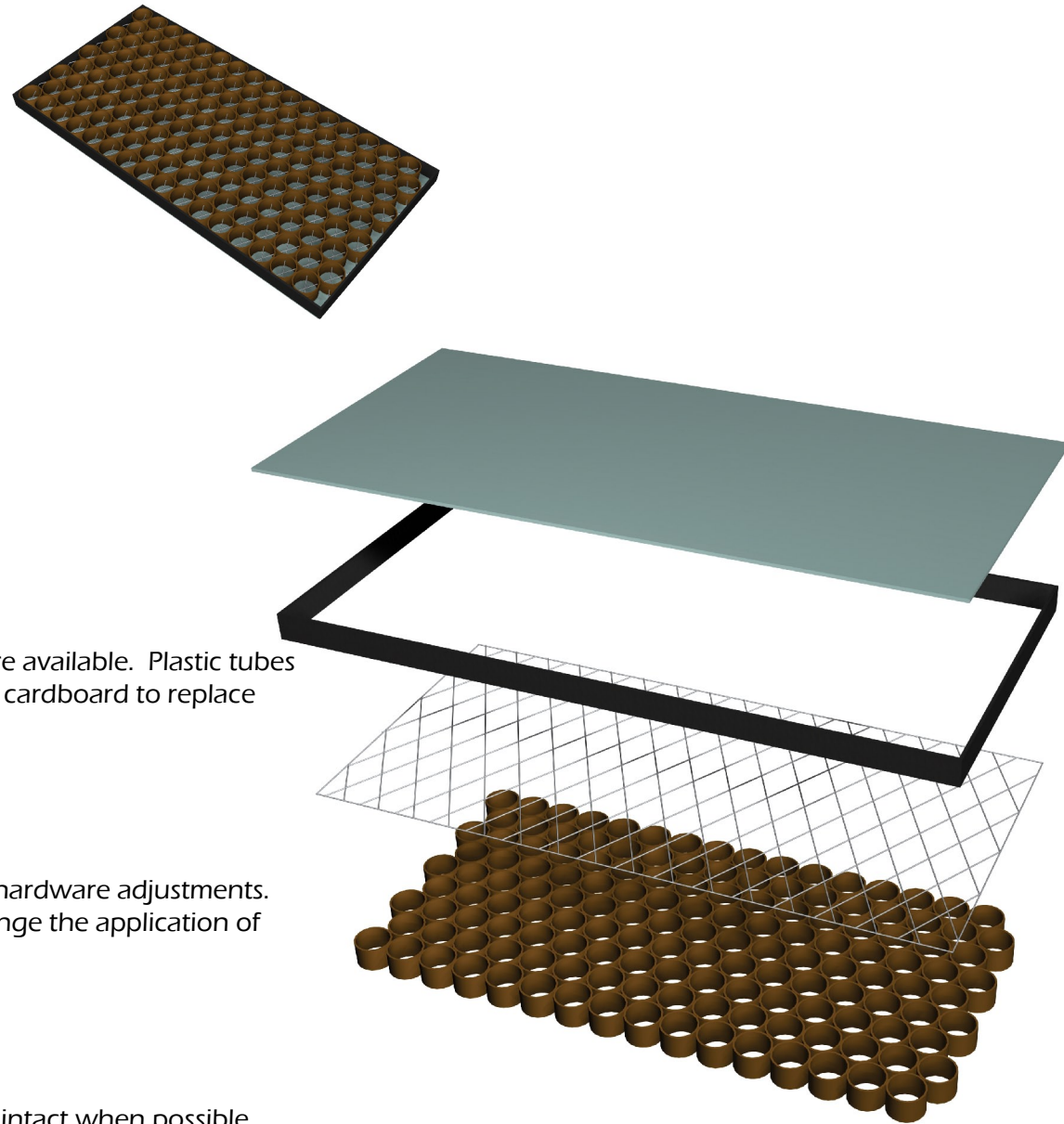
* Replacement option: Alternate cable materials are available. Plastic tubes can replace cardboard when available. Laminated cardboard to replace tubes if needed.

Upgrade/Replacement Options:

Plexiglas counter top can be replaced with minor hardware adjustments. Glass counter tops are available if you wish to change the application of the component.

Demolition Recommendation:

Steel frame, cable and cardboard tube will remain intact when possible to ease transition to second use. Plexiglas top can be removed and component can be wall hung for small unit storage.



MUFFLER LIGHT

Materials Used:

Automotive Muffler
Golf Balls *
Steel Grid
Electrical Housing
Fluorescent Light

General Notes:

1. Muffler will be cut in half to create two components
2. Golf balls will be cleaned and sorted prior to implementation
3. Electrical housing will be reclaimed from typical light fixtures
4. Golf balls will be placed upon installation

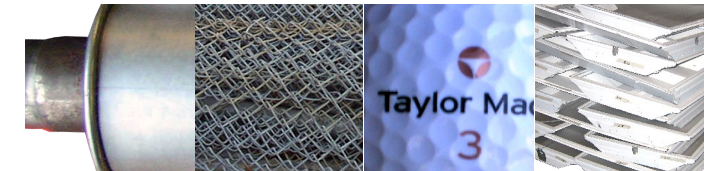
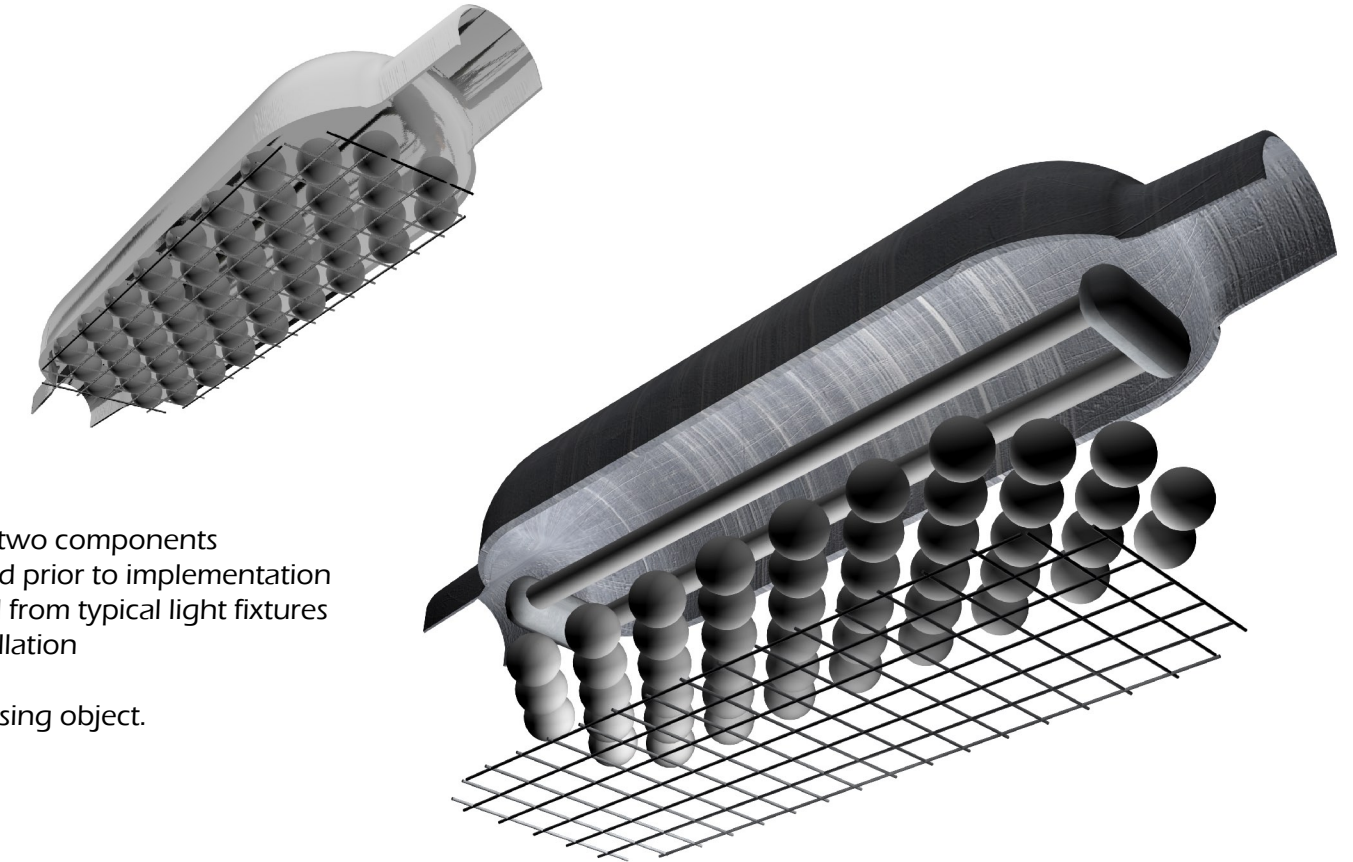
* Replacement option: Any light diffusing object.

Upgrade/Replacement Options:

Golf ball can be replaced in the field. A variety of muffler sizes are available. Multiple lighting types are available.

Demolition Recommendation:

Each material will be consolidated individually and gathered for reuse. Alternate muffler uses include garden planters,



PHASED DEVELOPMENT

PHASE BREAKDOWN

The implementation of this construction technique would happen over the course of four phases. Currently the Frances Cabrini Homes are run down and in dire need of a complete renovation or replacement. The structures are a combination of two and three story brick buildings. The current street infrastructure leaves no room for public space, and the bordering wasted space is very high value. The site is extremely valuable in location, it is being surrounded by new businesses which are squeezing the Frances Cabrini site into a smaller community that it stood previously. The buildings once referred to as army barracks are now looking for a new identity, one that will be accepted by the residents and their new neighbors.



PHASE I

DEMOLITION NOTES:

- Windows, doors and roofs to be replaced
- Brick to have eco-friendly sandblast refinish
- Interior finishes replaced as needed
- Concrete from street removal to be reprocessed in future concrete work on site

CONSTRUCTION NOTES:

- All trees to be fenced during construction
- Awnings to be added over windows
- Park areas to be fabricated off site and delivered to specified areas
- Addition of parking structures, commercial district and community center to take place during first phase
- Local contractors to be used when possible

GOALS:

- To bring the existing structures up to livable conditions
- Addition of parking garage, commercial district and community center
- Stabilize and secure the site
- Identify locations of future housing
- Create a fluid transportation system
- Create a sense of ownership and reinforce public spaces



PHASE II

DEMOLITION NOTES:

- Sidewalk concrete being removed will be reprocessed and used for future concrete work on site.

CONSTRUCTION NOTES:

- All trees to be fenced during construction
- Park areas to be fabricated off site and delivered to specified areas
- Local contractors to be used when possible
- New components to be delivered to site via semi-truck
- Trucks to remain on perimeter streets
- Local residents have the option to work with contractor

GOALS:

- Create housing for displaced residents
- Utilize common waste material to create homes
- Limit wear on existing structures
- Remove and replace trees
- Simultaneously work out of both housing systems
- First priority goes to former Frances Cabrini residents
- Maximize efficiency



PHASE III

DEMOLITION NOTES:

- Frances Cabrini homes to be de constructed incrementally
- Bricks to be refinished for use in new cladding and sidewalks
- Window glass to be stripped and reused in new components
- Doors to be reclaimed and refinished
- Counter tops to be reclaimed and refinished
- Wood studs to be gathered and reused
- Components to be removed and applied to new construction

CONSTRUCTION NOTES:

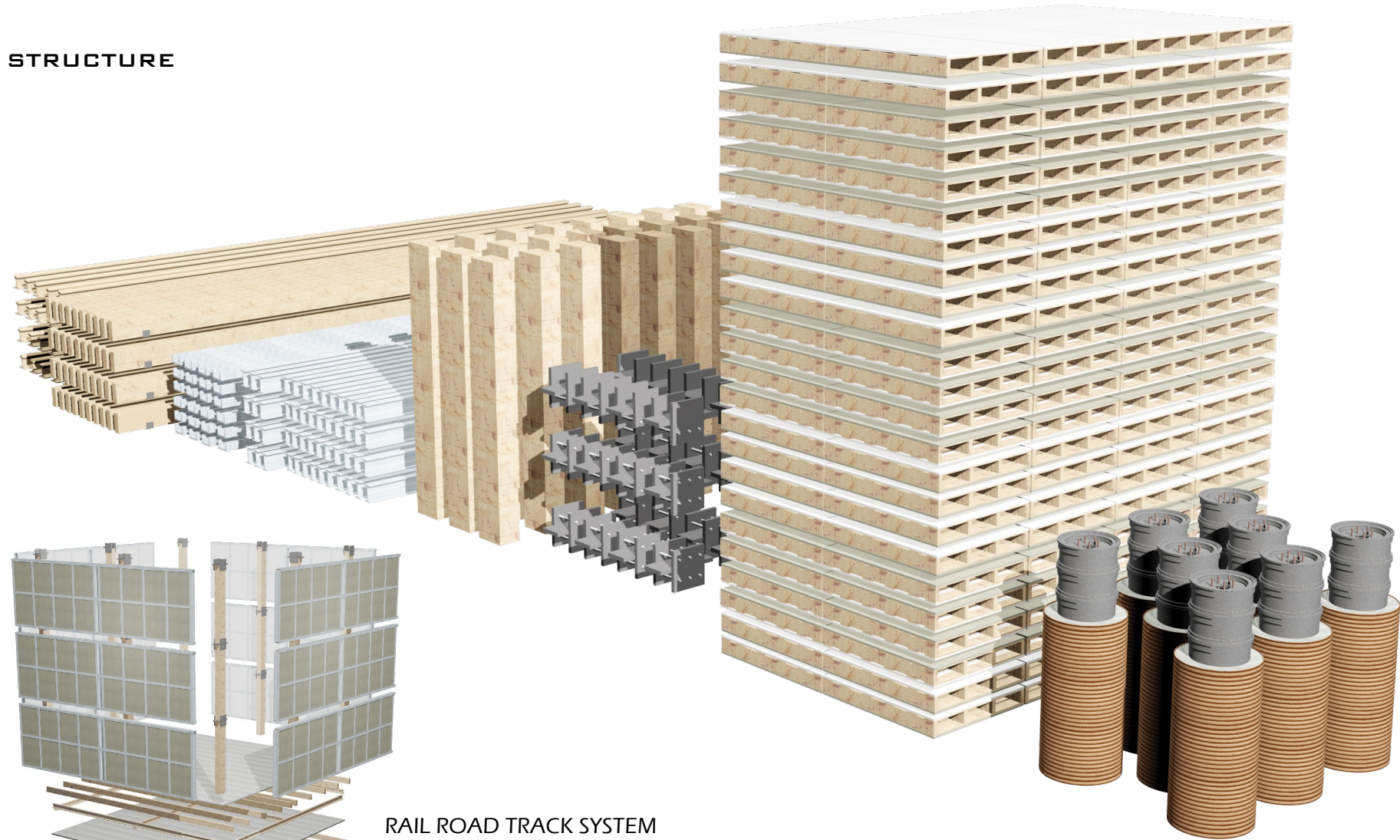
- All trees to be fenced during construction
- Local contractors to be used when possible
- New housing to work around phase II new housing
- New components to be delivered same as phase II
- Apply lessons learned from phase II

GOALS:

- Maximize housing in-fill for local residents
- Implement a new and creative solution
- Allow for future additions
- Create housing clusters to reinforce sense of community



STRUCTURE



RAIL ROAD TRACK SYSTEM

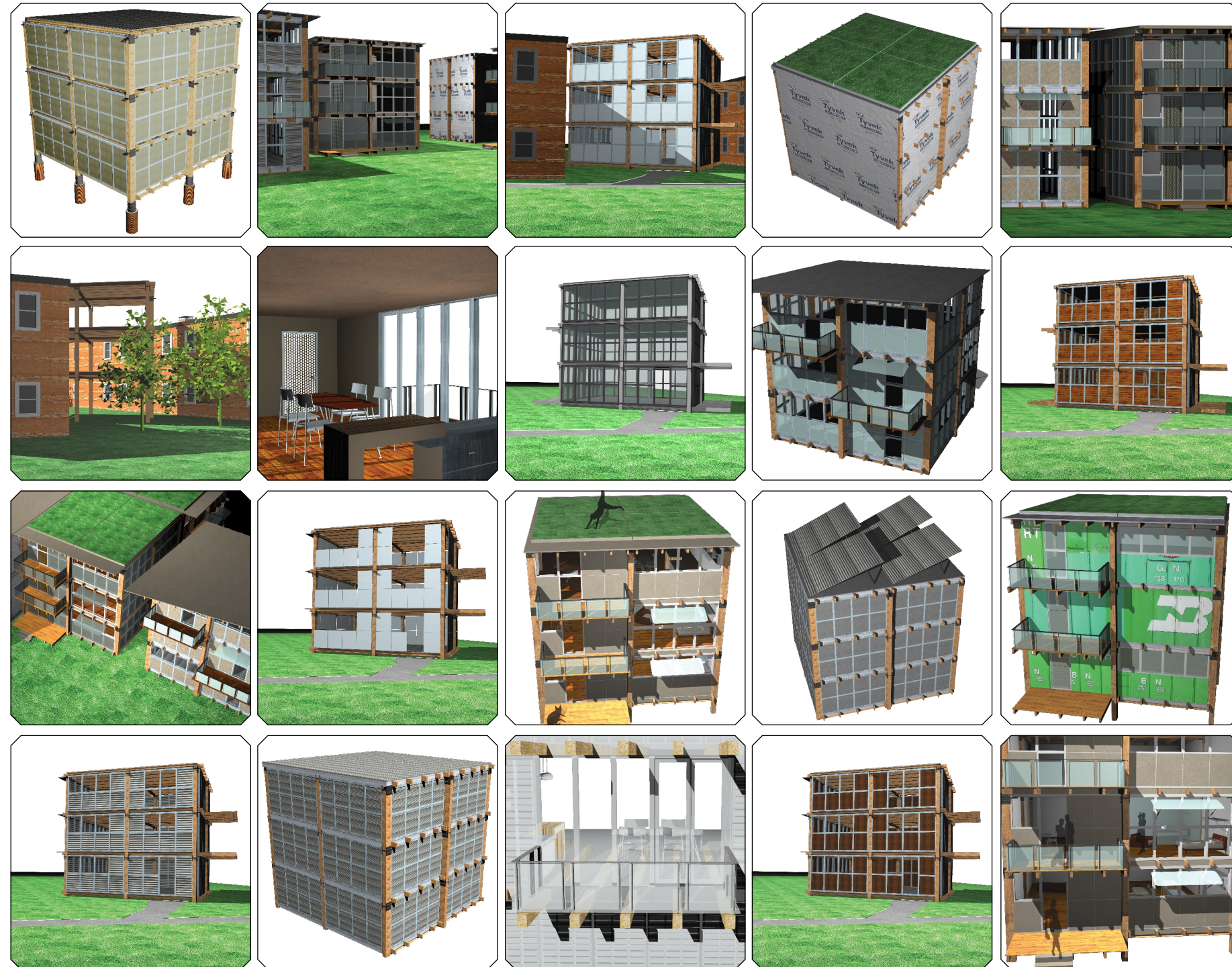
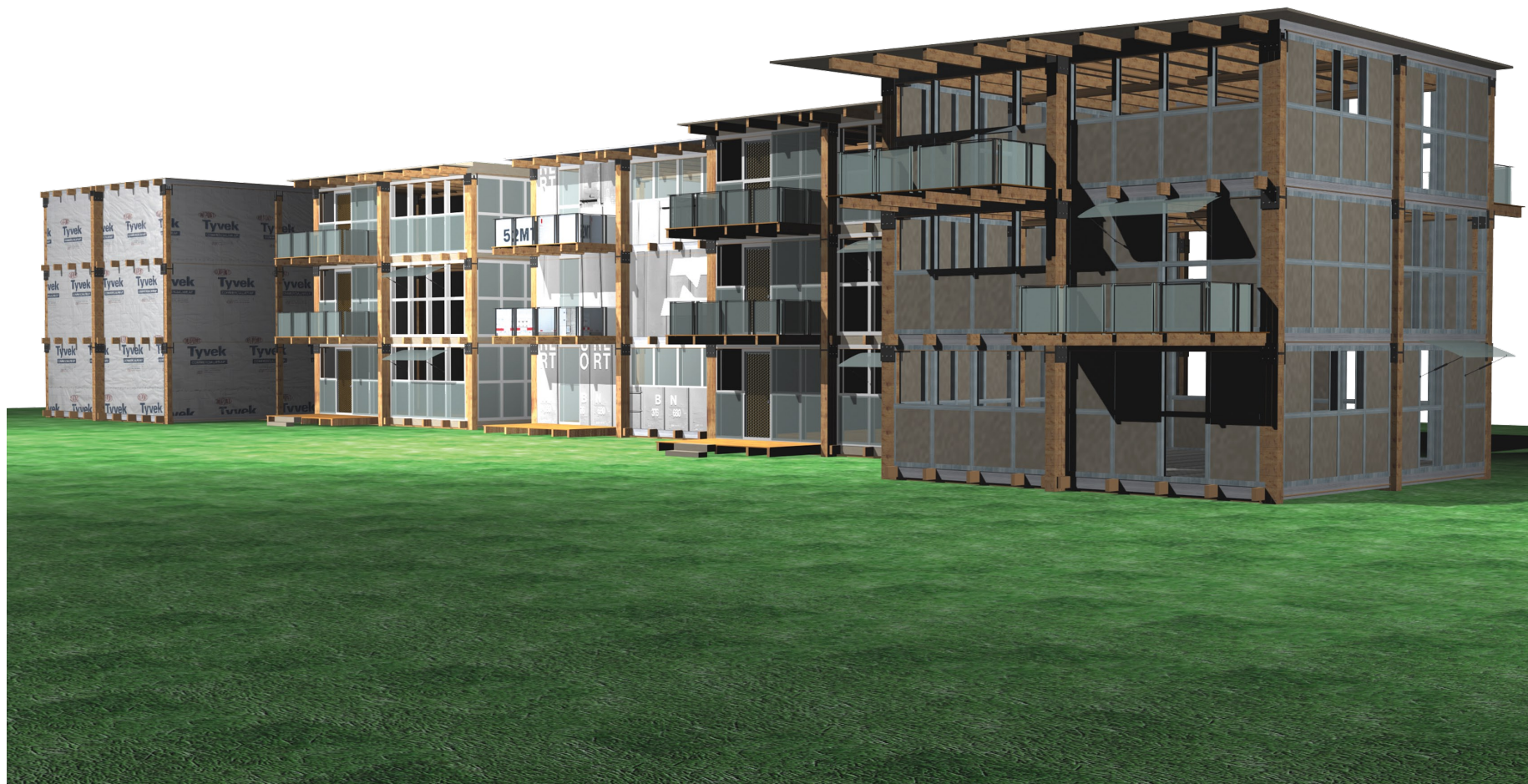
The CTA is currently undergoing renovations to upgrade several of the train lines bordering Cabrini Green. This renovation is adding a wealth of reusable materials to the region. The size of the current train stops are the issue, not the structural members themselves. Using these discarded railroad ties and tracks will create and guide the new superstructure for the development.



FINAL SOLUTION

THE NEW FRANCES CABRINI HOMES

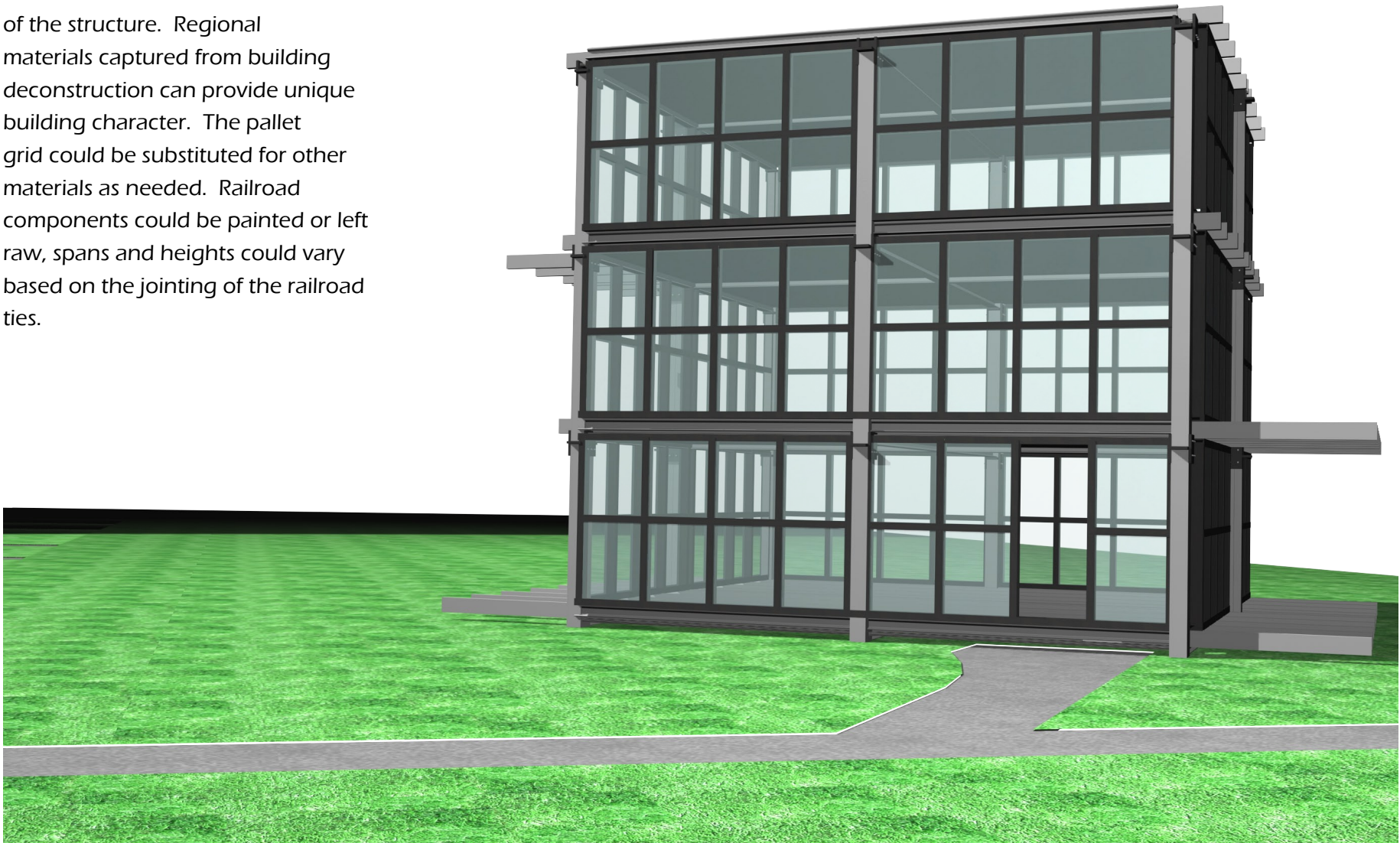
The final solution was presented with perspectives from all three phases. The following images show a wide range of material finishes and thus a different character for each home. Exterior finishes, decks, roof materials, doors, windows, awnings, overhangs, interior finishes, interior components and furniture would all be optional components for the designer to locate based on the families needs. These buildings would be constructed with the idea of future developments being added on.



FINAL SOLUTION

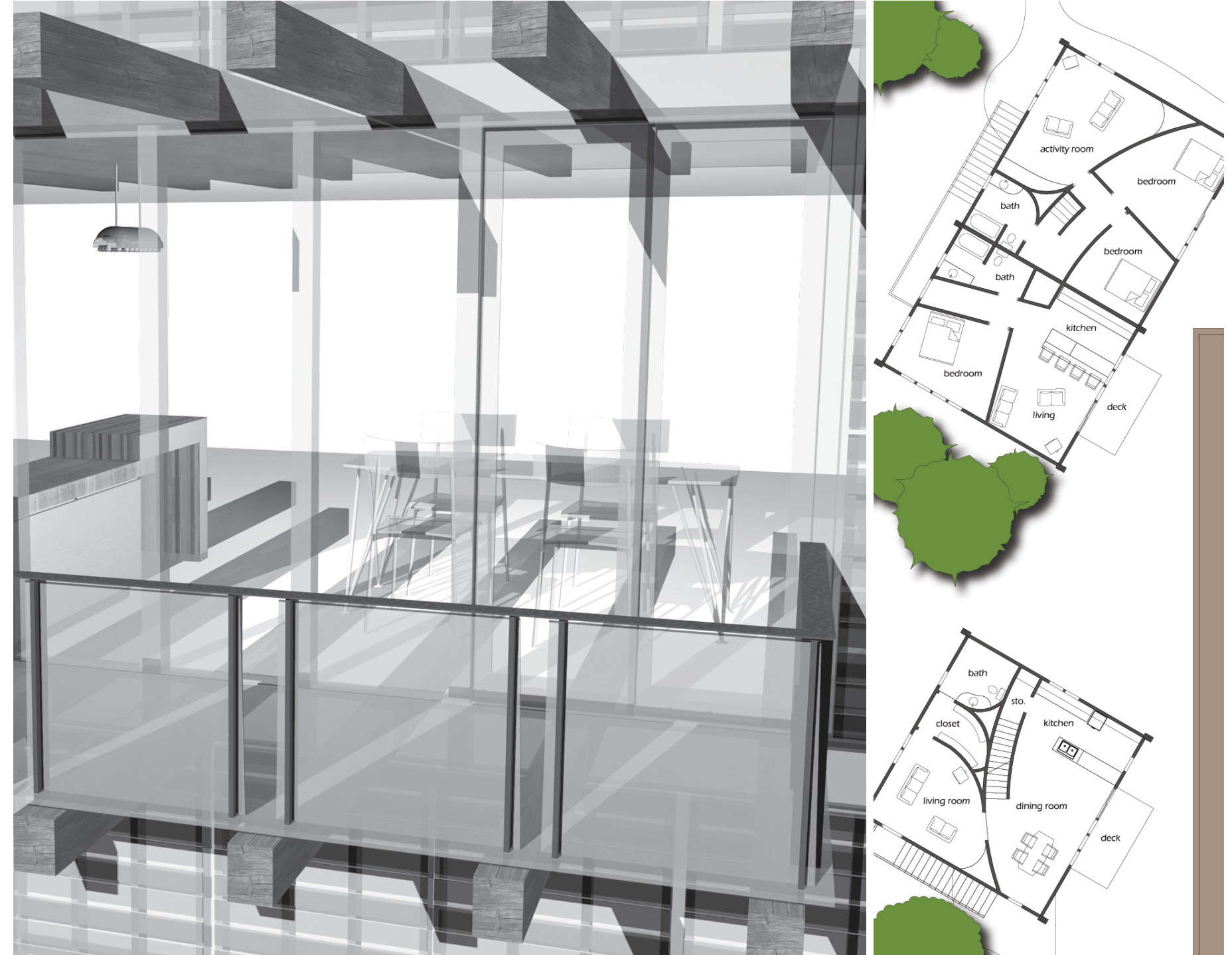
SINGLE UNIT

Using the wall panel grid system, a variety of materials can be used to clad the exterior of the structure. Regional materials captured from building deconstruction can provide unique building character. The pallet grid could be substituted for other materials as needed. Railroad components could be painted or left raw, spans and heights could vary based on the jointing of the railroad ties.

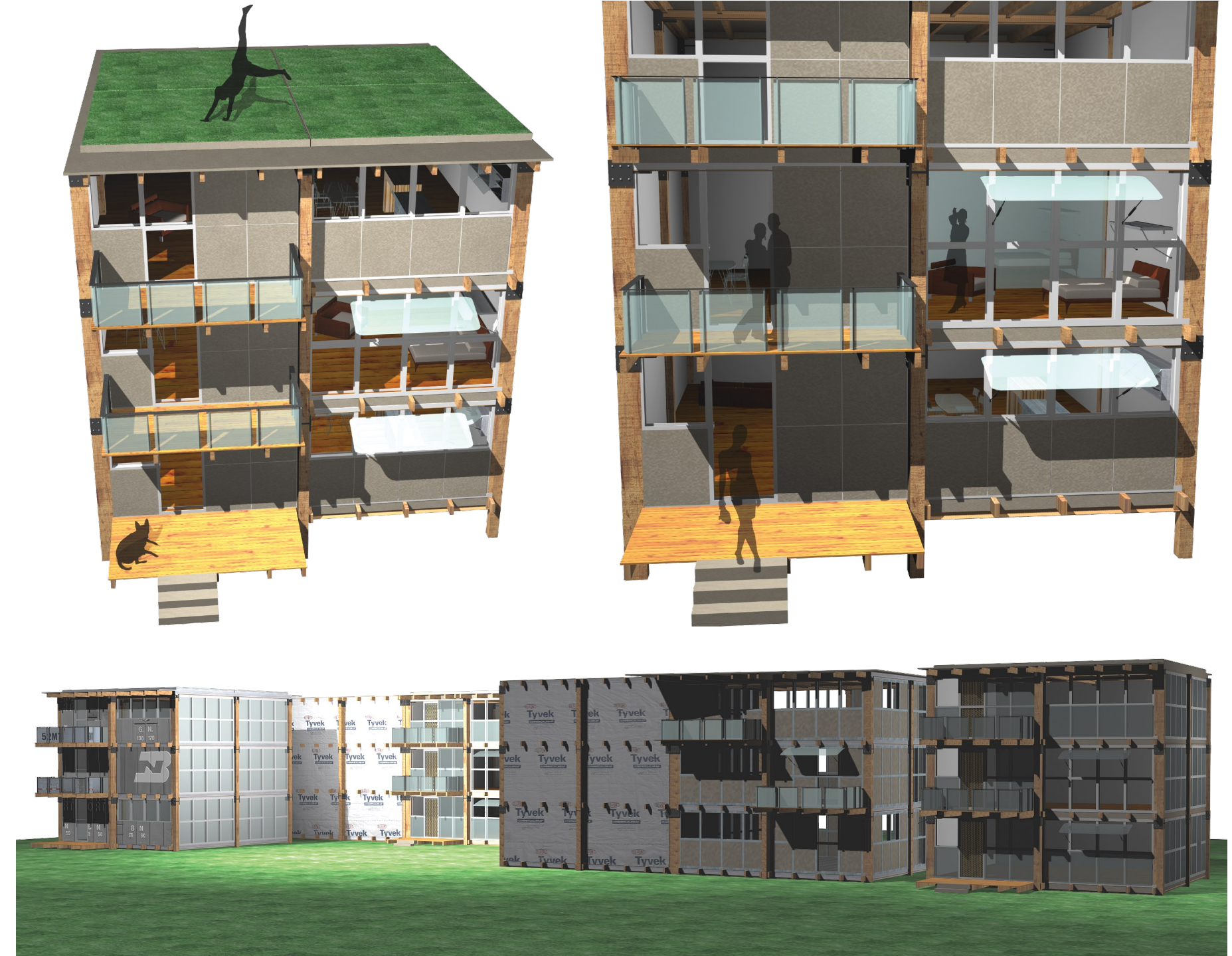
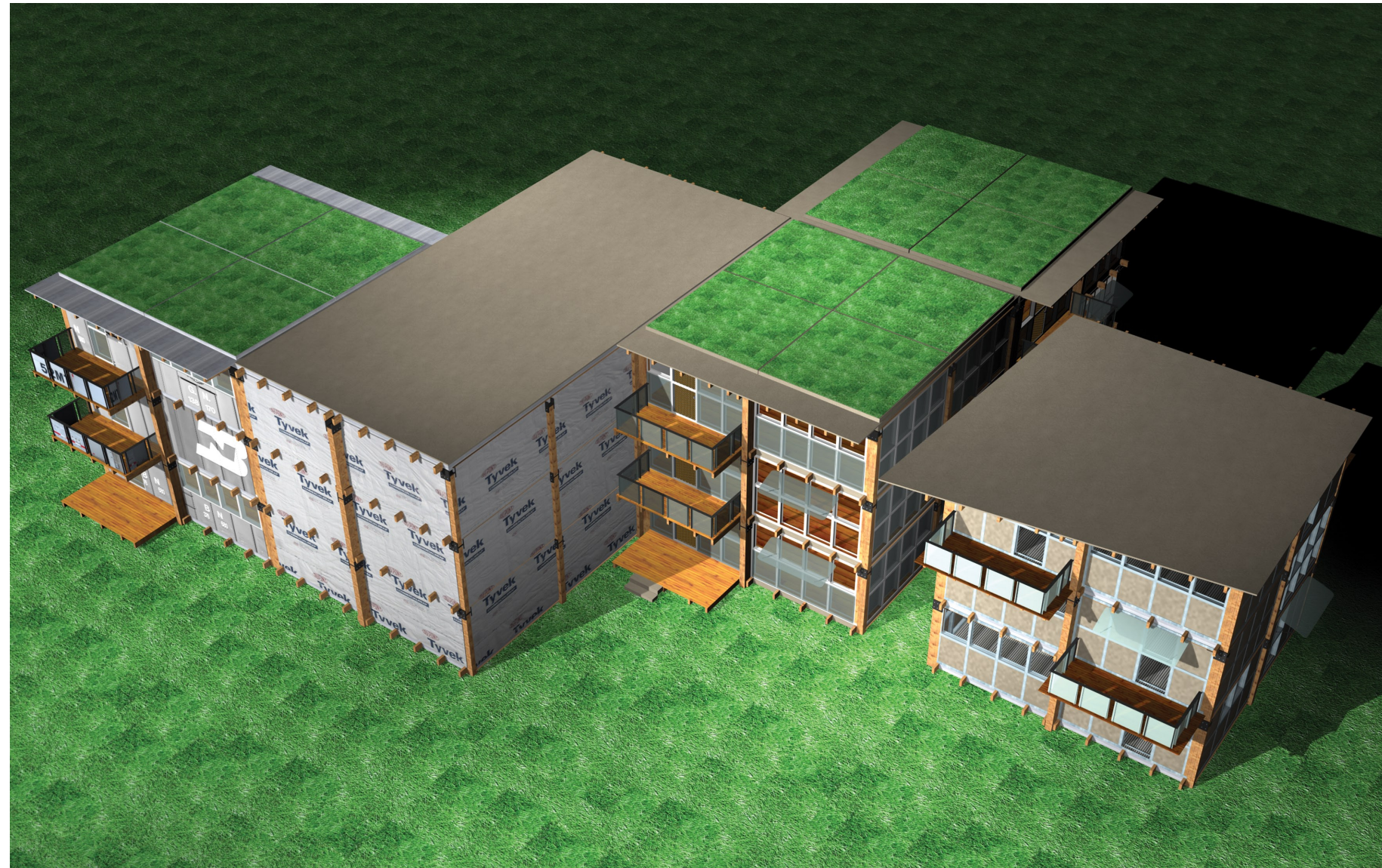


INTERIORS

A variety of floor plan options would be available based on the square footage of the residence and the number of rooms needed. A wall component would be available at a variety of width intervals, standard components would help guide room dimensions. Space planning would allow the owner to customized the arrangement of their home.



PERSPECTIVE RENDERINGS



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Research was a large portion of this investigation. Books, articles, interviews, tours, site visits, and conversation all contributed to the development of this project.



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INTERVIEWS/CONSULTANTS

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SITE VISITS

Cabrini Green
Kawasaki Plant
Tvrdy Family Farm
Unity Manufacturing Building
Chicago Police Department
GM Salvage yard
ecostore