

REBUILDING STOUFFER PLACE

A new vision for Stouffer Place Apartments at The University of Kansas

By

JORDAN C. WILKINSON

A REPORT

submitted in partial fulfillment of the requirements for the degree

MASTER OF LANDSCAPE ARCHITECTURE

Department of Landscape Architecture / Regional & Community Planning
College of Architecture, Planning and Design

KANSAS STATE UNIVERSITY
Manhattan, Kansas

2011

APPROVED BY:

Major Professor
Lee R. Skabelund, ASLA

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2011

ABSTRACT

College and university campuses have the potential to organize buildings, outdoor spaces, pedestrian corridors, roadways, parking lots, and infrastructure all within one cohesive and unified place. Dynamic but unified spaces are typically the result of thoughtful architecture, landscape architecture, and years of planning. Recognizable design styles, material use, and plant palettes work together to create something bigger than simply a collection of buildings, transportation corridors, and outdoor spaces. Each building, group of buildings, series of spaces, transportation feature, and infrastructural component needs to be designed and implemented with the entire campus in mind to be truly successful. When planned correctly, a unified campus can harbor innovation, provide inspiration, and initiate interaction.

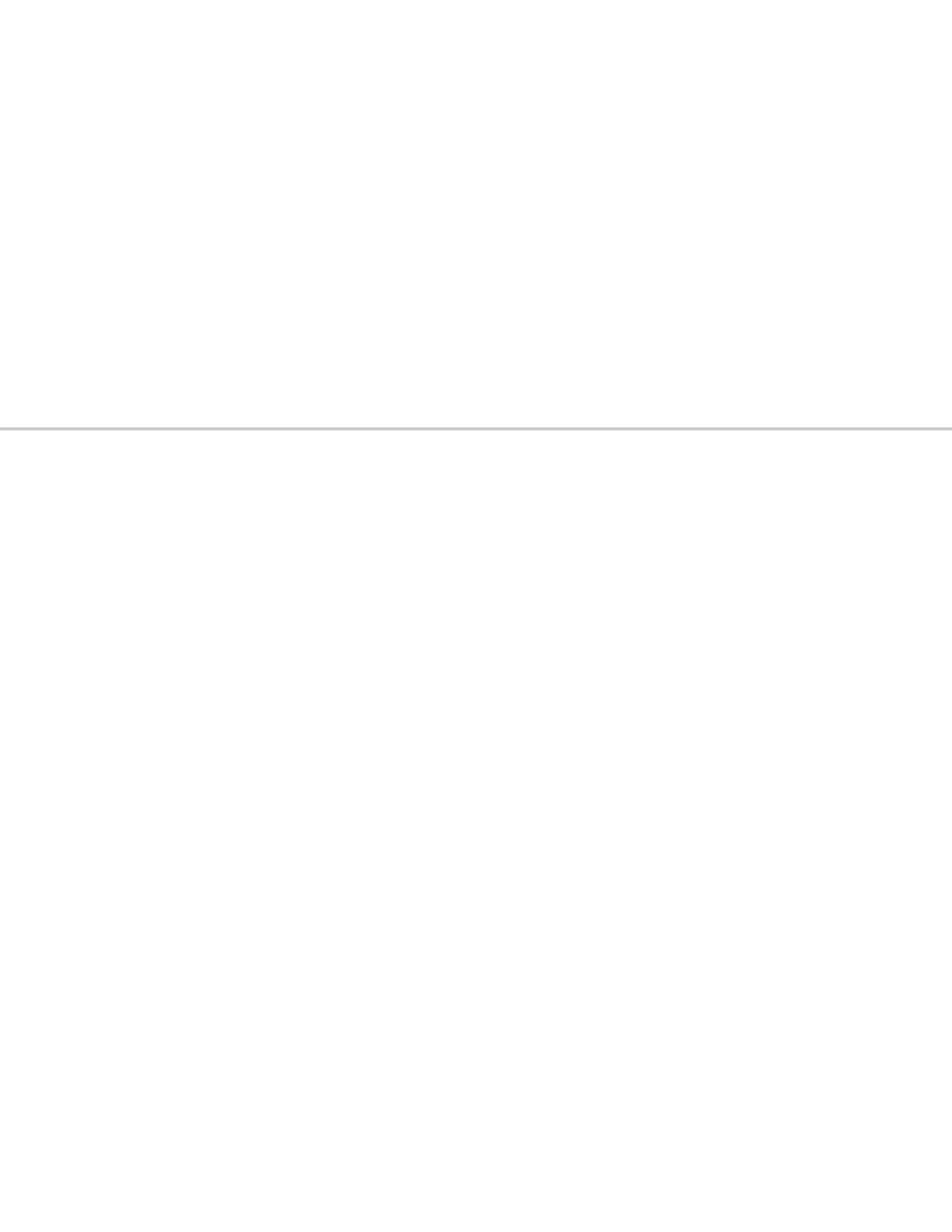
Stouffer Place Apartments has evolved into a secluded housing development within the midst of the busy University of Kansas (KU) campus. Apartments are only available to graduate students, international students, students with families, non-traditional students, and post-doctoral researchers. Stouffer Place has maintained a quiet and peaceful atmosphere at the corner of 19th and Iowa in Lawrence, Kansas since 1957. Like so many of the university housing developments built after World War II, Stouffer Place is full of aging infrastructure, providing the basis for a discussion of a new or renovated development on the site (Casey-Powell 1999, 86). Not only are the aging Stouffer Place buildings an eyesore to many people in the community, but their existing arrangement limits community interaction and shared space. Additionally, many of the Stouffer Place apartment buildings are near the end of their lifetime, but they can they be recycled, reused, and deconstructed to create dynamic spaces for the residents. In short, Stouffer Place can be redeveloped to create a new model of affordable, sustainable, and self-sufficient on-campus apartments that attract and retain students as well as create a higher quality of life.

With the growing trend of sustainable building practices, KU's Department of Student Housing (DSH) has an immense opportunity to transform this student community into a model for other universities nationwide. By implementing a design strategy that successfully reuses and phases out the existing built infrastructure of the site, a place that facilitates sustainable living and community interaction will be created. Through this project, the culture and identity of Stouffer Place is revealed and catalyzed, using the missions of KU and DSH to create a plan that supports, sustains, and creates.

A photograph of a tree trunk and branches against a stone wall. The tree trunk is on the left, and its branches extend across the top and right. The stone wall is made of large, rectangular blocks with visible mortar lines. The overall tone is muted and natural.

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Master's Report
May 2011

Kansas State University
College of Architecture, Planning, & Design
Department of Landscape Architecture / Regional and Community Planning

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Lee R. Skabelund, Department of Landscape Architecture / Regional and Community Planning

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figure 1.1 Stouffer Place Sign

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polycentric.csupomona.edu

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Most importantly, I would like to thank my friends and family for all of their love and support during my time at Kansas State University. This journey could not have been possible with great friends around me for five years.

Mom, Dad and Jess... thank you for always being there for me.



1



INTRODUCTION:

This chapter serves as the basic introduction to the project, delivering the dilemma and thesis.



DILEMMA:

Like so many of the university housing developments built after World War II, Stouffer Place is full of aging infrastructure, providing the basis for discussion of a new development on the site (Casey-Powell 1999, 86). KU faces the critical choice of expensive patchwork renovation or total redevelopment. There must be a solution that seeks common ground between these two costly options, and creates a place that students are proud to call home. Stouffer Place is sited at a critical spot within the KU campus as well as the Lawrence community, but the existing arrangement of buildings and roads limits community interaction and shared space.

As the modern student develops new needs and preferences, the university housing strategy must adapt and accommodate. Students are becoming less likely to stay in traditional residence halls beyond their freshman year in college, and are requesting more private housing with plenty of amenities. In recent years, many universities have been renovating traditional residence halls into suites and apartments, but many students are still moving off campus (Educational Facilities Laboratories 1972, 38-39). It is the responsibility of the universities to provide an affordable, self-sufficient housing alternative for students to achieve a higher quality of life.

Along with the responsibility of providing excellent housing communities, universities should be leading the way into new methods of sustainable design, construction, and development. Traditional construction methods create tons of waste and pollution, while at the same time using enormous amounts of energy to transport and create new materials. Tearing down aging buildings and sending them to landfills wastes precious materials and embedded energy that can easily be deconstructed and recycled to create new spaces. "Reducing and recycling construction and demolition materials conserves landfill space, reduces the environmental impact of producing new materials, creates jobs, and can reduce overall building project expenses through avoided purchase/disposal costs" (EPA, Construction and Demolition Materials 2008).

As a leading academic and research institution, The University of Kansas can use this housing dilemma at Stouffer Place as an opportunity to educate and inspire change. A primary question is: How can this site be redeveloped so as to provide a successful model for sustainable student housing?





THESIS:

Stouffer Place can be redeveloped into a new model of sustainable on-campus apartments that attract and retain students. By implementing a strategy that successfully reuses and phases out the decaying built infrastructure of the site, a place that harbors and encourages sustainable living and community interaction will be created. Sustainable design techniques will catalyze the valued existing culture of this place while creating a positive impact on the surrounding community of Lawrence, Kansas.

figure 1.2 Sycamore Branches

19th Street

2

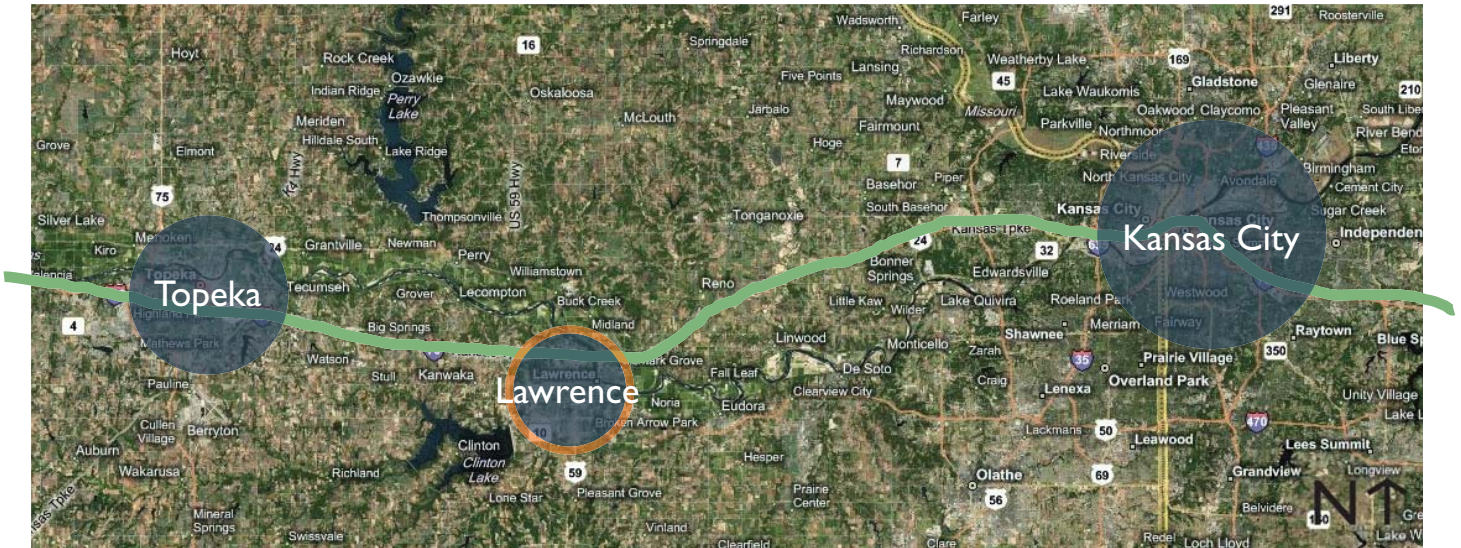
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BACKGROUND:

Chapter 2 provides a brief history of the site, as well as a look at the project goals and key topics to be addressed.

Ellis

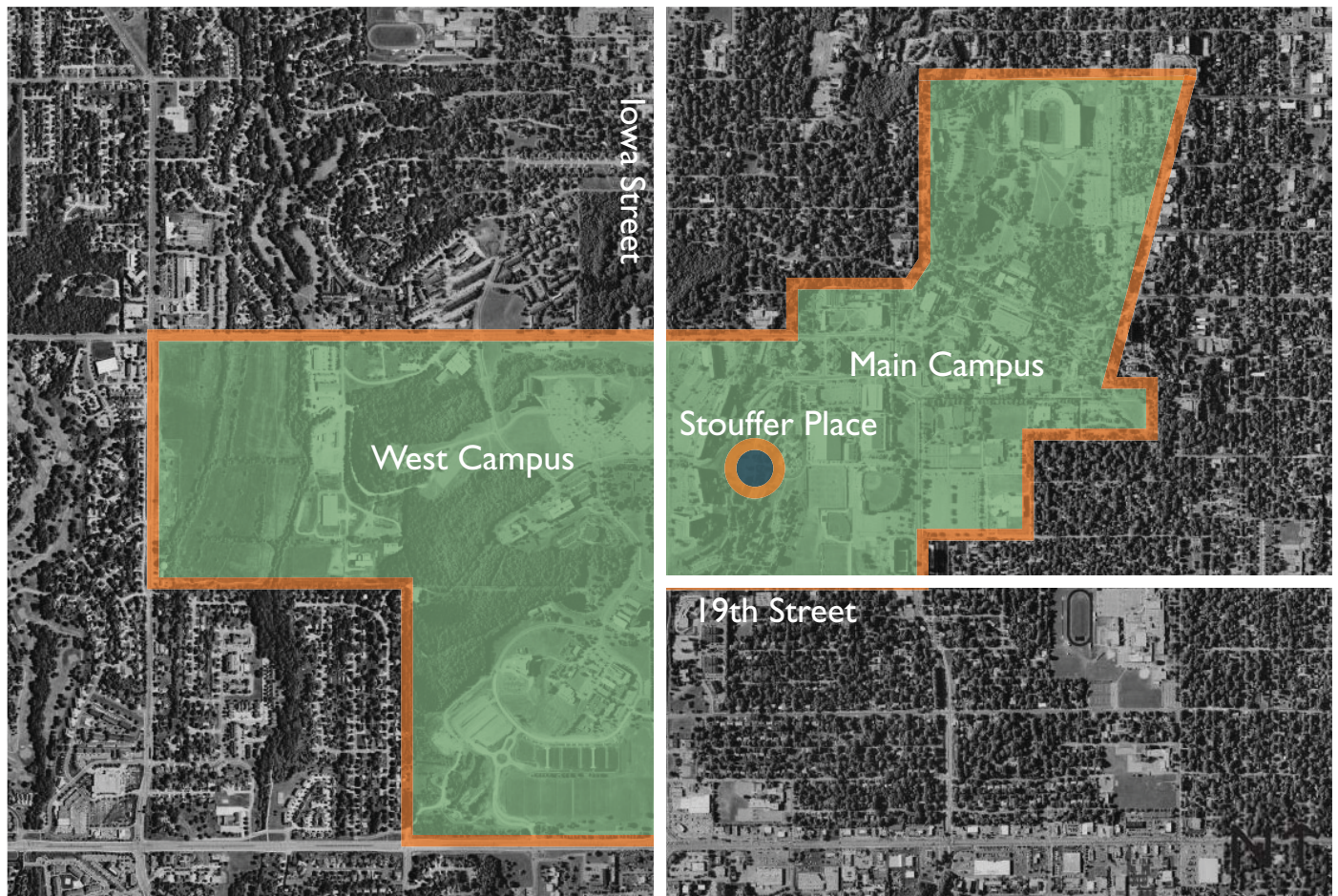
LOCATION AND SIZE OF SITE:



Lawrence, Kansas:

figure 2.1 Lawrence, KS

Lawrence is located in the northeast corner of Kansas. Adjacent to the I-70 corridor, Lawrence lies between Topeka, and Kansas City. Many residents of Lawrence commute to these cities for work.



The University of Kansas:

figure 2.2 KU Campus

The University of Kansas includes approximately 1000 acres in the heart of the City of Lawrence. Stouffer Place is near the center of campus, at the intersection of Iowa and 19th Streets.



Stouffer Place:

figure 2.3 Stouffer Place

Stouffer Place Apartments is a development of 25, 2-story apartment buildings. The buildings and circulation are predominantly oriented roughly north to south in response to the topography.

CRITICAL EXISTING SITE CONDITIONS:

Site Background:

Named after Ellis B. Stouffer, former dean of the university (1945-51), Stouffer Place was opened in 1957 (University of Kansas website). The site at Stouffer Place Apartments has great potential to be a well-connected sustainable development at the heart of the KU campus. There are currently 25 buildings containing a total of 283 units ranging from one to three bedrooms. Stouffer Place Apartments are only available to graduate students, couples and students with children, post-doctoral researchers, and non-traditional students. Stouffer Place is currently almost entirely occupied by international students.

Infrastructure:

After 54 years of occupation, the buildings at Stouffer Place are currently approaching the end of their lifetime. Only a handful of buildings have recently been renovated, and only one renovation addressed ADA accessibility. A few portions of the apartments have even been closed off to residents, due to shifting concrete slabs and structural components. As a result, these units have been deemed unsafe and not suitable to be lived in. The aging brick facades and exterior balconies provide a less than inviting presence to this vital gateway to the south of KU's campus. With these thoughts in mind, KU has been considering the options of renovating or redeveloping the site.

Site Layout:

Although mature trees shade some of the buildings, the layout and orientation of this aging infrastructure is less than optimum for energy efficiency. The western elevations of many apartment buildings are left exposed to the afternoon sunlight. The north-south orientation of the buildings works well with the existing topography, but creates very little shared community space for the residents. Using the same footprint for every building on the site may have been cost-effective during construction, but it lends little to the sense of place here. Parking lots and leftover greenspaces are some of the only opportunities for usable community spaces.

Context:

Stouffer Place is on the southern edge of the main KU campus. With 19th street as a major thoroughfare along the south, this edge of campus has been under-utilized as a gateway into the campus. Immediately to the west of the site is the group of five residence halls traditionally called 'Daisy Hill'. To the north is the Hilltop Child Development Center. To the east of the site are various KU Athletics practice and competition facilities. There are no real resources nearby for the residents of Stouffer Place. The nearest markets, stores, and other commercial purveyors are located to the south of the site along Clinton Parkway.

figure 2.4 Playground



PROGRAM POSSIBILITIES:

Cultural & Community:

Throughout the years, Stouffer Place has become home to many international students working on graduate or doctoral degrees. This group of international students has a great sense of ownership for their community at Stouffer Place. Since most of the current residents stay at Stouffer Place for 3-4 years, they have a desire to make this area of campus a better place to live and enhance their community in any way possible. In order to maintain and build upon this positive residential culture at Stouffer Place, careful thought must be put into the phasing and design of community spaces and amenities that will be used for years to come.

Sustainability:

As the current infrastructure reaches the end of its expected lifetime, KU has great opportunity to take advantage of new building and site design practices that will improve site efficiency and sustainability. Development of an efficient building model that works well with the site and topography will be critical to the formation of a sustainable model of on-campus housing for KU. With the amount of existing infrastructure on the site, much thought should be put into the reuse of building materials for future site amenities and community spaces. The possibility of mixed-use amenities for the residents should also be considered in order to promote a walkable and self-sufficient community.

figure 2.5 Front Doors



KEY QUESTIONS:

The following questions offer an initial platform for exploring design ideas for Stouffer Place:

- What are the housing needs of a modern student? How can they be met in a sustainable manner?
- What are the economic and social impacts of renovating a housing development at KU?
- How can the aging built infrastructure of Stouffer Place be reused, recycled, expanded, or successfully phased out to create successful community spaces and new apartments?
- How can a new arrangement of apartments work with the site topography to create a community that has a variety of outdoor spaces enjoyed and shared by the residents?
- What is the best housing strategy to attract and retain students to this new model of sustainable on-campus housing?
- What is the role of Stouffer Place in the future KU campus?
- What is the best development phasing strategy to meet the social, economic, and ecological needs and limitations of the site and university?
- Which sustainable technologies are appropriate for the site, and what are the best ways to implement them throughout the site?



AREA OF STUDY:

Sustainable redevelopment, campus design, infrastructure reuse, student housing, regenerative systems.

This project explores the design and planning considerations of redeveloping an aging campus apartment development. The over-riding question is: How can this site be redeveloped to create a sustainable student housing community that attracts and retains students?

In regards to this study, the phrase 'sustainable student housing' can be defined as:

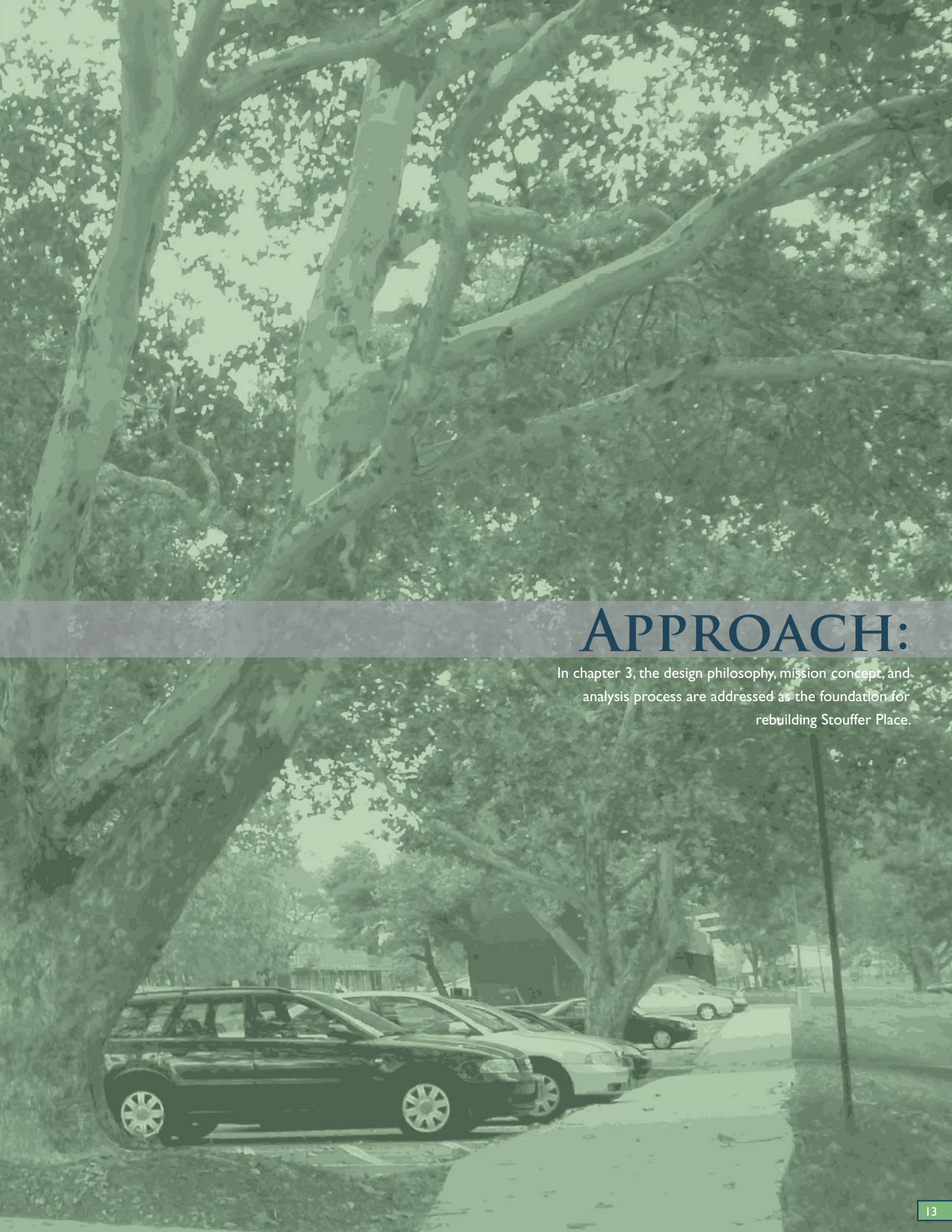
A building or group of buildings where students reside on an academic campus that is designed and built in a manner that meets the needs and aspirations of the present residents, and the university and state of Kansas as a whole, without compromising the ability of future generations to meet their needs related to people (particularly residents and visitors to Stouffer Place), the planet (namely the site and local community/environment), and economics (especially the financial obligation of the university and its students).

figure 2.6 View of Residence Halls





3



APPROACH:

In chapter 3, the design philosophy, mission concept, and analysis process are addressed as the foundation for rebuilding Stouffer Place.

DESIGN PHILOSOPHY:

To ensure that this project followed a clear path and was framed by a relevant mission statement, the following personal design philosophy was developed:

My personal design philosophy is to create memorable places that will provide the setting for vivid memories and an improved quality of life--through the implementation of responsible and ethical design solutions that respond to the natural environment.

PERSONAL GOALS & OBJECTIVES:

- To approach this project with an open mind, and make every attempt possible to challenge myself to “think outside the box.”
- To fully utilize my personal knowledge of the University of Kansas (KU) campus and planning process to influence the final design solution, and keep every design/planning decision that I make transparent.
- To understand the potential impact of a sustainable student housing development at a modern academic research institution.
- To understand the complexities and challenges in making an on-campus student housing development successful.
- To challenge my existing skills and knowledge of graphic representation and 3-D modeling.
- To further my knowledge of campus design, student housing, and sustainable development practices.
- To create a product that will ultimately influence the planning and design decisions that The University of Kansas makes regarding the redevelopment of Stouffer Place.

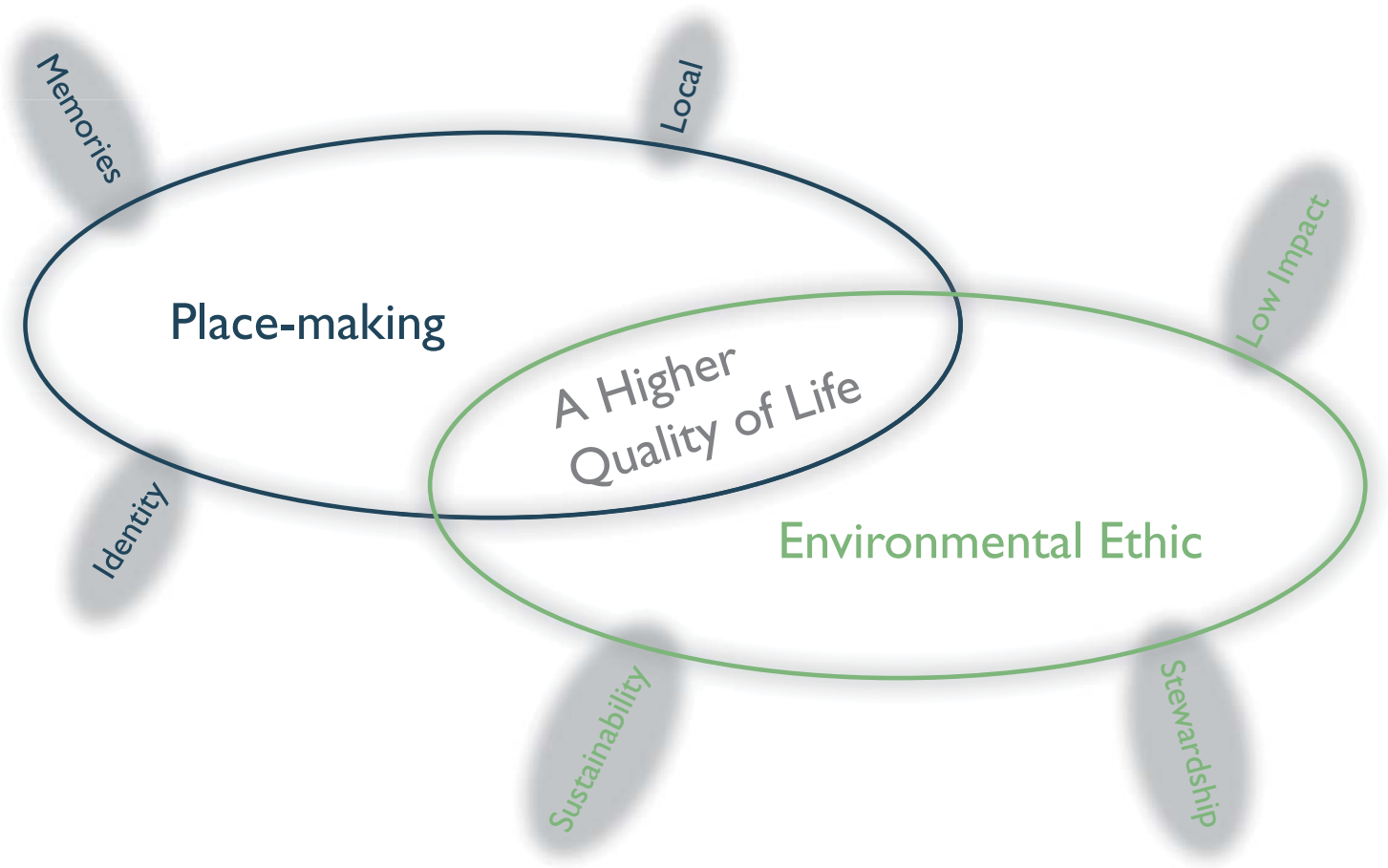


figure 3.1 Design Philosophy



figure 3.2 Memories



figure 3.3 Local



figure 3.4 Identity



figure 3.5 Sustainability



figure 3.6 Low impact



figure 3.7 Stewardship

MISSION DEVELOPMENT:

The University of Kansas Mission:

“The University of Kansas is a major comprehensive research and teaching university that serves as a center for learning, scholarship, and creative endeavor. The University of Kansas is the only Kansas Regents university to hold membership in the prestigious Association of American Universities (AAU), a select group of 62 public and private research universities that represents excellence in graduate and professional education and the highest achievements in research internationally” (University of Kansas website).

The University of Kansas Values:

“The university is committed to excellence. It fosters a multicultural environment in which the dignity and rights of the individual are respected. Intellectual diversity, integrity and disciplined inquiry in the search for knowledge are of paramount importance” (University of Kansas website).

Department of Student Housing Mission:

“Building excellent communities through individual support and respect” (University of Kansas Department of Student Housing website).

Department of Student Housing Central Values:

- *We provide essentials – shelter, security, nutrition – and strive for excellence in all we do*
- *We promote academic success, growth, leadership, and participation in all our communities*
- *We foster unity and understanding while celebrating the individual*
- *We offer a variety of innovative and affordable environments through effective management*

(University of Kansas Department of Student Housing website)

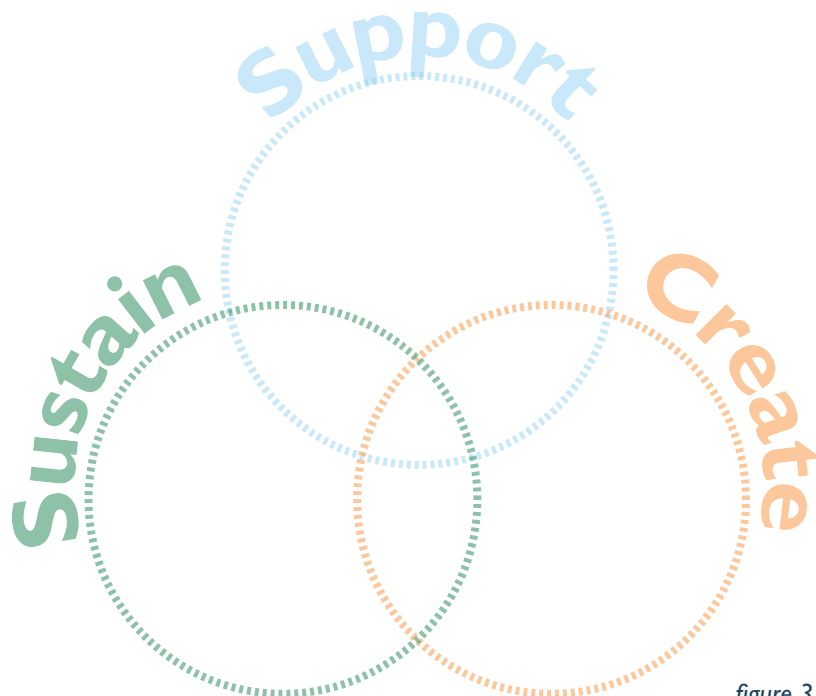


figure 3.2 Project Goals

MISSION CONCEPT:

The missions of the university and department were merged to create a conceptual mission diagram for Rebuilding Stouffer Place.

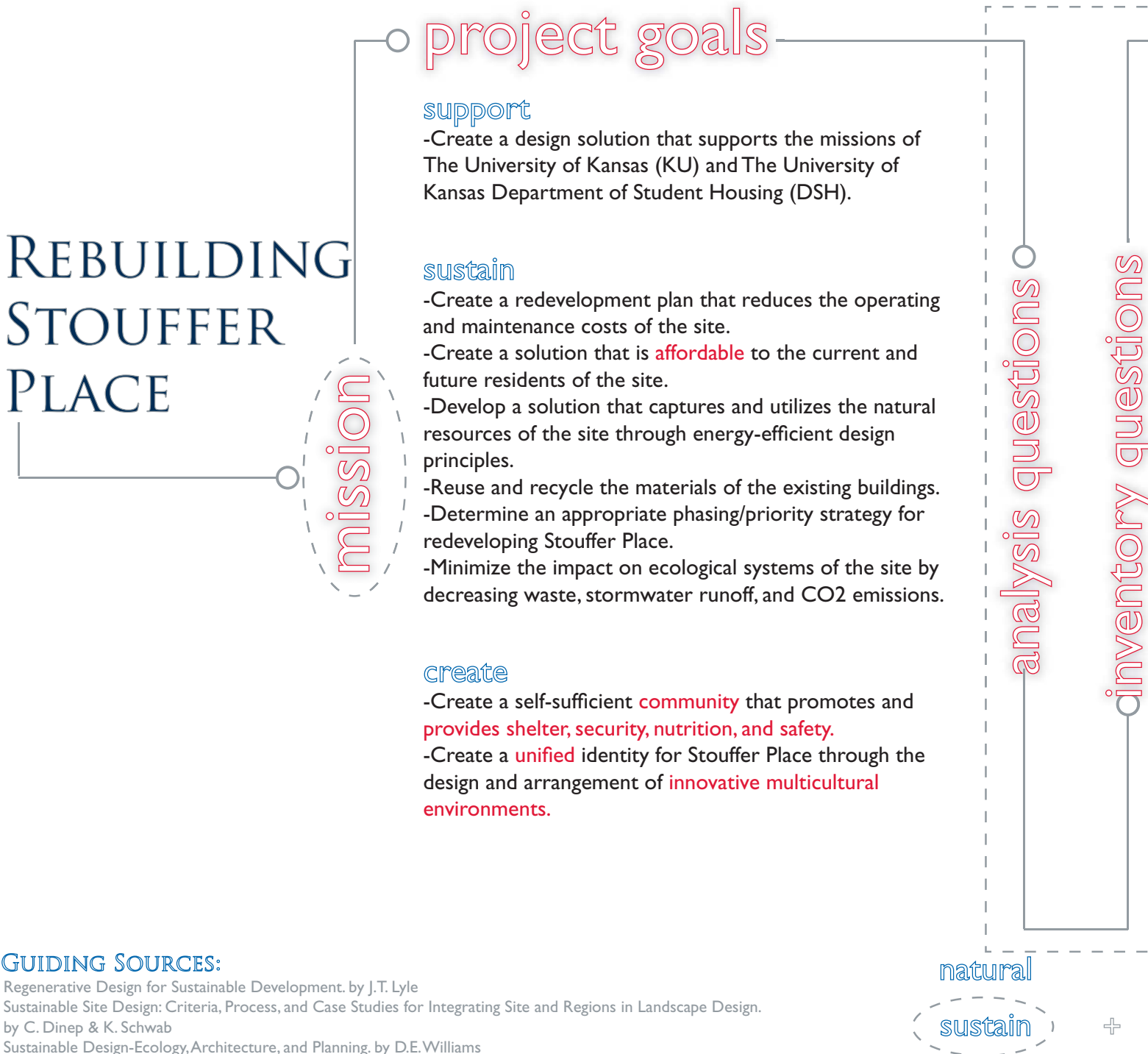


figure 3.3 Mission Concept

INVENTORY + ANALYSIS PROCESS:

The inventory and analysis process is built upon the formulation of a solid mission. The mission in turn directly frames the project goals, which have been categorized into support (social), sustain (natural), and create (program). Once the project goals were outlined, the site inventory and analysis process was initiated and guided by a set of wide-

-ranging analysis questions. From each analysis question, came a series of specific inventory questions aimed at answering the larger analysis questions. Once the necessary inventory items were developed, they were analyzed to answer the original questions.



GUIDING SOURCES:

Regenerative Design for Sustainable Development. by J.T. Lyle
 Sustainable Site Design: Criteria, Process, and Case Studies for Integrating Site and Regions in Landscape Design.
 by C. Dinop & K. Schwab
 Sustainable Design-Ecology, Architecture, and Planning. by D.E. Williams

Once the site inventory and analysis process was complete, the results were used to determine a more exact program of elements leading to a schematic design. These program elements were then filtered through a series of sustainability criteria before being finalized for design. The sustainability criteria are a series of objectives that encompass connectivity,

meaning, purpose, efficiency, and stewardship, terms used in the book "Sustainable Site Design" to evaluate a site and its relationships to contextual matters (Dinep & Schwab 2010, vii). The words within the project goals highlighted in red below were taken directly from the mission concept.

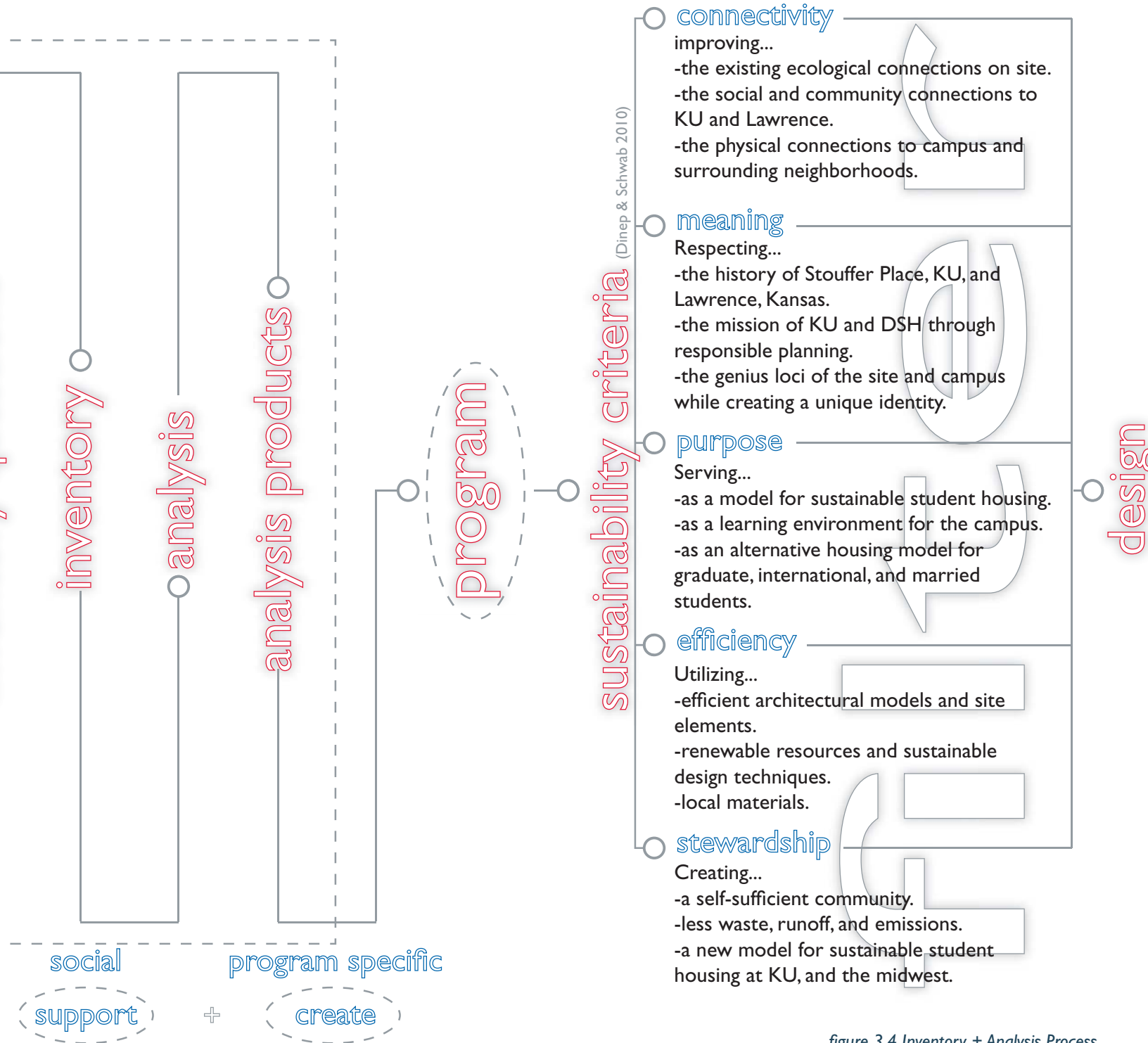


figure 3.4 Inventory + Analysis Process



4



PRECEDENTS:

In this chapter, two previously built projects are analyzed in the form of precedent studies to provide a framework for the site analysis and design process.

JARDINE APARTMENTS:

Kansas State University Manhattan, KS

Two precedents have been chosen to serve as guiding examples for Rebuilding Stouffer Place. Jardine Apartments at Kansas State University in Manhattan, Kansas are analyzed to gain an understanding of the complexities of designing student apartments, while a look at the John T. Lyle Center for Regenerative Studies at Cal Poly Pomona provides a site for the analysis of sustainable technologies and applications.

Project Name:

Jardine Apartments

Location:

Manhattan, KS

Constructed:

1957-1963,
Community Center 1990,
Renovation 2005-2015

Cost:

\$82 million (phase I) \$22 million (phase II)

Size:

54 acres

Designers:

GLMV Architecture

History:

Jardine Apartments opened in 1957 to accommodate the influx of students and families that came to Kansas State University post World War II. Sited just north of the Manhattan, Kansas campus, Jardine Apartments are just a short walk away from classes. The original design sited 31 buildings with 552 apartments, six laundry centers, and one community center was constructed in 1990 (Kansas Division of Facilities Management). Like many of the housing developments of its time, Jardine was facing the end of its lifetime. Increasing maintenance costs and client base changes spurred the planning effort towards a full renovation. The redevelopment of Jardine Apartments was split into two phases, the first of which is now complete. Jardine now houses almost 1,400 residents in over 700 apartments (KSU, 2010). Phase two is currently underway and should be completed in 2015 (KS DFM, 2009).





figure 4.1 Denison neighborhood

JARDINE APARTMENTS, 1957:

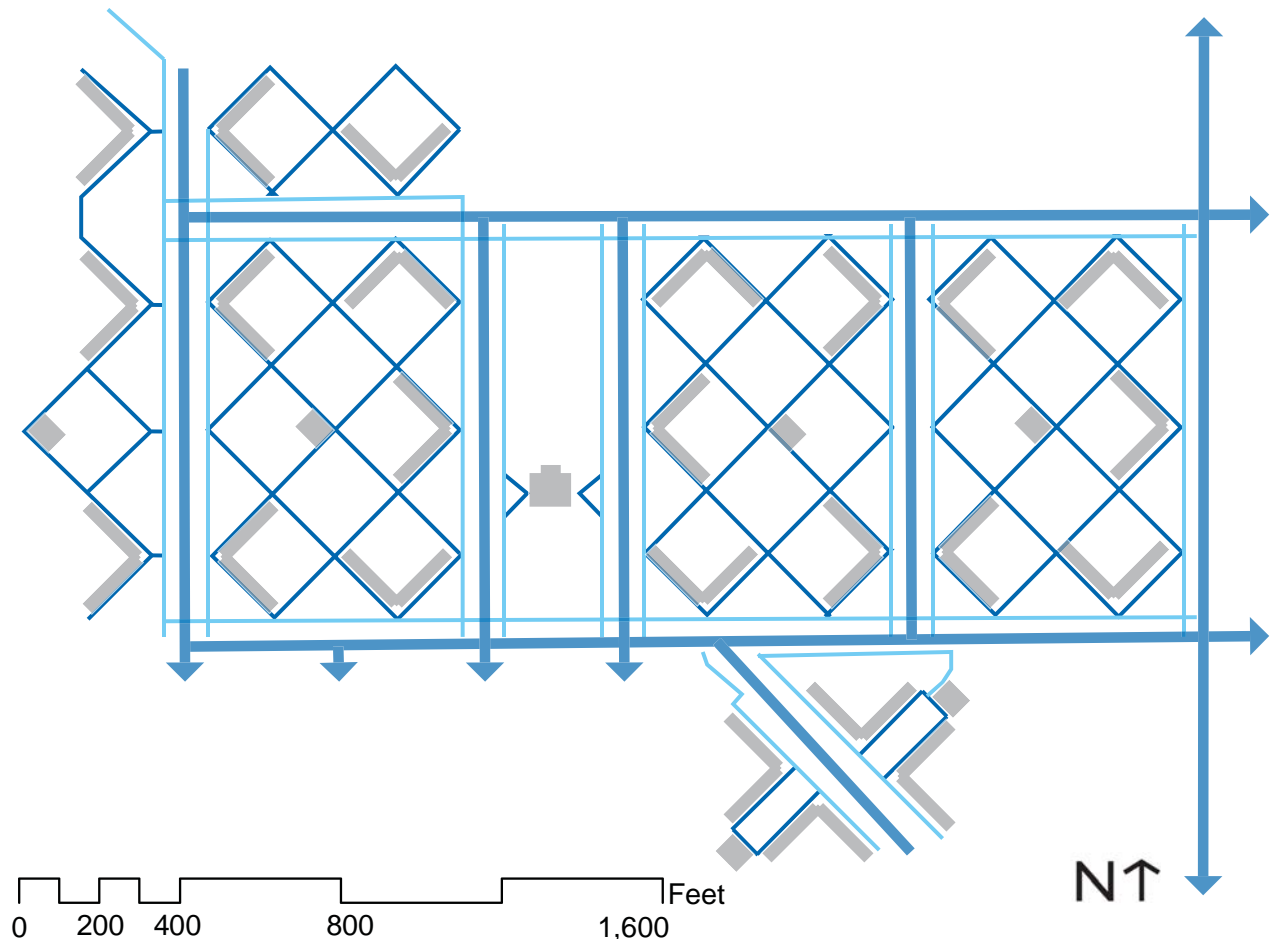


figure 4.2 Site circulation

The original site plan for the 1957 Jardine Apartments lays the buildings out on a grid, rotated 45 degrees from the major vehicular circulation of the site. This rectilinear pattern of evenly spaced apartment buildings provides the basis for a simple circulation strategy. The site is essentially broken up into four blocks, containing sidewalk-lined streets that provide the major circulation through the community. Sidewalks are also extended back and forth from the buildings to create a gridded network of interior paths. Sidewalks continue under the second-story balconies of the apartment buildings bringing residents directly to their front doors.

- Original Buildings
- Vehicular Circulation
- Perimeter Sidewalks
- Interior Sidewalks

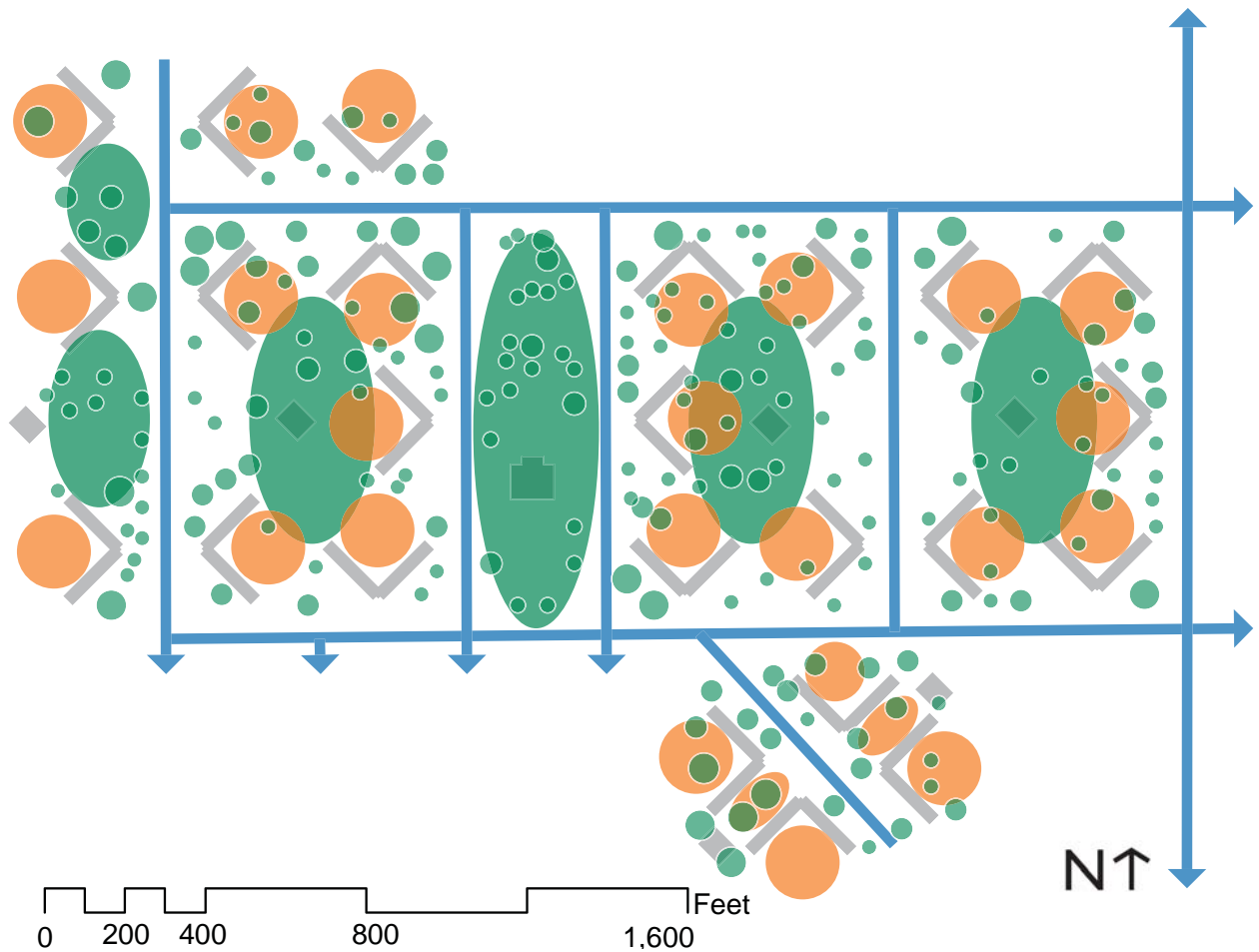
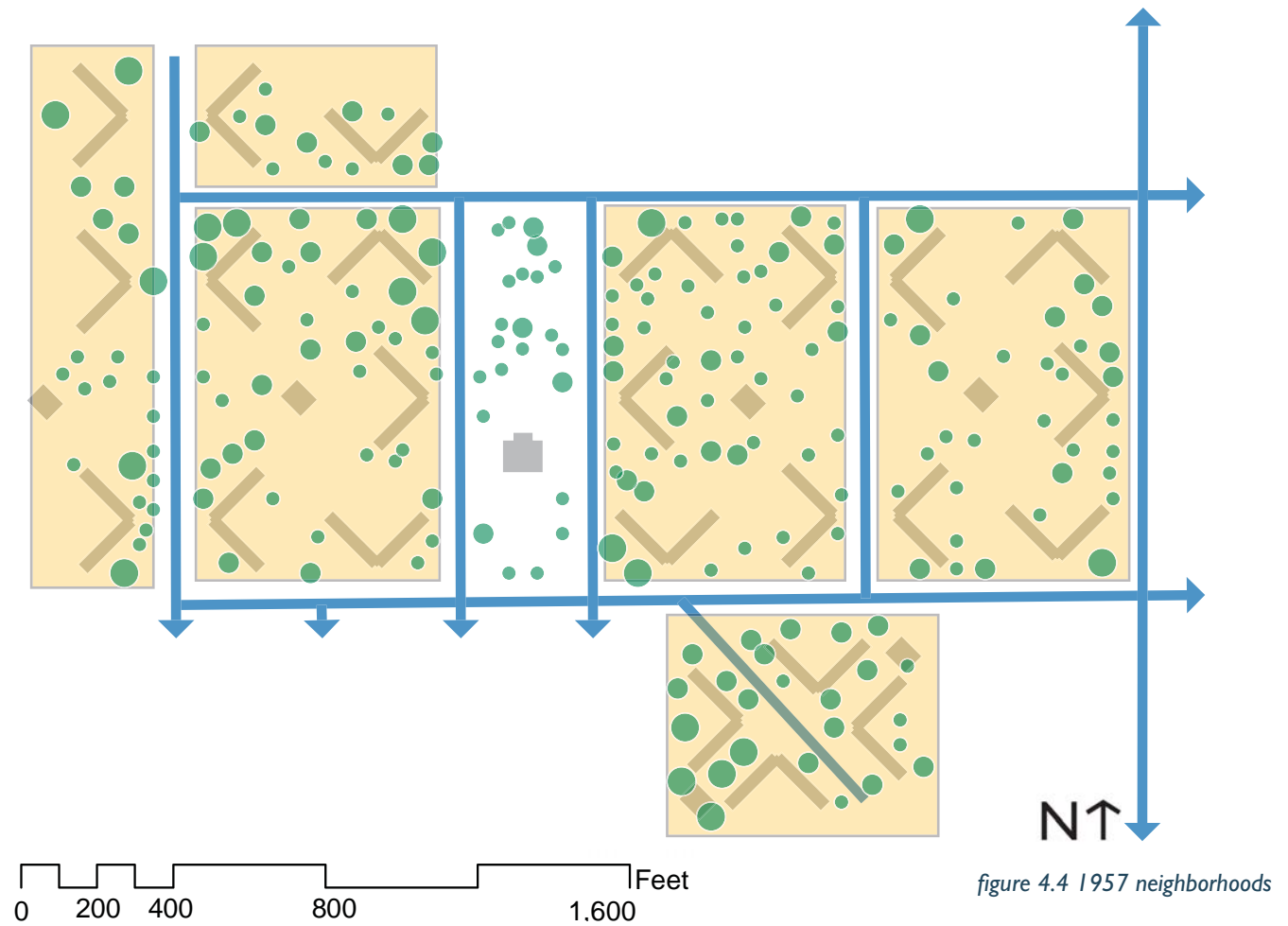


figure 4.3 Community open space

The gridded arrangement of these inward-oriented buildings makes for a simple arrangement of protected community spaces. The form of two buildings linked at a 90-degree angle focuses spaces between clusters of buildings (usually five). There is a community space of planted lawn on each of the segmented blocks at Jardine, as well as one larger open space adjacent to the community center at the middle of the site. The building massing also creates smaller, more intimate spaces for the residents of the site. These spaces are articulated by the sidewalks and building edges to make a closer personal areas for children to play within earshot of the residential buildings. Overall, the lack of variety and well thought out outdoor spaces offers a monotonous modular program of spaces.

- Shared Open Space
- Building Lawn Open Space
- Vehicular Circulation
- Original Trees



Jardine’s blanketed arrangement of buildings and minimally designed spaces makes it difficult to divide this community into neighborhoods. Based on the division of blocks by vehicular circulation, the clusters of buildings orient inward, creating quasi-neighborhoods. In this sense the buildings are linked together as neighborhoods through their spatial connections only. The cluster of four buildings south of the site is the closest representation of a neighborhood, but still does not contain a unique identity. Neighborhood identity could have been developed through spatial articulation and variety, architecture, or planting scheme.

- Neighborhoods
- Vehicular Circulation
- Original Trees
- Original Buildings

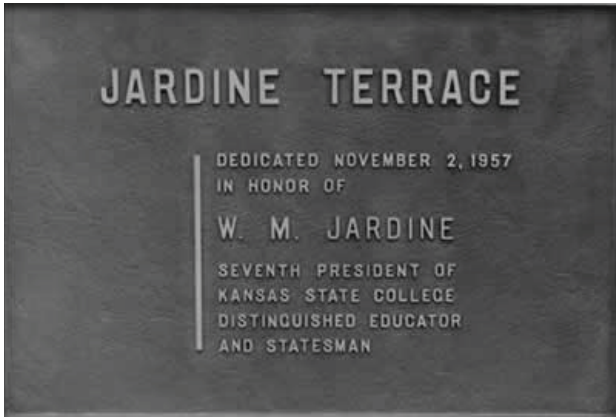


figure 4.5 Dedicating Jardine



figure 4.6 Ground-breaking of a 1950's building



figure 4.7 Early Jardine



figure 4.8 An architectural model of Jardine Apartments



figure 4.9 Laundry facility at early Jardine



figure 4.10 Clotheslines at early Jardine

JARDINE APARTMENTS, 2006

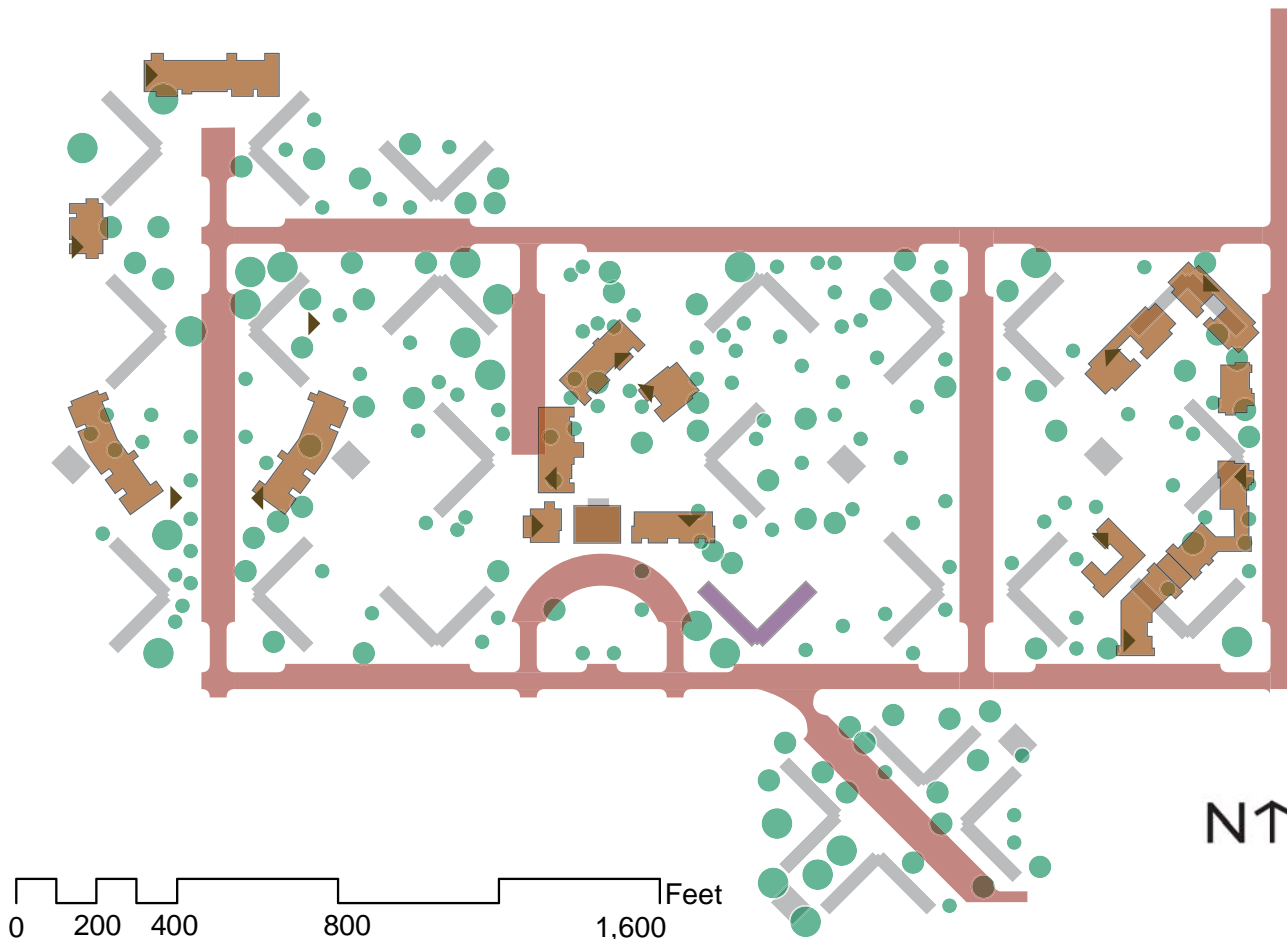
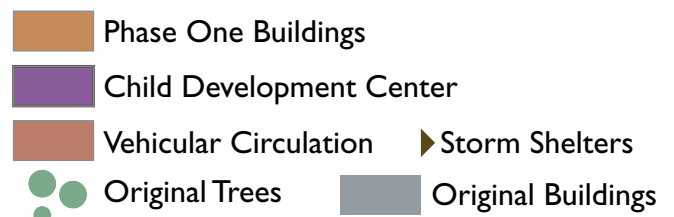


figure 4.11 Phase one

Phase one of Jardine’s redevelopment began in 2005 with the demolition of three buildings along the eastern edge of the site, and one in the center of the site. Two of the site’s laundry facilities were also demolished to accommodate the planning of three new neighborhoods within the complex. With the addition of a fully landscaped retention pond, the identity for the new Denison Neighborhood was formed. Five new buildings encircle the pond, framing views to this an inward-focused community. A new hardscape plaza serves as the town square of the entire site, and the community space for the new Plaza neighborhood of six mixed-use buildings. Finally, four new buildings were strategically placed between existing buildings to create the quieter West End Neighborhood (Kansas State University, 2010).



Phase One:

- 4 buildings, 2 laundry centers razed
- 14 new buildings constructed
- 6 buildings with minor renovations
- 1 building with major renovations

JARDINE APARTMENTS, 2009

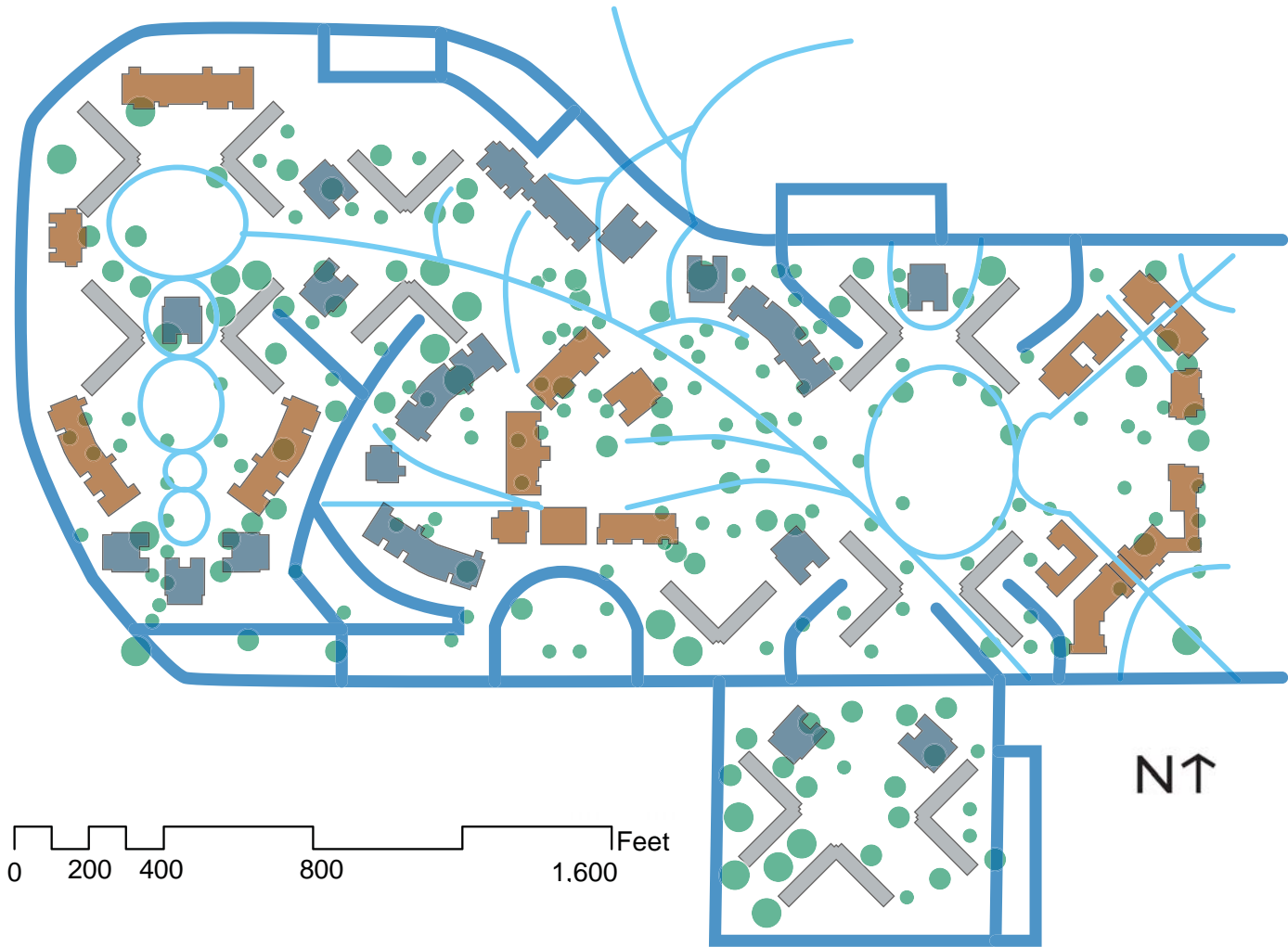
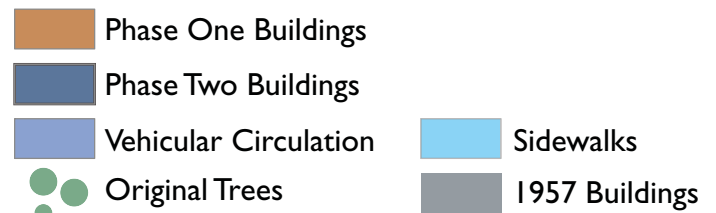


figure 4.12 Phase two

Beginning in 2009, phase two of the Jardine redevelopment initiated the final phase of the project. This phase adds new apartment buildings and focuses on the construction of major site amenities throughout the community. This includes the addition of new green spaces, streets, parking, playgrounds, landscaping, and utilities (KS DFM). Among the major goals of this phase is the addition of a new connection to the Chester E. Peters Recreational Facility to the north, and the KSU Botanical Gardens to the east. “In addition to practical amenities of parking and protected play areas, the landscaping for the site will provide a stronger visual and physical connection to the botanical garden across Denison Avenue, pulling in some of the character of the gardens” (KS DFM website).



Phase Two:

- 6 buildings, 3 laundry centers razed
- 17 new buildings constructed
- 166 new apartments, 324 beds

PHASE TWO OPEN SPACE:

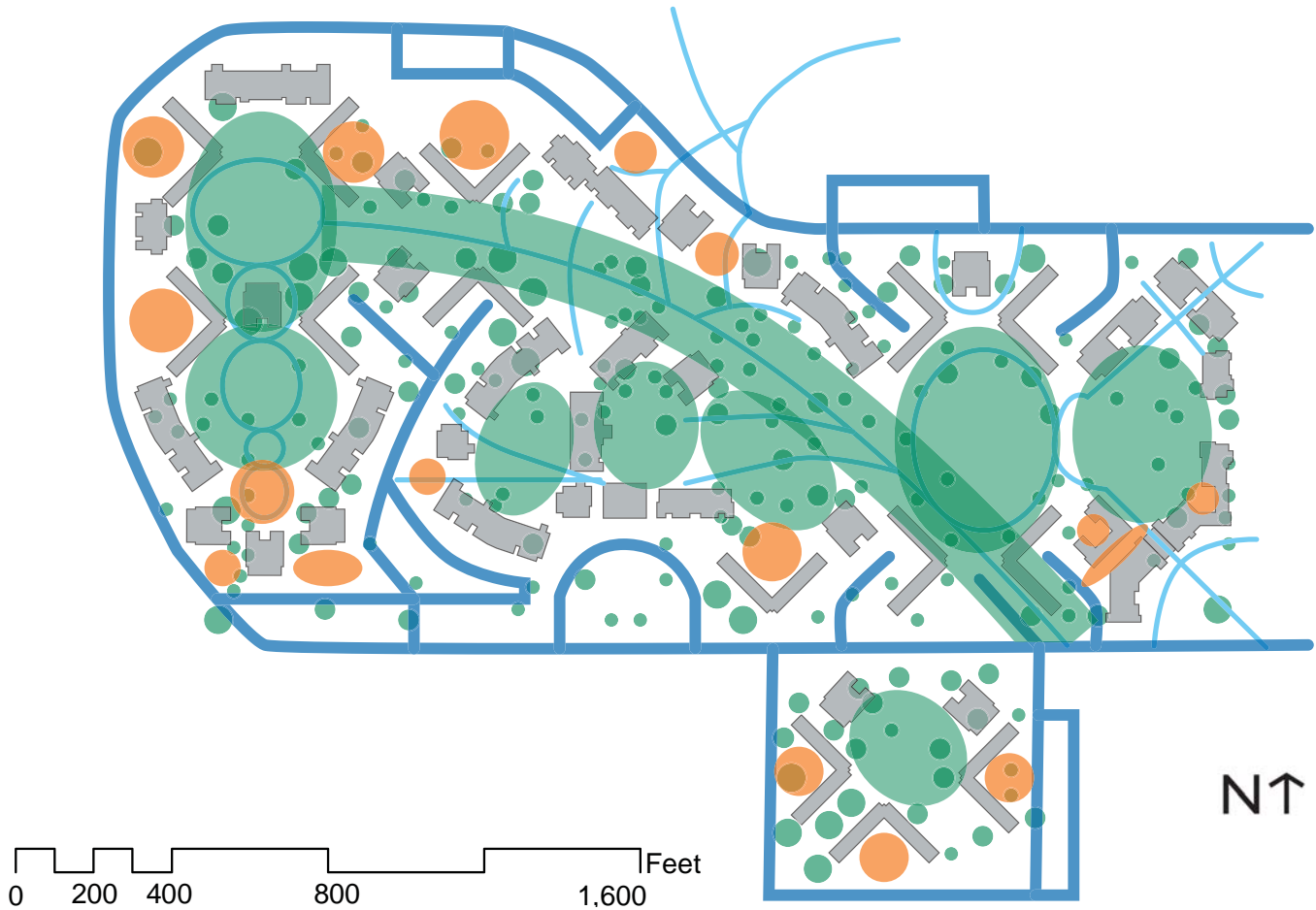
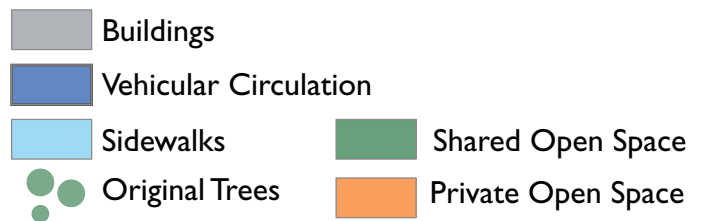


figure 4.13 Phase two community open space

With the completion of phase two, Jardine Apartments will become a comprehensive apartment community full of spatial amenities and architectural features. A variety of shared open spaces exist between the groupings of buildings across the site. These spaces range from large recreational fields and quads, to a sweeping pedestrian promenade that will become the major internal circulation route of the site. The variety of architectural units and arrangements provides for multiple private spaces throughout the site as well. These appropriately scaled spaces have the benefit of being sheltered and framed by architecture, providing residents with a sense of ownership of their outdoor spaces (KSU, 2010).



Timeline:

- Master Plan & Phasing Modification: 2009
 - 2 buildings razed, construction begins: 2010
 - 2 buildings razed, construction continues: 2011
 - 2 of 3 new buildings complete & online: 2012
 - 3 new buildings complete & online: 2013
- (KS DFM)

PHASE TWO NEIGHBORHOODS:



figure 4.14 Phase two neighborhoods

Four distinct neighborhoods are formed with the renovation of Jardine Apartments. From west to east they are: The West End Neighborhood, The Plaza Neighborhood, The Denison Neighborhood, and The International Court Neighborhood to the south. By planning for the formation of neighborhoods at the onset of the design process, the designers have created a cohesive community with well-defined neighborhoods that blend well with each other. The Plaza Neighborhood is the town square of the site, providing nonstop activity. The Denison Neighborhood serves as the major gateway into Jardine, with grand views of the pond from the south and east. Finally, the West End Neighborhood takes cues from the traditional rural architecture of Kansas with features such as large front porches and prominent yards (KSU, 2010).

- Neighborhoods
- Vehicular Circulation
- Original Trees
- Original Buildings

Budget:

Demolition & Site Preparation:	\$350,000
Utilities & Infrastructure:	\$400,000
Building Construction:	\$19,250,000
Parking, Landscaping, & Site:	<u>\$2,000,000</u>
Total Construction Budget:	<u>\$22,000,000</u>
	(KS DFM)

END PRODUCTS:

GLMV provided the community with a full spectrum of 3D views of the proposed site. Envisioning the end product and getting public feedback was essential in the Jardine redevelopment process.



figure 4.15 overlook at nighttime



figure 4.16 aerial view of Plaza neighborhood



figure 4.17 courtyard space

Program:

- Lake with overlook and fountain
- First floor retail at Plaza neighborhood
- Community center building spaces
- Courtyard spaces
- Four distinct neighborhoods
- Major gateways at Denison and Plaza neighborhoods
- Recreation field
- Landscaped drainage corridor, lined with a major pedestrian promenade
- Plaza space for markets, festivals, pep rallies
- Architectural icons: towers and gateways

RESPONSE:

Much can be taken from the analysis of Jardine Apartments. Although there are historical similarities between this project and Stouffer Place, ultimately both universities have different missions regarding the future of their housing programs. The phasing strategy for Jardine seems to be very effective at integrating clusters of housing within the existing site envelope of the development. Jardine has been at capacity since the addition of the new buildings, and its popularity seems to be retaining students.

There is an overall cohesiveness throughout Jardine, accomplished by architectural elements and material choices. By using native limestone and prairie style materials, Jardine has created an identity for itself that blends well with the surrounding context. The scale and variety of outdoor spaces come together to create a community full of places for

residents to be proud of. One of Jardine's greatest success is the creation of fully programmed unique neighborhoods that each serve a different purpose for the community. These spaces allow residents to decide which area is best suited to their lifestyle, thus maximizing comfort and quality of life. As a former resident of the Plaza Neighborhood, I enjoyed living at Jardine.

Although the difference in clientele (undergraduate versus graduate and international students) separates the missions of Stouffer Place and Jardine apartments, The University of Kansas can learn much from this well-designed community. Take-home lessons include the need to create well-defined neighborhoods, memorable outdoor spaces, and iconic architecture while employing a unified set of materials.



figure 4.18 nighttime view of Plaza neighborhood

JOHN T. LYLE CENTER FOR REGENERATIVE STUDIES:

California State Polytechnic University Pomona, CA

Location:

Pomona, CA

Constructed:

1992

Cost:

Total cost unknown

\$4.3 million (from private foundations)

Size:

16 acres

Designers:

Dougherty + Dougherty Architects, LLP
Claremont Environmental Design Group
Cal Poly Pomona faculty

Mission:

“The mission of the Lyle Center is to advance the principles of environmentally sustainable living through education, research, demonstration and community outreach.”

(Center for Regenerative Studies website)

History:

The John T. Lyle Center for Regenerative Studies (CRS) was the product of Professor John T. Lyle’s vision for a community that could be run solely by renewable resources, and have a positive impact on the environment. John Lyle (1934-1998), a landscape architecture professor for Cal Poly Pomona within the College of Environmental Design during the 1970’s, led a faculty-based design and planning team to create the concept for CRS at CSU Pomona. By creating a facility that can serve as a live-learn environment, Lyle has given students and faculty a chance to gain hands-on experience through research and experimentation in a number of fields. Architects, engineers, landscape architects, chemists, planners, and scientists are some of the participating faculty providing multidisciplinary guidance at the center, which offers a minor and master of science in regenerative studies for Cal Poly Pomona students.



figure 4.19 an egret at CRS



REGENERATIVE STUDIES:

“Regenerative studies is a unique descriptor for the interdisciplinary field of inquiry concerned with a sustainable future. While closely aligned with environmental, economic and social sustainability projects, regenerative studies places emphasis on the development of community support systems which are capable of being, restored, renewed, revitalized or regenerated through the integration of natural processes, community action and human behavior. It is argued that the development of regenerative systems is the most promising method for ensuring a sustainable future - not merely conserving critical natural resources, but even enhancing them over time” (CSU Pomona website).

The diagram below illustrates the overall focus of regenerative studies according to Kyle D. Brown, Ph.D., ASLA, the director of the CRS.

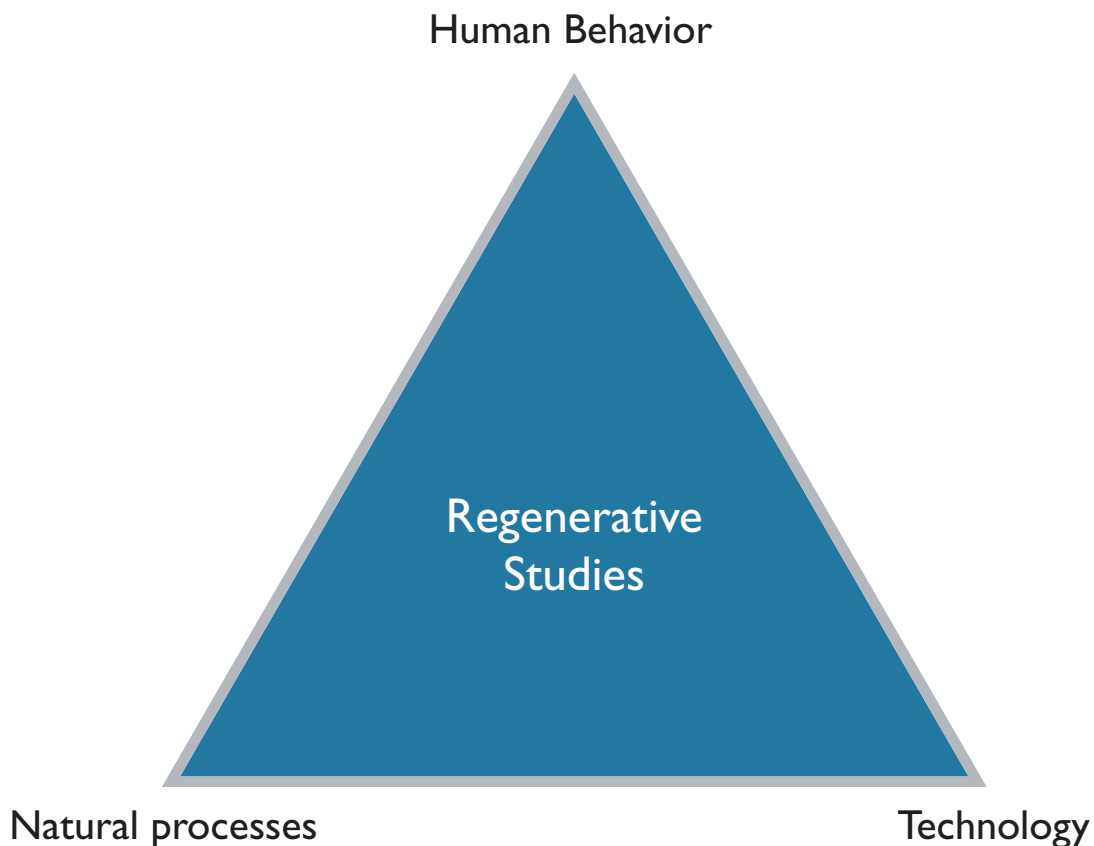


figure 4.20 Regenerative Studies

SITE LOCATION:



figure 4.21 Aerial view of the CRS site

The site of CRS sits on 16 acres just a short distance from the main campus of Cal Poly Pomona. The center provides the experimentation and demonstration of sustainable technologies through a focus on building, energy, food, water, and waste systems.

By implementing technologies that optimize efficiency and biological processes, the center actually creates energy rather than consuming it. This type of community will become more important as the demand for non-renewable resources increases.

Although the center is sited in a region with very different resources and climatic patterns, much can be learned from the organization and design of these supporting technologies. The following precedent study will focus less on the design of the community, and more on the strategies of regeneration and energy efficiency used throughout the site.

ENERGY FLOW:

Goals:

- supply adequate quantities of energy
- minimize use of nonrenewable resources, especially fossil fuels
- minimize waste; include none that is hazardous or toxic
- provide sustainability into the indefinite future
- maximize community participation and control

(Lyle, 80)

Steps of the energy planning process:

- determine energy uses (demand)
- determine potential means for conversion
- develop a energy-flow model, showing sources, conversions and uses and the flows among them
- estimate quantities for energy uses
- estimate quantities for energy sources and conversions
- develop an energy budget, matching quantities for uses, sources, and conversions
- evaluate sustainability
- define the role of community in energy processes

(Lyle, 82)

Lyle's energy flow model below illustrates the relationships between the sources, conversions, and uses of the site.

Although this diagram also includes outside sources such as propane gas and electricity from the city, the majority of the energy comes from the sun.

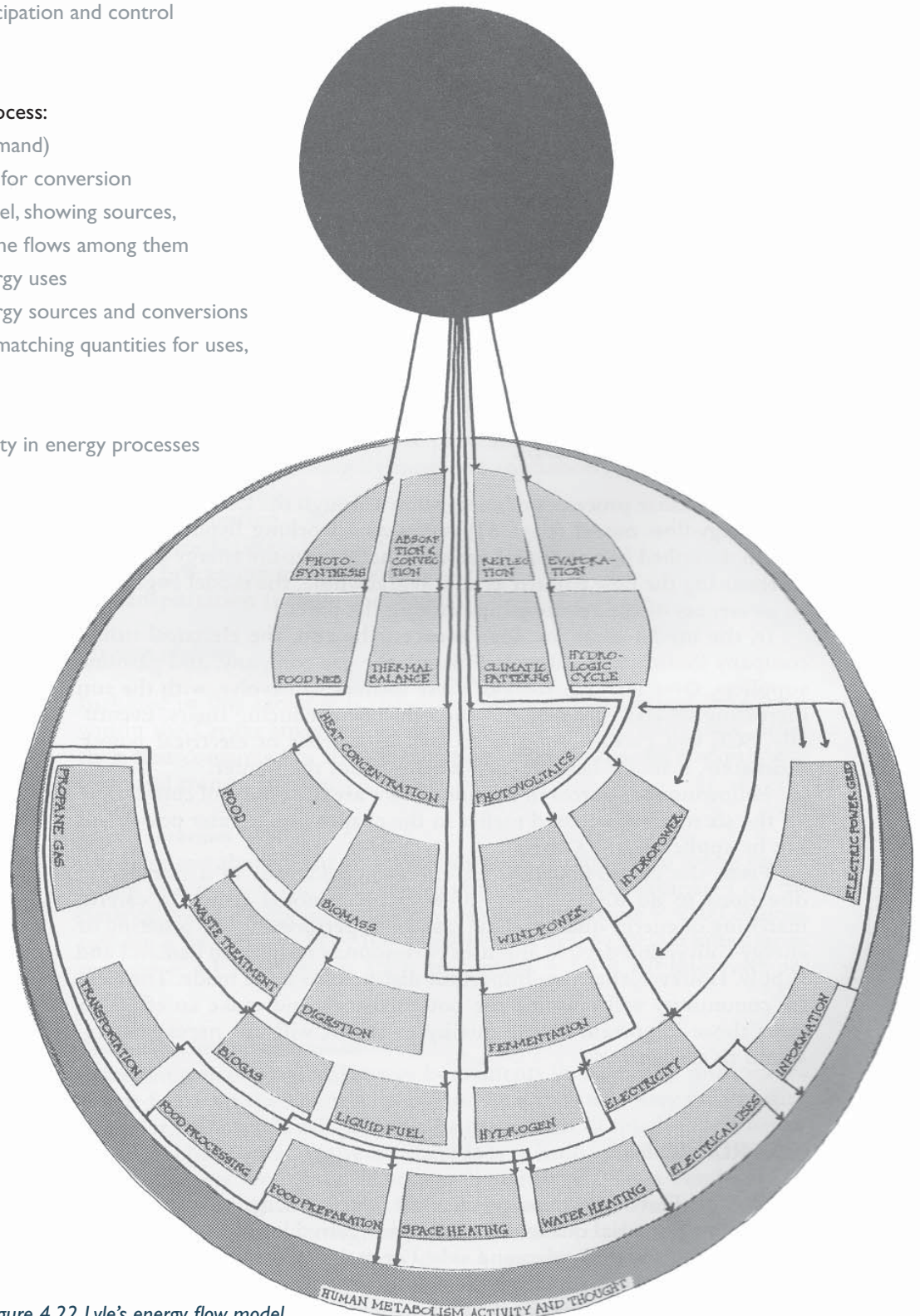


figure 4.22 Lyle's energy flow model

RENEWABLE RESOURCE TECHNOLOGIES:

solar:

direct heat

- roof-mounted flat-plate collectors for hot water
- passive solar radiation for spaces

electricity

- two dish-stirling engine-driven generators
- tracking solar concentrator unit (12.8 kWh)
- multiple fixed and tracking panels
- portable solar energy cart
- solar shingles

waste:

sewage treatment

- wetland sequence
- rootzone system
- aquaculture system

food:

- aquaculture
- animals/livestock
- produce
- grains

water:

- holding tanks
- nursery ponds
- growout ponds
- hand-tech ponds
- reservoir

wind:

- one windmill (5.5 kWh)

The diagram below illustrates the flows of energy, nutrients, and water as part of the schematic structure for the center. Focusing on a human ecosystem, the cycles show how the nutrients we receive from food are passed on to provide a source of intake for the sewage treatment system, and later the fruit and vegetable production of the site (Lyle 1994). Complete cycles like this are key to finding a customized structure of energy flow for a community. Once the schematic framework is established, the appropriate technologies can be implemented at their most efficient role in the system.

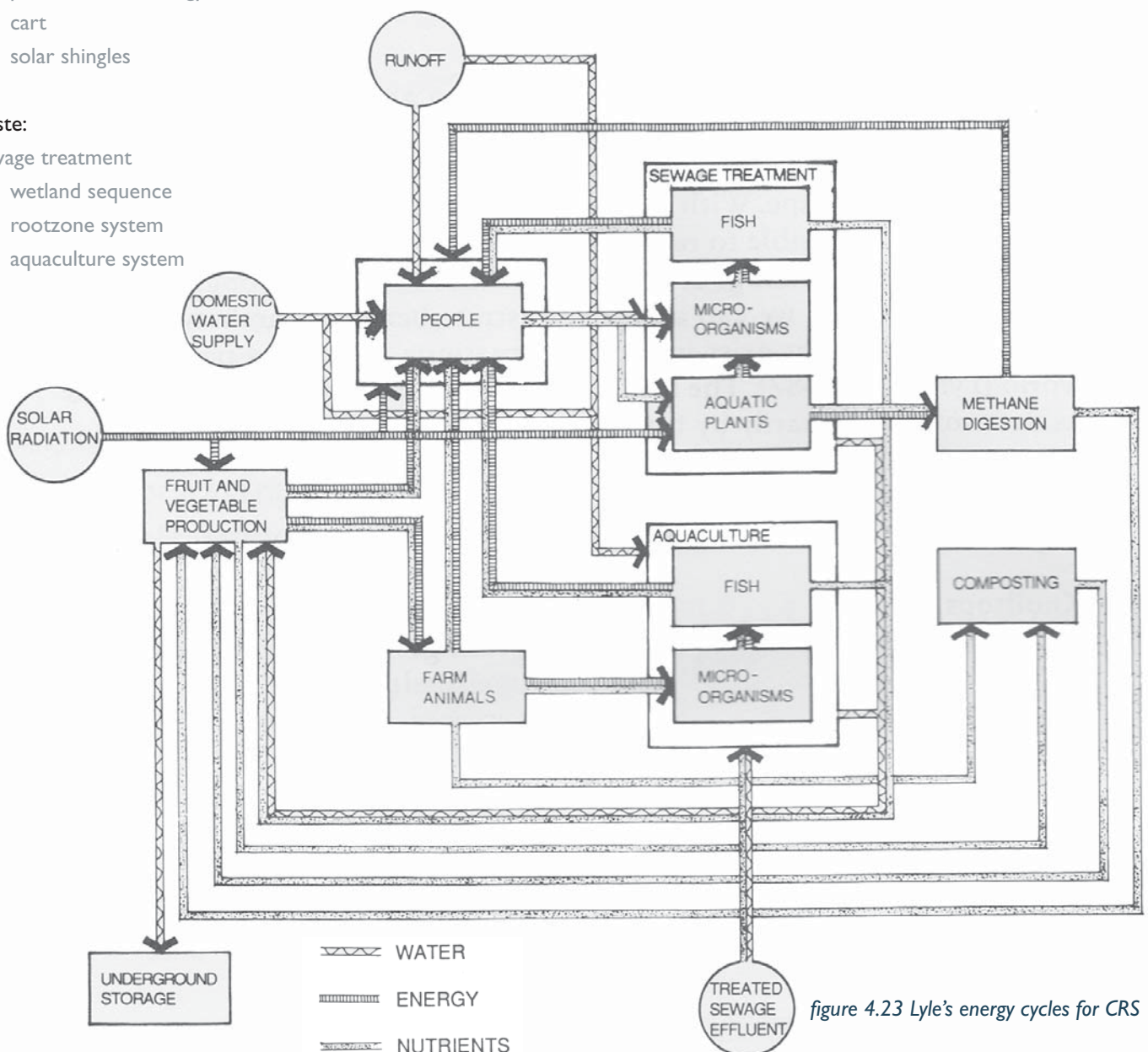


figure 4.23 Lyle's energy cycles for CRS

BUILDINGS:

Building interior energy flow elements:

Insulation

Transparent surfaces

- 80% of glass surfaces orient south, these walls are at least 50% glass to optimize solar radiation.

Shading devices

- plants on roofs, east and west walls
- trellis structure with vines project 4' on east and west ends
- outriggers/arbors with vines on south ends
- productive plants inside southern glass

Thermal mass

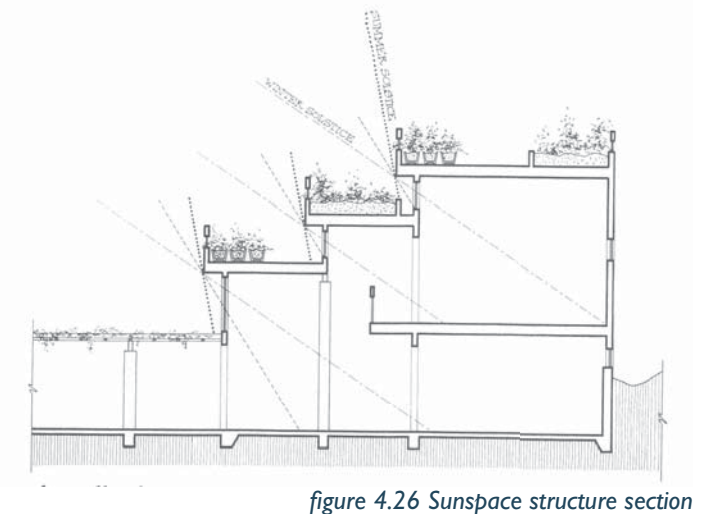
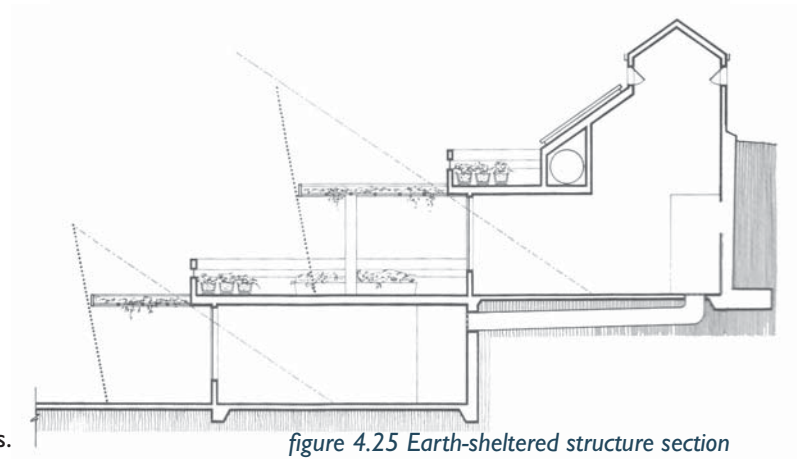
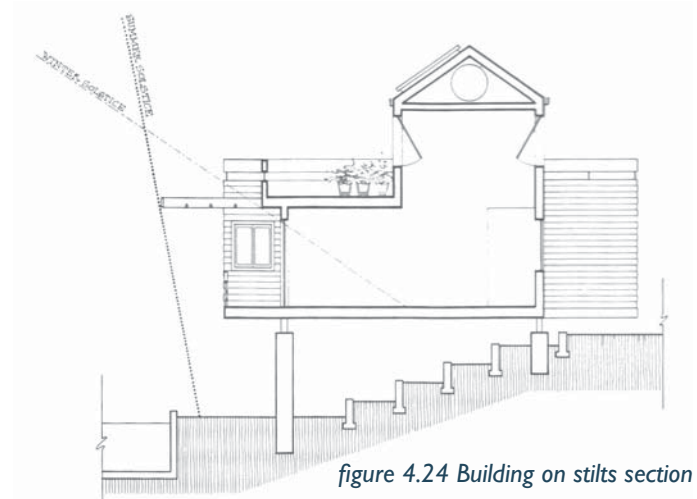
- concrete floor and earth on raised buildings
- retaining walls

Air movement

- southern intakes
- northern outlets on high ceilings
- earth tubes

Although the CSR site is 16 acres in size, the actual living, teaching, and research facilities are all sited on a 2.2 acre area (Lyle 1994). The site itself contains many different types of topography and land, making it possible to serve so many uses. If the original plan for 90 residents is realized, the 2.2 acre central site will have an overall density of 41 people per acre, that of a dense urban setting. Most of the remaining site is needed to sustain the life of the residents through agriculture and other regenerative techniques (Lyle).

The building program for the center includes space for 90 residents, gathering spaces, a formal community reception hall, dining facilities, academic facilities, and small storage spaces. To house these functions, the buildings were set up to fit a set of three archetypes that are custom designed to fit into the slopes of the site. From top to bottom these three types are: building on stilts, earth-sheltered structure, and the sunspace structure. The building on stilts is ideal for siting near water for cooling via surface evaporation. The earth-sheltered structure takes advantage steep slopes, accommodating its stepped configuration and providing thermal mass. The final sunspace model is great for the tops of the knolls on site, where it can get the most direct sunlight (Lyle).



The buildings all employ the same principles of interior energy flow outlined by Lyle in his book. These elements work together to produce a living space that is naturally heated, cooled, and ventilated to a comfortable range without traditional heating or cooling elements. Overall, the buildings' southern exposure makes it possible to obtain passive and active solar radiation, southern air, and shade from direct light.



figure 4.27 Building on stilts



figure 4.28 Sunspace structure



figure 4.29 A southern trellis provides shade



figure 4.30 Grapevines on a trellis

Sustainable building practices minimize the energy needed to heat and cool the living spaces. From top left clockwise these images show: building on stilts, sunspace structure, a southern trellis shading, and grapevines on a trellis detail.

WATER:

The site for the Center of Regenerative Studies is unique in that it does not intercept runoff or drainage from any outside source. With this in mind, all of the water management techniques implemented at CRS are to efficiently maximize the use of the rainwater that falls on the property. Some of the topography has been terraced and stepped in a way that holds water longer, and minimizes the erosion of the slopes. This terracing technique is an ancient practice that facilitates the farming of crops on steep slopes. In the schematic design for CRS, the site was subdivided into five topographic zones based on slopes and visual dominance (Lyle 1994).

The center receives potable water as well as sewage effluent from the Pomona Water District. Rainfall over the site is mostly directed into a retention basin that transfers the water into underground storage for irrigation. The buildings' green roofs and rooftop gardens capture some water, while the rest is directed to cisterns and stored for later use. The center utilizes the potable water from the city for cooking and drinking, however, used water is utilized for aquaculture and irrigation. Sewage effluent is also used for these purposes after the ammonia content is reduced (Lyle).

Although most of the site's water is ultimately used for irrigation, some is set aside for use in aquaculture. The center uses three ponds as the starting point for their aquaculture system. These ponds are used to breed and produce freshwater fish such as tilapia and carp. Within the system are nursery and growout ponds that are used to grow the fish into a size large enough for food consumption (Lyle). The diagram to the right begins to conceptualize the different uses of water in all of its three sources. In his book, Lyle describes this system, "The valley functions as a highly controlled human-made river at the core of the water-flow system. The open tanks store water to be used to grow fish and aquatic plants. A supply line along the north side of the valley links all of the tanks with the water sources" (Lyle, 183).



figure 4.31 A growout pond at CRS

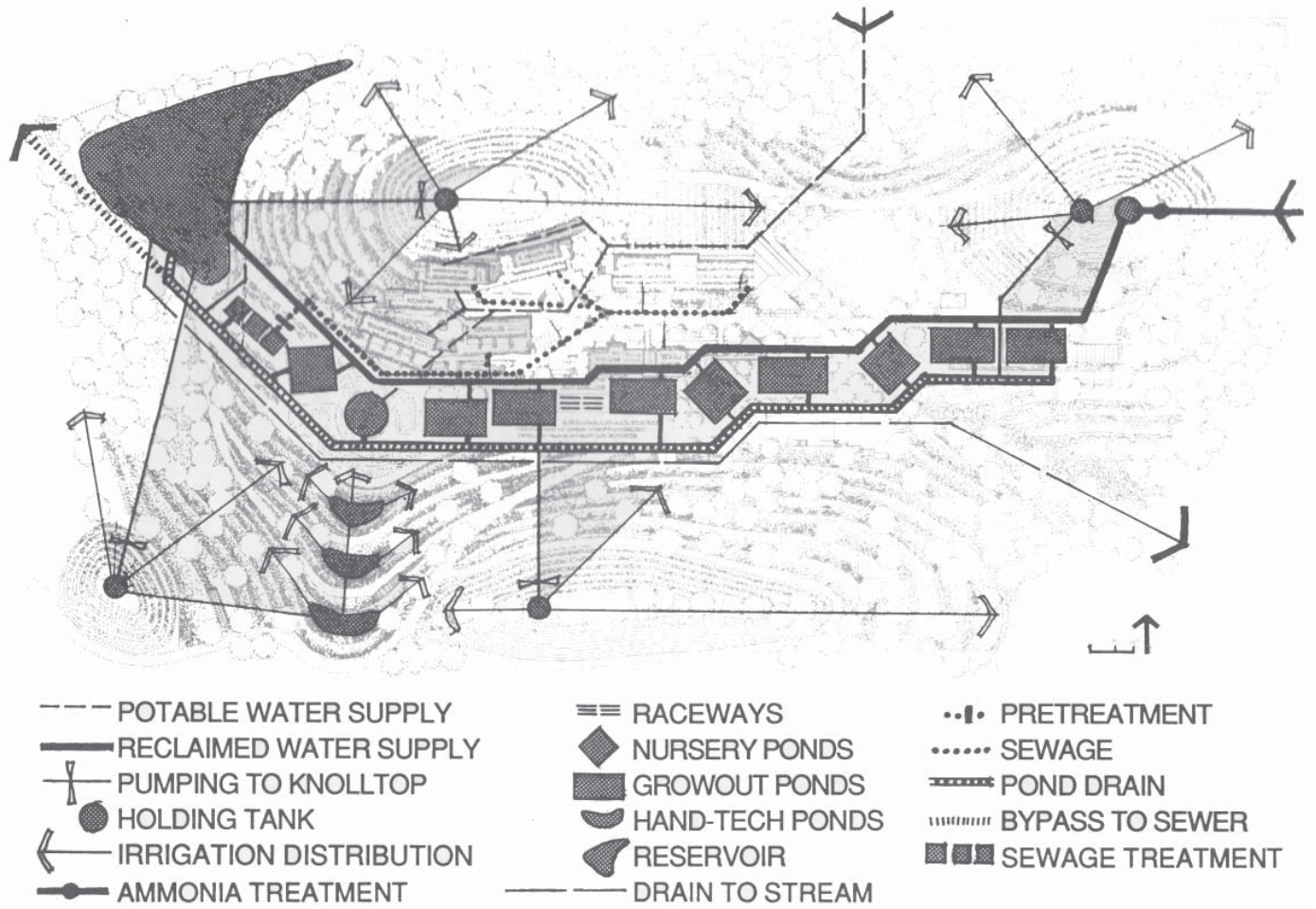


figure 4.32 Pig waste effluent entering an aquaculture pond



figure 4.33 An aquaculture tank at CRS

Water management is a major priority at the Center for Regenerative Studies. Pictured here from top left clockwise are: a growout pond, pig waste effluent entering an aquaculture pond.



WATER FLOW PLAN

figure 4.34 Water systems at CRS

SOLAR ENERGY:

Solar energy on the site for the Center for Regenerative Studies is used in five ways: directly through solar heat, concentration of solar heat, photovoltaics, biomass, and wind conversion. Direct heat methods include the use of roof-mounted flat-plate collectors which heat water. Once the plates are heated by the sun, they transfer heat to storage tanks where the water remains until it is used for bathing. Another direct heat method is the passive solar radiation used to heat interior spaces. Buildings are oriented to receive direct southern radiation that shines through glass windows and heats concrete floors (Lyle 1994).

The southern California climate is ideal for converting solar radiation into electricity as well. This is done through the use of photovoltaics and heat concentration. The dish-Stirling assemblies direct the reflected heat from concave discs to an engine driven generator which is used for power throughout the site. There were also two new solar tracking photovoltaic assemblies added recently as upgrades from the original design. Solar shingles and portable photovoltaic panels are used as a small source of electricity as well (Lyle).

Lyle's design for a solar park (below) is a great way to integrate these technologies into a designed spaces where people can see and interact with them. The solar park is an expression and manifestation of the role of solar energy to the community. Lyle indicates in his book that, "Lines and points on the ground surface mark the directions of the sun at key points in the earth's annual cycle: summer and winter solstices, spring and fall equinoxes" (Lyle, 97).

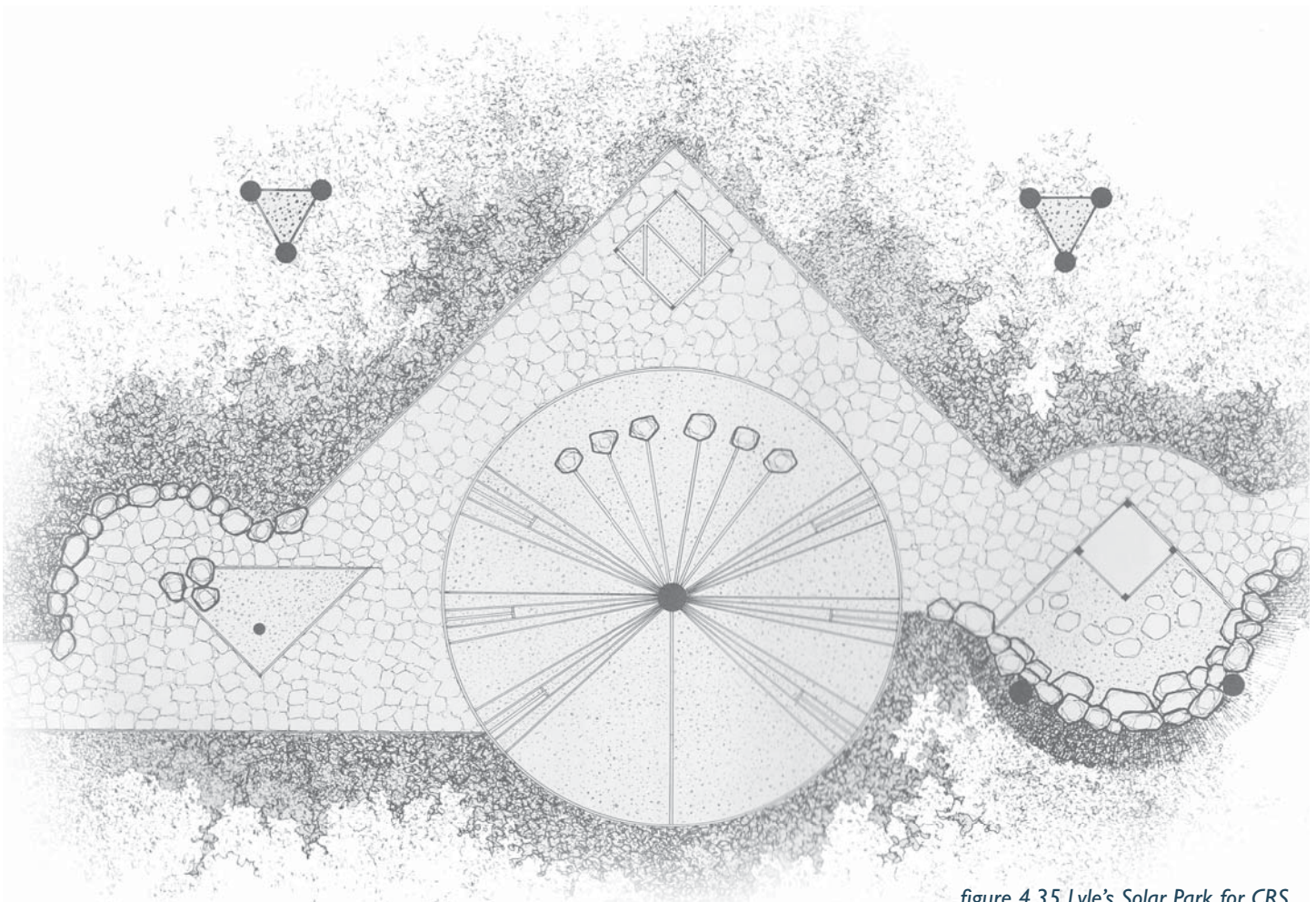


figure 4.35 Lyle's Solar Park for CRS



figure 4.36 Roof-mounted solar collectors



figure 4.37 Dish Stirling solar heat convertor



figure 4.38 Solar tracking photovoltaics

The conversion of solar energy is illustrated in three ways here. From the top left clockwise they are: roof mounted collectors for hot water, a dish Stirling solar heat convertor, and a newly installed solar tracking photovoltaic assembly.

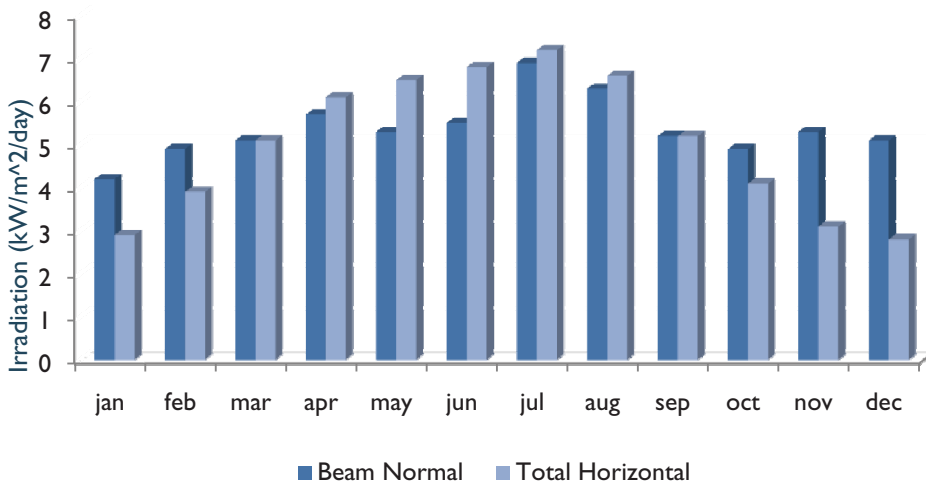


figure 4.39 Daily average beam normal and horizontal solar radiation estimates for CRS

FOOD PRODUCTION:

In order to keep all of their gardens and agriculture organic, the center's agriculture management focuses on two main activities: enhancing soil quality, and controlling pests (CSU Pomona website). The land has been divided into six different production areas, as shown below. The valley is a mix of agriculture, aquaculture, and livestock. The bases of the knolls are limited to vegetable production. The knoll sides focus less on productive landscapes, and more on native plantings to enrich the ecosystem. Steep slopes contain fruit and nut trees which are also used for fuel wood and windbreaks. Knoll tops are planted with grain, legume, and root crops. Finally, the human use areas are planted with productive plants that offer high aesthetic quality for the residents and visitors (Lyle, 1994).

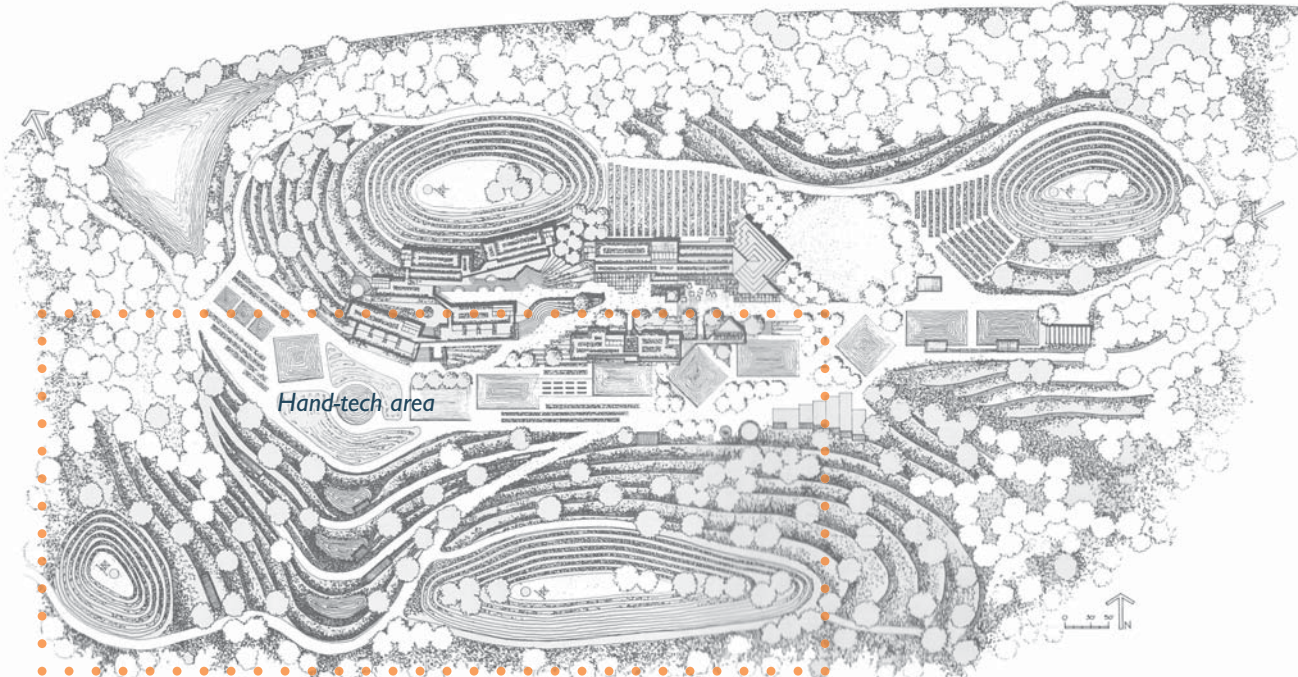
The hand-tech area (highlighted below) is an experimentation area that only utilizes labor and farming methods that are also used in unindustrialized nations. Tools and products that derive from fossil fuels are not used here. These techniques extend the centers community reach across the globe (Lyle).



figure 4.40 Kyle D. Brown, director of CRS with a beehive



figure 4.41 Vegetable gardens adjacent to housing



THE VALLEY
Bottomlands
2.4 acres



BASES OF THE KNOLLS:
Planting Beds
.4 acres



KNOLLSIDES.
Terraced Slopes
3.5 acres



KNOLL TOPS
Upland Grain
2.4 acres



HUMAN USE AREA
The Village
2.2 acres



STEEP SLOPES
Agroforestry
5.1 acres

figure 4.42 Agricultural land uses at CRS

RESPONSE:

The John T. Lyle Center for Regenerative Studies is a very complex, and well thought out approach to sustainable living. Beyond sustainability, the center prides itself on the demonstration of regenerative technologies and practices that not only minimize energy inputs, but replace them with newly produced materials and converted energy forms. Lyle's design and concepts are truly an inspiration and guide as Rebuilding Stouffer Place progresses (Lyle).

There is so much that can be taken from the analysis of the center's sustainable technologies. At the forefront of my interests is the use of solar energy, building energy flow, and agriculture management. The concept of developing an energy flow structure as the guiding source that determines the appropriate applications of sustainable technologies seems valid in any project like this.

The successful integration of regenerative devices into the site makes it possible for residents to live, learn, and interact with each other to create a strong community bond that is rooted in ethical ownership of the land and resources. One key difference that must be addressed here is the fact that the Center for Regenerative Studies is isolated from the

rest of the Cal Poly Pomona campus. This lack of connection and interaction with the traditional daily university life seems to make the center a unique entity, almost an oasis. When designing the center, the team didn't have to take into account so many of the complex relationships that come with designing a project in the midst of a large campus. Nevertheless, The Center for Regenerative Studies has already proved to be a successful pioneer in the industry, and will hopefully continue to flourish as new technologies and theories arise.

At the end of his book, J.T. Lyle addresses the important challenge of investing in regeneration: "Reversing the destructive patterns of recent centuries and reestablishing the earth's vital processes will be a very large undertaking indeed' Gaia's garden will be expensive. On the other hand, so was the global machine created by the industrial age, and so was the military machine created in the last half of the 20th century" (Lyle, 319).

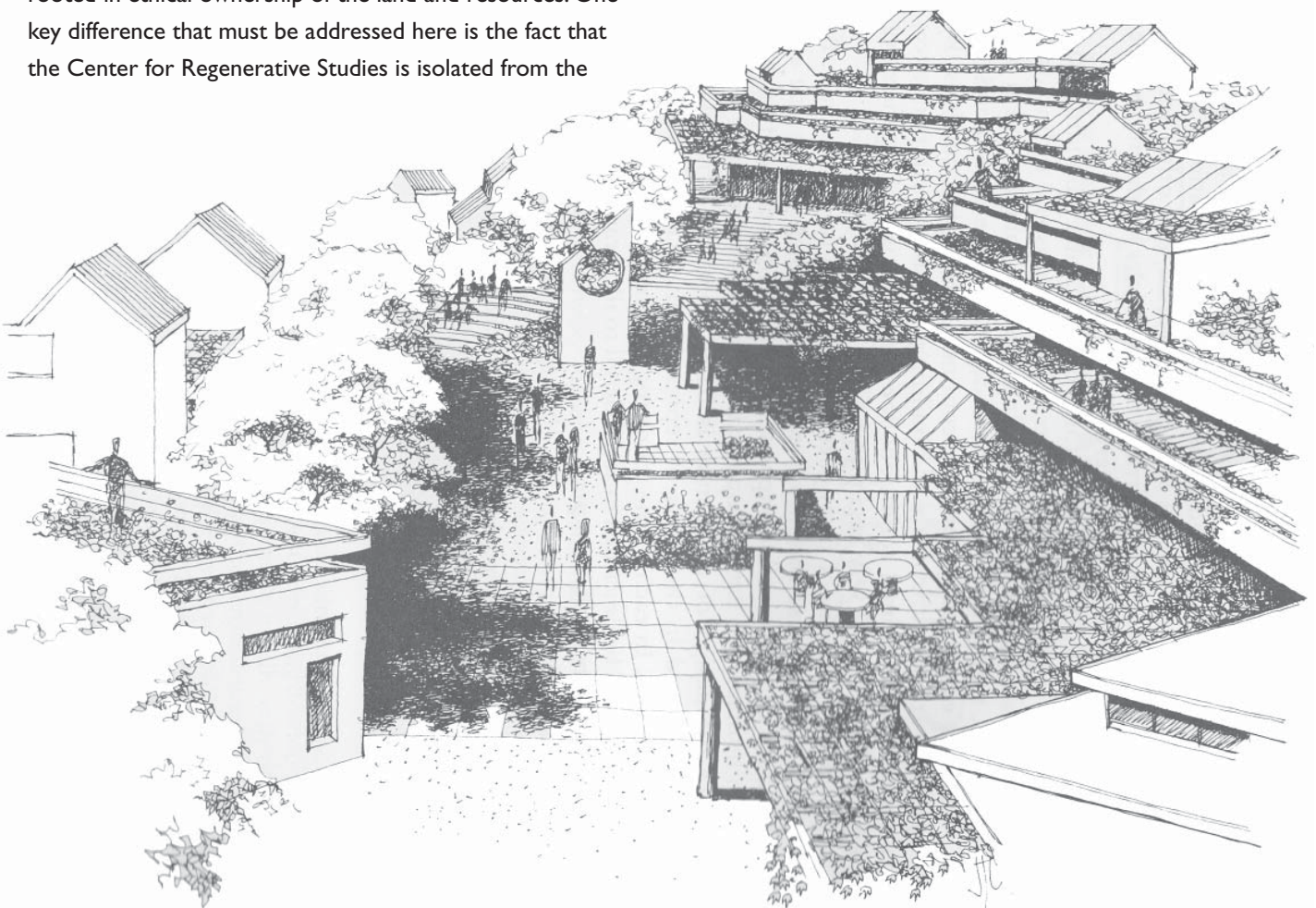


figure 4.43 Rendered view of CRS



5



INVENTORY + ANALYSIS:

Chapter 5 provides a detailed inventory and analysis of the site at Stouffer Place. Natural systems, social systems, and program specific systems are addressed.

SITE CONTEXT:

As previously mentioned, the site for Stouffer Place is in the middle of the University of Kansas Lawrence Campus. To the west of the site is the Daisy Hill Residence Hall Complex. This includes five halls from 6-8 stories tall. To the east of the site lies most of the KU Athletics facilities. The basketball, baseball, soccer, and softball venues are all in this area along with

numerous training facilities. North of the site is Jayhawker Towers, a cluster of student apartments. To the south of the site along 19th Street is a residential neighborhood.

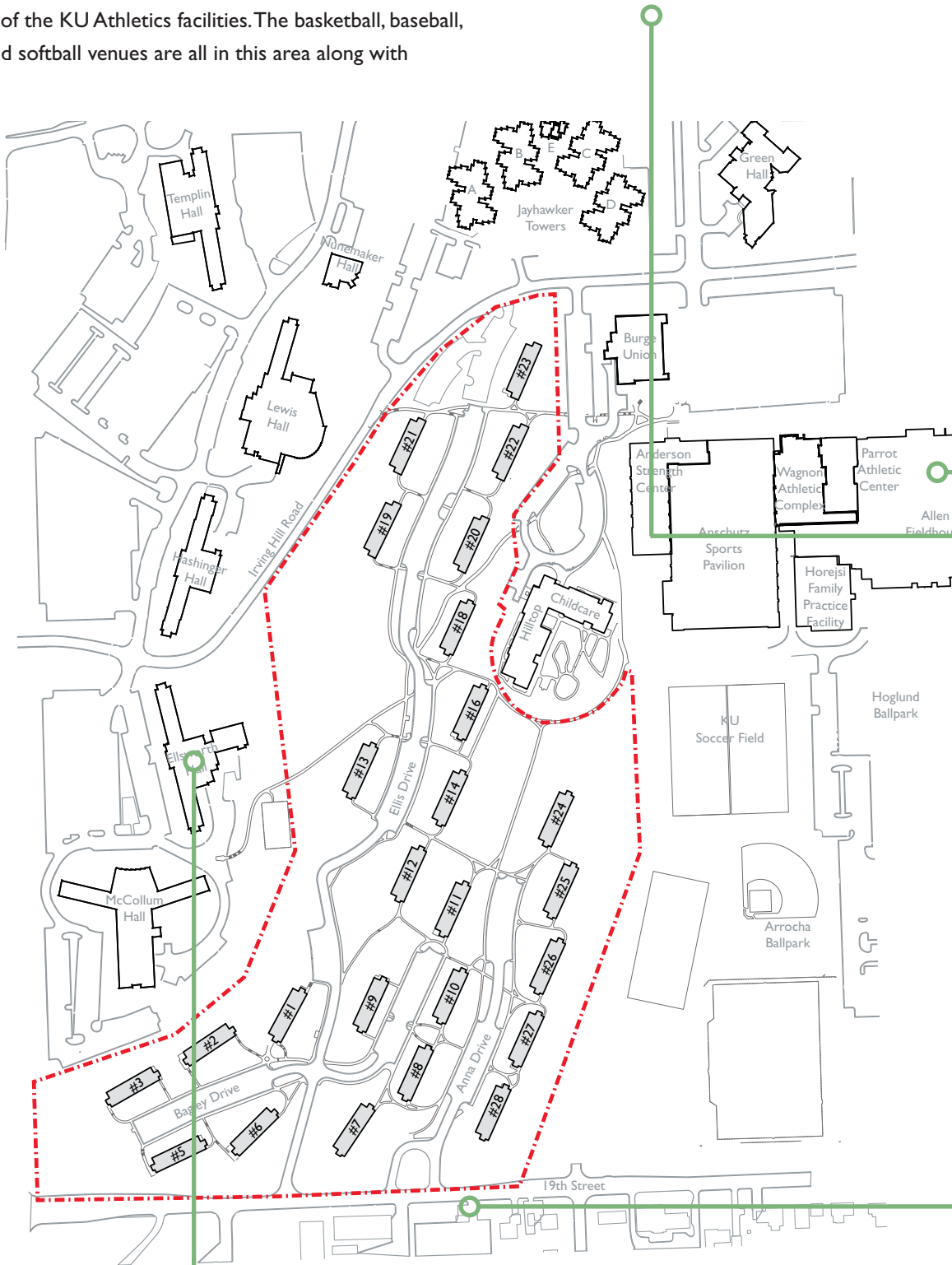
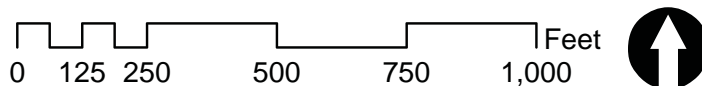


figure 5.1 Stouffer Place site context





○ figure 5.2 Allen Fieldhouse



○ figure 5.3 Jayhawker Towers



○ figure 5.4 Apartment building on 19th Street



○ figure 5.5 McCollum Residence Hall

SURROUNDING LAND USE:

Sited in the middle of a university campus, only the southern edge of Stouffer Place borders any different land uses. To the south of 19th Street is mostly residential land use, with a large cluster of commercial and retail land uses to the south along 23rd Street. This area provides many of the daily amenities that residents at Stouffer Place would need, such as grocery

stores, restaurants, and various retailers. At nearly one mile away from the site, these services are not close enough for many residents to readily walk to, so they are forced to drive.

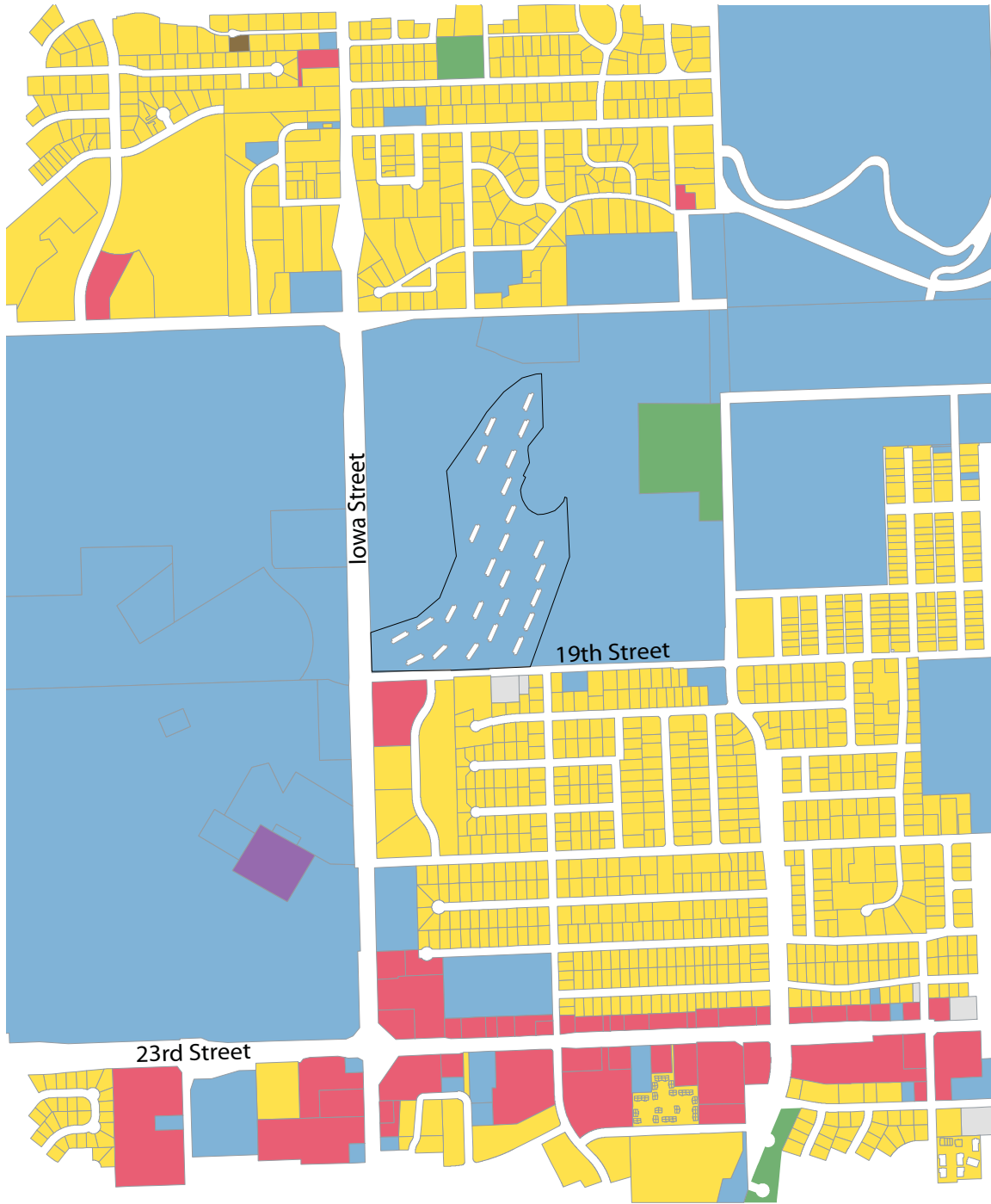
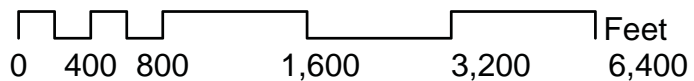


figure 5.6 Stouffer Place surrounding land use



TRANSIT CONNECTIONS:

There is one transit stop at Stouffer Place at the entrance on Anna Drive. This shelter is the only opportunity for residents to ride on the Lawrence/KU coordinated transit system. Route 26 circulates up from the south and down 19th Street, stopping at Stouffer Place before it continues on to the rest of the KU campus.

At least ten separate bus routes travel through campus, with two circulator routes that solely service the campus. With a valid student ID, any student at KU can ride all of the buses throughout the city. There is demand for an additional bus stop somewhere within Stouffer Place, but a bus turn-around or sufficient circulation corridor is needed for this to happen.



figure 5.8 Stouffer Place transit shelter

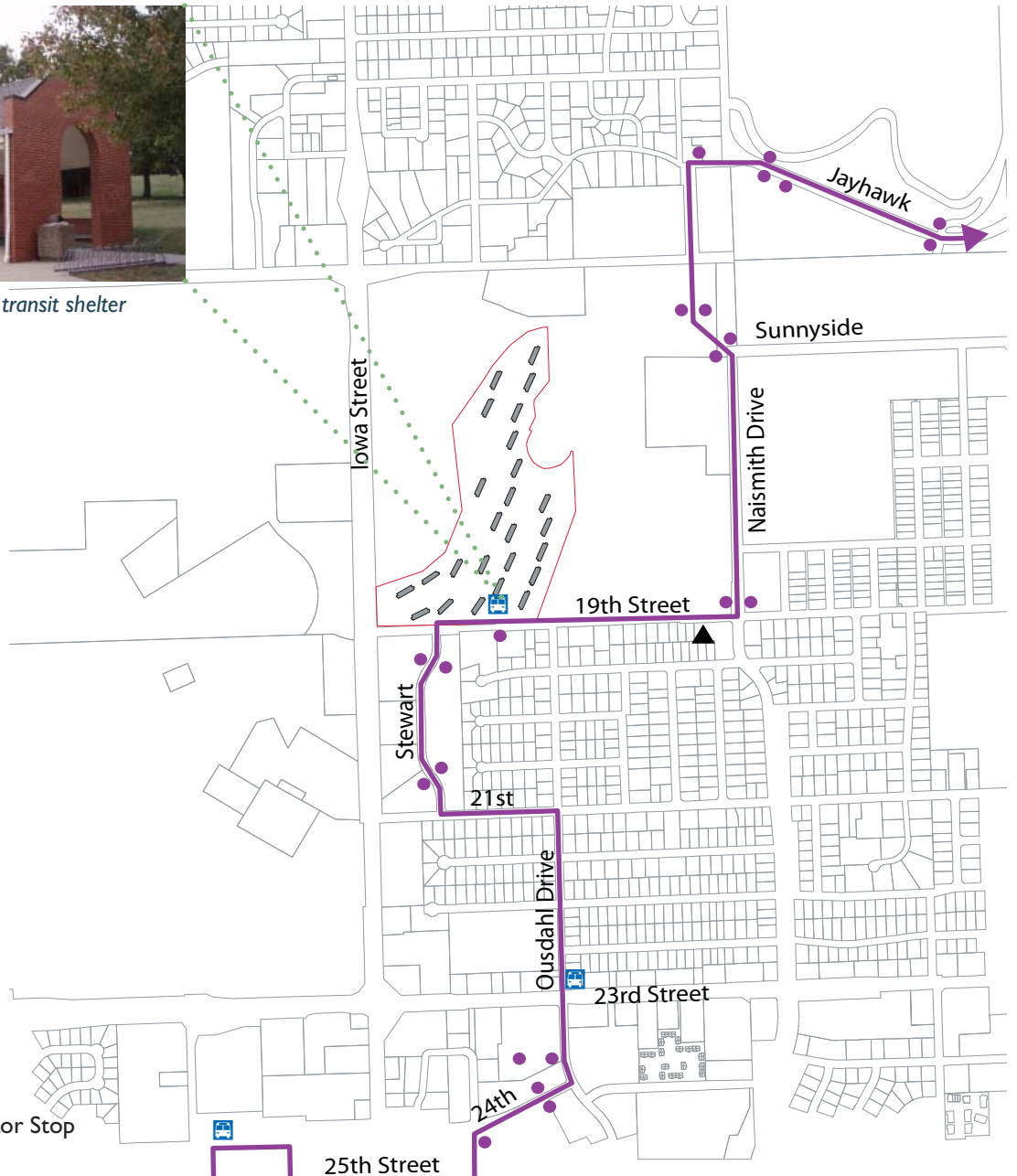
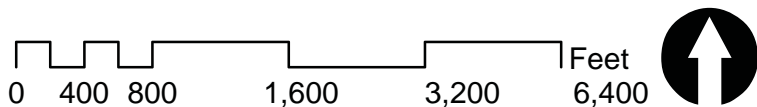


figure 5.7 Stouffer Place transit connections

26 25th & Melrose to KU

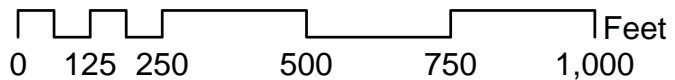
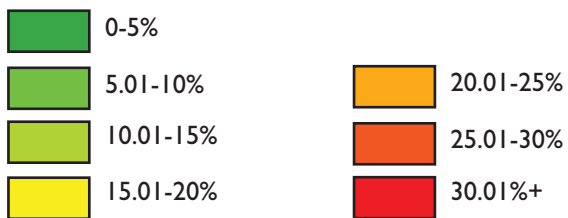


SLOPES:

The site slopes down from the northwest to the southwest. The buildings at Stouffer Place are sited lengthwise to conform to the topography and minimize grading for building pads. There are several areas on the western edge of the site that are too steep to build on.



figure 5.9 Stouffer Place slopes



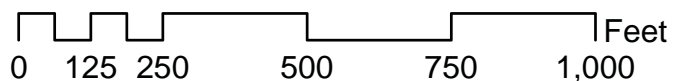
SOILS:

According to the Natural Resources Conservation Service (NRCS), there are three separate soil types within the boundaries of the Stouffer Place site. The majority of the site contains a Vinland-Martin complex, and areas with more gradual slopes contain a Martin silty clay loam. Some steeper areas of the site contain a Sogn-Vinland complex. The soil descriptions for these types follow.

Due to their greater depth and good draining characteristics, the Martin silty clay loam and Vinland-Martin complex are the soils most amenable to building construction and general site development. These soils would be easily manipulated and controlled to support roads, parking, sidewalks, and other residential amenities for Stouffer Place.



figure 5.10 Stouffer Place soils



SOIL DESCRIPTIONS:

Vinland-Martin Complex:

- Elevation: 800-1,600 feet
- Mean annual precipitation: 31-47 inches
- Mean annual air temperature: 52-59 degrees F
- Frost-free period: 175-215 days

Vinland:

- Landform: Hillslopes
- Down-slope shape: Convex
- Across-slope shape: Convex
- Parent material: Sandy and silty residuum weathered from shale

Properties and qualities

- Slope: 7-15%
- Depth to restrictive feature: 10-20 inches to paralithic bedrock
- Drainage class: Somewhat excessively drained
- Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately high (0.00-0.20 in/hr)
- Depth to water table: More than 80 inches
- Frequency of flooding: None
- Frequency of ponding: None
- Available water capacity: Low (about 3.5 inches)

Martin:

- Landform: Hillslopes
- Landform position (three-dimensional): Base slope
- Down-slope shape: Convex
- Across-slope shape: Convex
- Parent material: Silty and clayey colluvium derived from limestone and shale over silty and clayey residuum weathered from limestone and shale
- Slope: 7-11%
- Depth to restrictive feature: More than 80 inches
- Drainage class: Moderately well drained
- Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06-0.20 in/hr)
- Depth to water table: About 22-26 inches
- Frequency of flooding: None
- Frequency of ponding: None
- Calcium carbonate, maximum content: 1%
- Available water capacity: High (about 9.8 inches)

Source: (NRCS)

Martin Silty Clay Loam:

- Elevation: 800-1,600 feet
- Mean annual precipitation: 31-47 inches
- Mean annual air temperature: 52-59 degrees F
- Frost-free period: 175-215 days

Landform: Hillslopes

- Landform position (two-dimensional): Backslope
- Landform position (three-dimensional): Side slope
- Down-slope shape: Convex
- Across-slope shape: Convex
- Parent material: Silty and clayey colluvium derived from limestone and shale over silty and clayey residuum weathered from limestone and shale
- Slope: 3-7%
- Depth to restrictive feature: More than 80 inches
- Drainage class: Moderately well drained
- Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06-0.20 in/hr)
- Depth to water table: About 21-26 inches
- Frequency of flooding: None
- Frequency of ponding: None
- Calcium carbonate, maximum content: 1%
- Available water capacity: High (about 9.8 inches)

Source: (NRCS)

Sogn-Vinland Complex:

- Elevation: 800-2,000 feet
- Mean annual precipitation: 31-47 inches
- Mean annual air temperature: 52-59 degrees F
- Frost-free period: 175-215 days

Sogn:

- Landform: Hillslopes
- Landform position (three-dimensional): Side slope
- Down-slope shape: Convex
- Across-slope shape: Convex
- Parent material: Loamy residuum weathered from limestone
- Slope: 5-20%
- Depth to restrictive feature: 4-20 inches to lithic bedrock
- Drainage class: Somewhat excessively drained
- Capacity of the most limiting layer to transmit water (Ksat):
Very low to moderately high (0.00-0.20 in/hr)
- Depth to water table: More than 80 inches
- Frequency of flooding: None
- Frequency of ponding: None
- Available water capacity: Very low (about 2.4 inches)

Vinland:

- Landform: Hillslopes
- Down-slope shape: Convex
- Across-slope shape: Convex
- Parent material: Loamy residuum weathered from shale
- Slope: 7-15%
- Depth to restrictive feature: 10-20 inches to paralithic bedrock
- Drainage class: Somewhat excessively drained
- Capacity of the most limiting layer to transmit water (Ksat):
Very low to moderately high (0.00-0.20 in/hr)
- Depth to water table: More than 80 inches
- Frequency of flooding: None
- Frequency of ponding: None
- Available water capacity: Low (about 3.5 inches)

Source: (NRCS)

Conclusions:

At the scale of the site for Stouffer Place, it is challenging to analyze the types of soil present without physical testing and research. By referencing soil surveys and records, we can get a basic understanding of the characteristics of the site. Since soils do not exist in strict and separate boundaries, careful attention should be paid to the properties listed by the NRCS and verified in the field. It should also be recognized that this site has been previously altered and built upon, thus altering the original characteristics of the named soil types.

The possibility of shallow soils and excessive slopes of the Sogn-Vinland complex combine to suggest that building in these areas is not suitable. Based on soil properties, building will be most suitable in the Vinland-Martin complex and Martin silty clay loam soils. Although these soils might not be ideal for developing, they are the most suitable of this site. Given the site's history of shifting slabs (buildings 19, 21, 22, 23) careful attention should be paid to the location of any foundations, footings, or slabs for buildings.

CIRCULATION:

Vehicles accessing the site move along three separate streets or drives. Ellis Drive is the main street of Stouffer Place and is accessed off of 19th Street. Bagley Drive intersects Ellis Drive at the south end of the site. Anna Drive, with the sites only transit stop, is also accessed off of 19th street. Within the site, a total of 3,770 linear feet of asphalt streets connect a series of perpendicular parking bays in front of the apartment buildings. As a method of eliminating through traffic, Ellis Drive does not connect all the way to Irving Hill Road to the north. A small barricade is currently in place to keep vehicles from cutting through the neighborhood.

Sidewalks line the edges of the parking bays and run along both sides of the streets at most locations. Walks also connect from the parking to the buildings, which are set back about 50 feet from the parking bays. Sidewalks also connect to the residence halls to the west, as well as Hilltop Childcare center to the north.

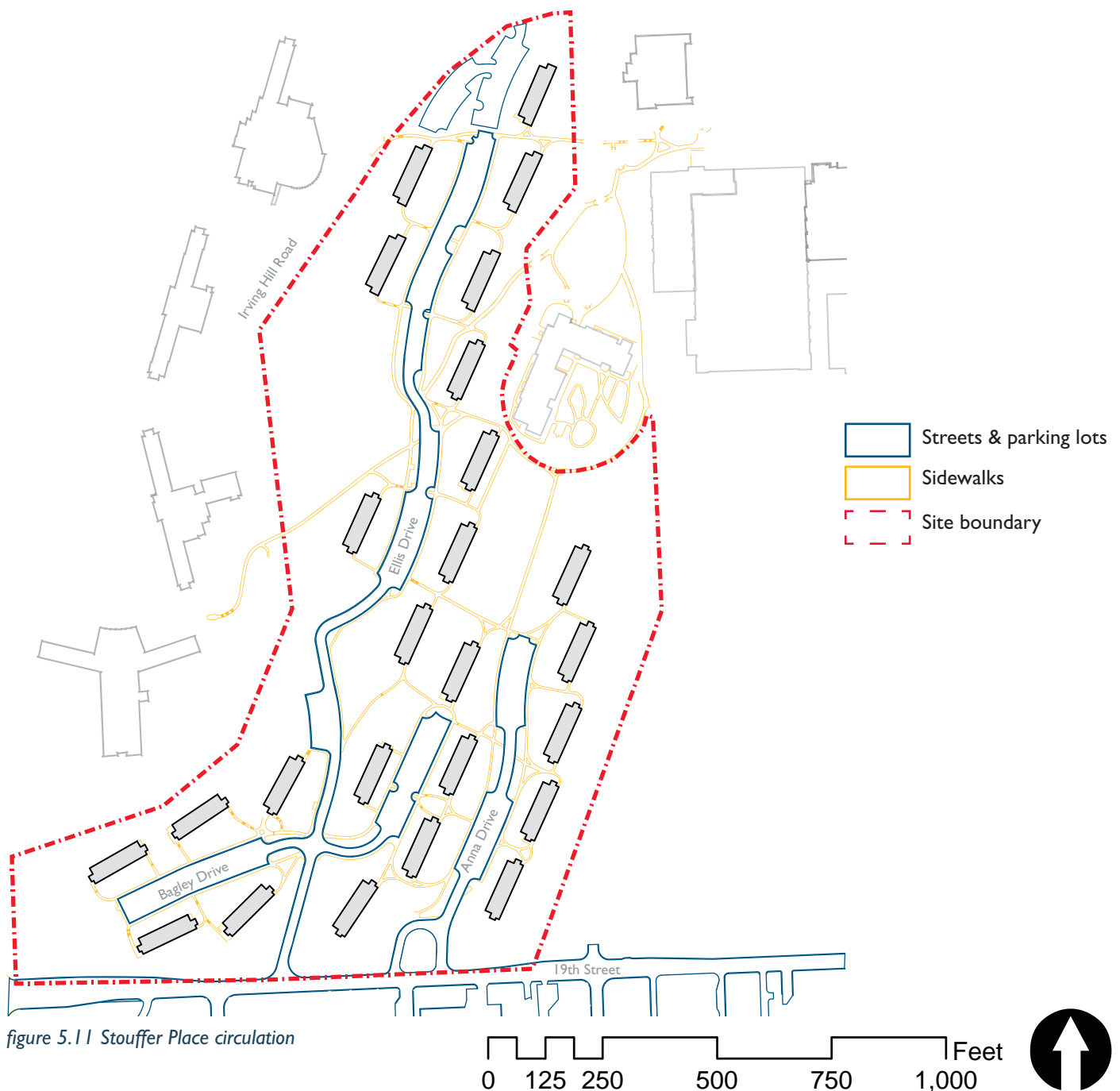


figure 5.11 Stouffer Place circulation

VEGETATION QUALITY:

As with many American universities, The University of Kansas has a multitude of well-established trees. The streets of Stouffer Place are lined with beautiful American Sycamores (*Platanus occidentalis*). These trees offer a great deal of shade and character to the site. With their white branches and exfoliating bark, they help to define the predominant landscape character of Stouffer Place.

Larger trees that offer a lot of shade, add to the identity of the site, or provide significant spatial definition were designated as “highest quality trees”. Moderate quality trees

are still very significant to the site, but do not provide as much shade, identity, or spatial definition. Poor quality trees offer the least amount of shade, identity, and or spatial definition. This diagram is by no means suggesting that all of the poor quality trees should be removed from the site, during construction. This inventory is intended to assign a basic quality rating to the trees of Stouffer Place in order to determine which trees could be sacrificed if tree removal is necessary. Efforts should be made to create a design that preserves as many trees as possible.



figure 5.12 Stouffer Place vegetation quality

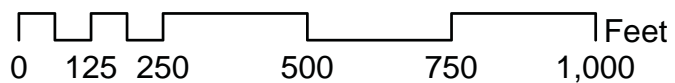
BUILDING CONDITION:

The aging infrastructure of Stouffer Place presents a great dilemma to the Department of Student Housing at KU. Recent renovations have upgraded the apartments in five of the buildings. Upgrades include central air conditioning, appliance upgrades, and floor replacements.

At the north end of the site, four buildings have experienced structural failure to some extent. The concrete slabs have shifted, thus causing walls to shift as well. Some of the apartments in these buildings have been taken offline. To address this issue a strategic phasing plan should be developed that takes building condition, location, and suitability into account.



figure 5.13 Stouffer Place building condition



UTILITIES:

There are many buried utilities within the site at Stouffer Place. Electric, cable, gas, water, and storm lines come from every building on the site. With this amount of buried infrastructure, any new construction will most likely warrant the replacement and re-routing of utilities.

Most of the site's runoff is captured by drains and moved underground through pipes to a larger storm sewer system on the northern right of way of 19th Street.

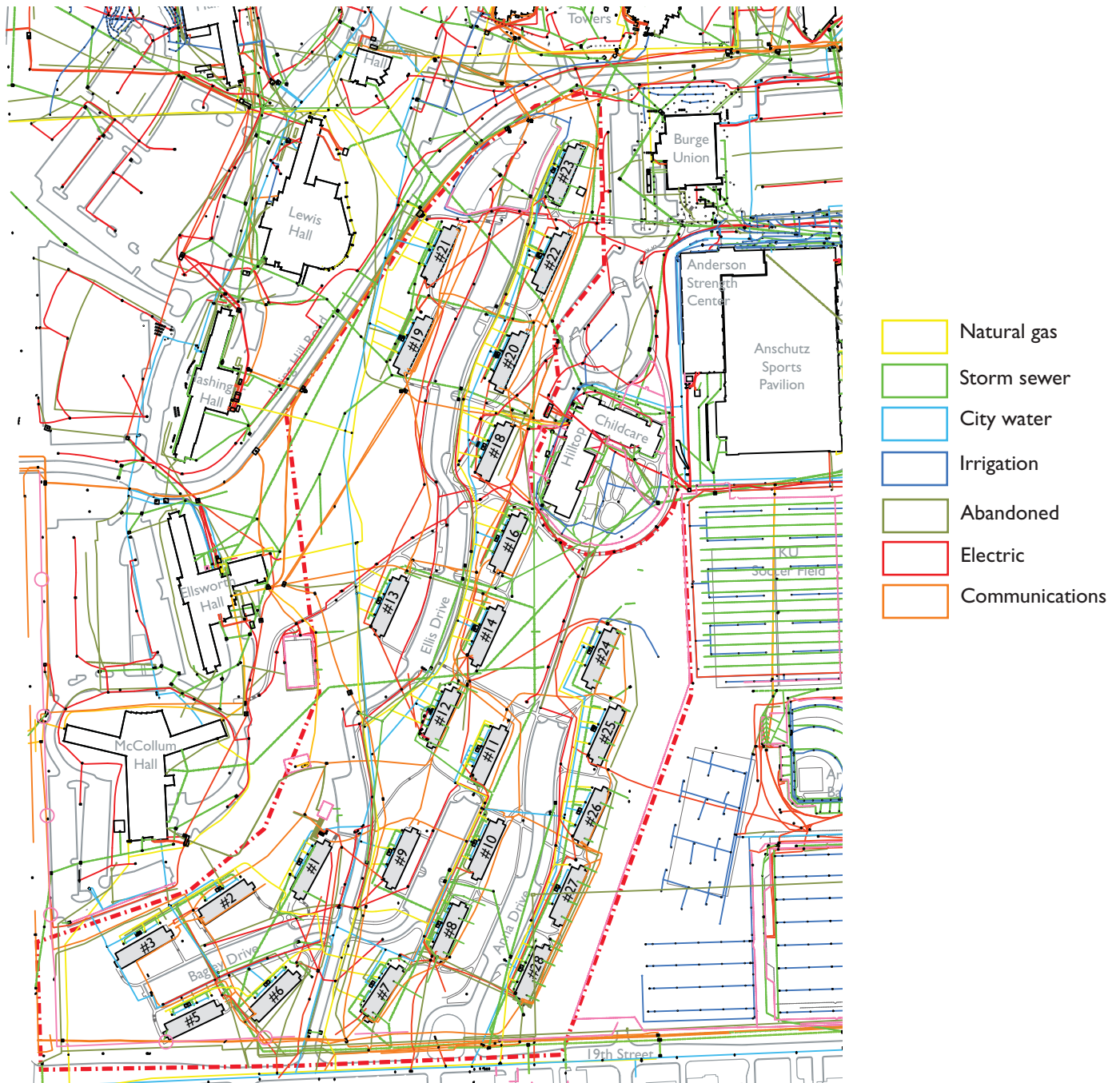
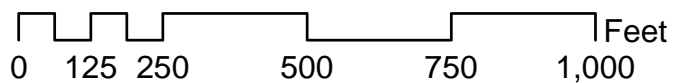


figure 5.14 Stouffer Place utilities



ARCHITECTURAL STYLE:



figure 5.15 View of building rear



figure 5.16 Transit shelter side view



figure 5.17 Typical building stairwell

Unlike the traditional limestone buildings with red roofs that line Jayhawk Boulevard, the apartment buildings at Stouffer Place are unique in their style at KU. The solid red brick construction sits beneath a gabled asphalt shingle roof with four dormers projecting from each side. Although these buildings are quite basic and lack any real variety or ornamentation, they are a step up from the flat roofed units that utilized the same floor plans at Jardine Apartments at Kansas State University.

The only noticeable difference between the appearances of the buildings is that on some buildings, the dormer shutters and balcony railings have been painted green while on other buildings they are painted red. The site is completely lacking of any variety of architectural elements that would add to the sense of place of the site. There are no iconic elements or landmarks to reference throughout the site at all.

MATERIALS:

Site:

The materials used on site are typical of streets and sidewalks throughout campus, using asphalt paving and concrete walks.



figure 5.18 Brick detail

Asphalt: ○

Concrete: ○

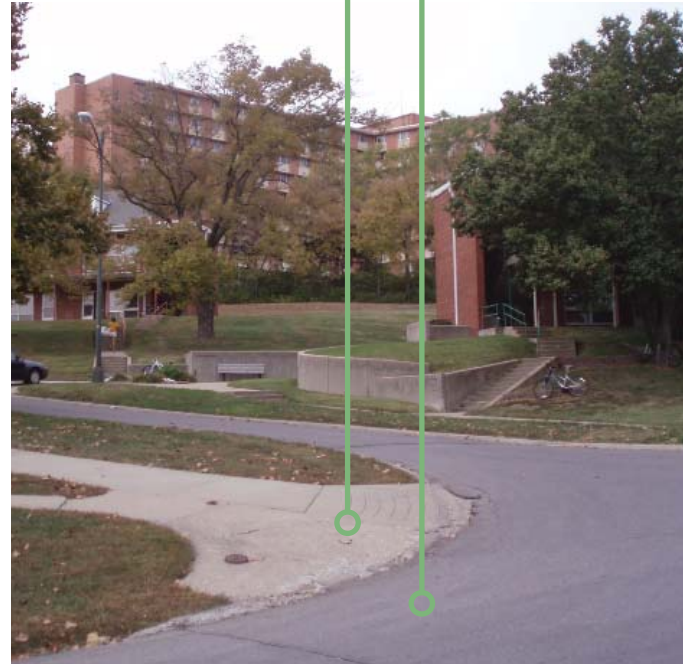


figure 5.19 Intersection detail

Buildings:

In contrast to most of the Lawrence campus, all of the site's 25 buildings are constructed of red brick, with a gabled roof design covered in asphalt shingles.

Asphalt Shingles: ○

Brick: ○



figure 5.20 View of building roof

OPERATING EXPENSES:

The 2011 fiscal year estimated expenses for Stouffer Place total \$1,092,800 (KU DSH). Of this expense report, \$291,050 is budgeted towards operating expenses. With these numbers, that is 26.6% of the money going towards expenses such as site and building maintenance, utilities, and other daily operating expenses. These operating expenses do not include bond repayments which pay for renovations of the buildings.

Non-operating expenses include human resources salaries, wages, benefits, bond payments, and overhead costs for the department of student housing.

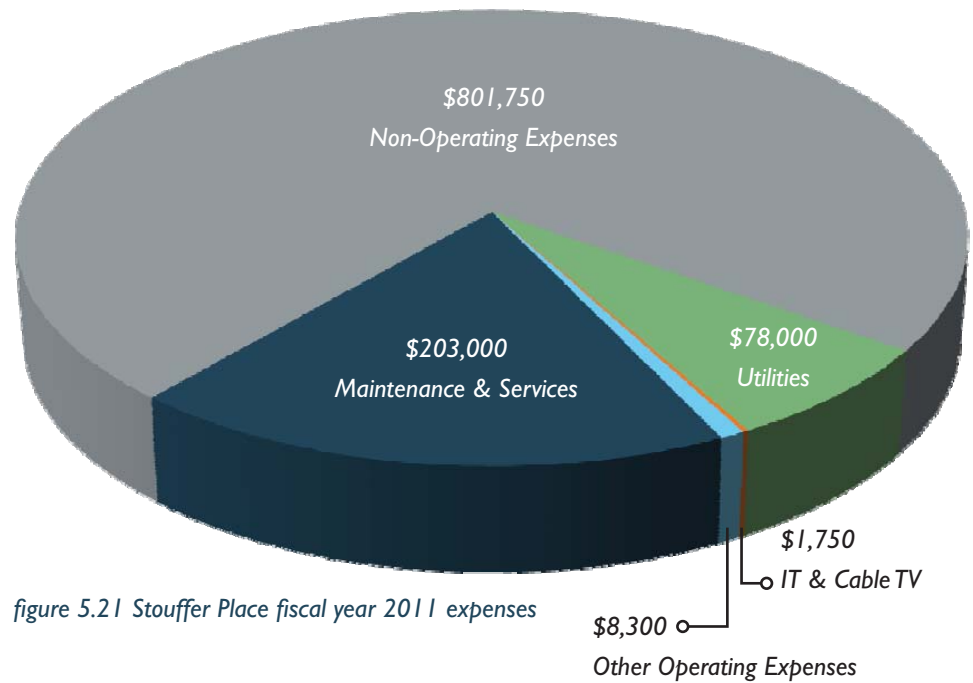


figure 5.21 Stouffer Place fiscal year 2011 expenses

The average estimated cost of apartment utilities is \$195 per month, which includes payment for electricity (40%), natural gas (30%), and water/sanitation bills (30%).

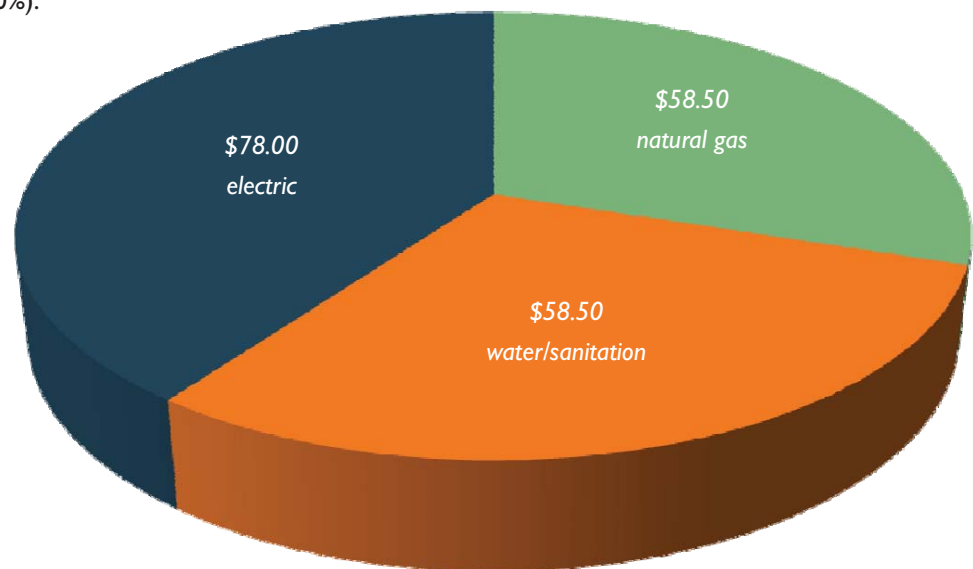


figure 5.22 Average estimated apartment utilities cost

SLOPE ASPECT:

The majority of the site slopes towards the east and southeast. Certain areas where significant grading has been done show slope aspects towards the north or west, but these are limited. With this position on a southeast facing slope, the site is mostly sheltered from intense afternoon solar rays coming from the west. Morning and mid-day sun are available to the majority of the site, making the use of passive and active solar heating techniques a great opportunity for the site.

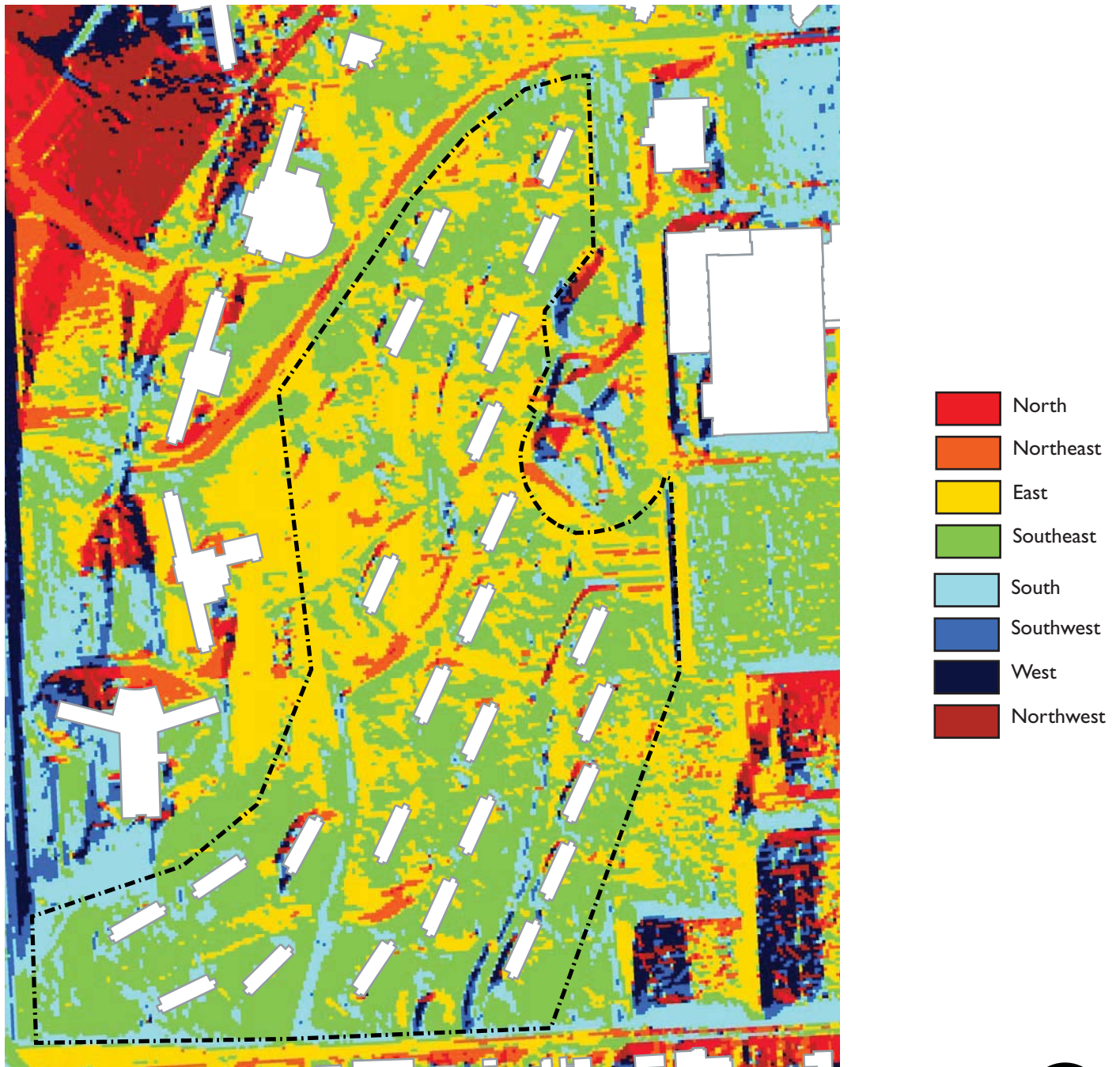


figure 5.23 Stouffer Place slope aspect

0 125 250 500 750 1,000 Feet



HOUSING SUITABILITY:

To determine the most suitable areas for building development, five subjects were inventoried and ranked from most suitable (10) to restricted (0). These inventories were combined to create overlays that reveals the most suitable areas for building development.

Natural Systems:

Soils:




- 10: Martin silty clay loam, well drained, more than 80" to bedrock
- 6: Vinland martin complex, excessively drained, 10-20" to bedrock
- 0: Sogn vinland complex, excessively drained, 4-20" to bedrock

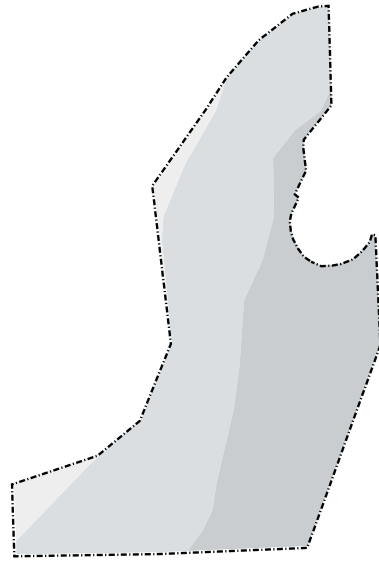
Slope:

- 10: 0-5%
- 8: 5.01-10%
- 4: 10.01-15%
- 2: 15.01-20%
- 1: 20.01-25%
- 0: 25%+

Vegetation:

- 8: Little to no spatial definition, little to no shade offering, little to no identity offering
- 5: Some spatial definition, some shade offering, some identity offering
- 1: American Sycamore street trees, high spatial definition, high shade offering, high identity offering

-  Most suitable for development
-  Moderately suitable for development
-  Least suitable for development



Soils



Slope



Vegetation

figure 5.24 Natural systems housing suitability elements

Social Systems:

Proximity to Amenities

(19th St, Irving Hill Rd, Hilltop Childcare):

10: One minute walk* (0-264')

9: Two minute walk* (265-528')

8: Three minute walk* (529-792')

7: Four minute walk* (793-1,056')




6: Five minute walk* (1,057-1,320')

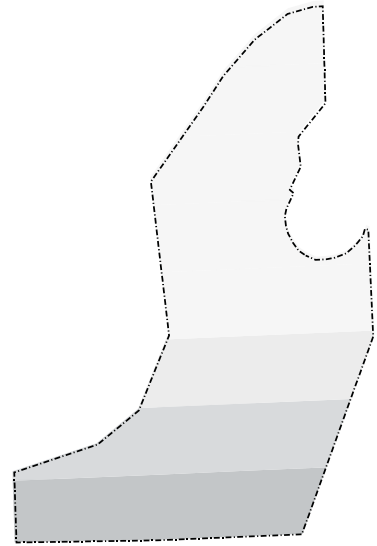
5: Six minute walk* (1,321-1,584')

4: Seven minute walk* (1,585-1,848')

3: Eight minute walk* (1,849-2,112')

*walk times calculated at 3 mph.

-  Most suitable for development
-  Moderately suitable for development
-  Least suitable for development



19th St.



Irving Hill Rd.



Hilltop Childcare

figure 5.25 Social systems housing suitability elements

NATURAL SYSTEMS:

By combining the elements of soil, slope, and existing vegetation, a weighted overlay was produced to determine the most suitable areas of the site for building development. Using geographic information systems (GIS) software, the values previously determined were weighted as follows:

Soils = 40%

Slope = 40%

Vegetation = 20%

The results indicate that based on the strategy of analysis of these biophysical elements, most of the site is cable of development.

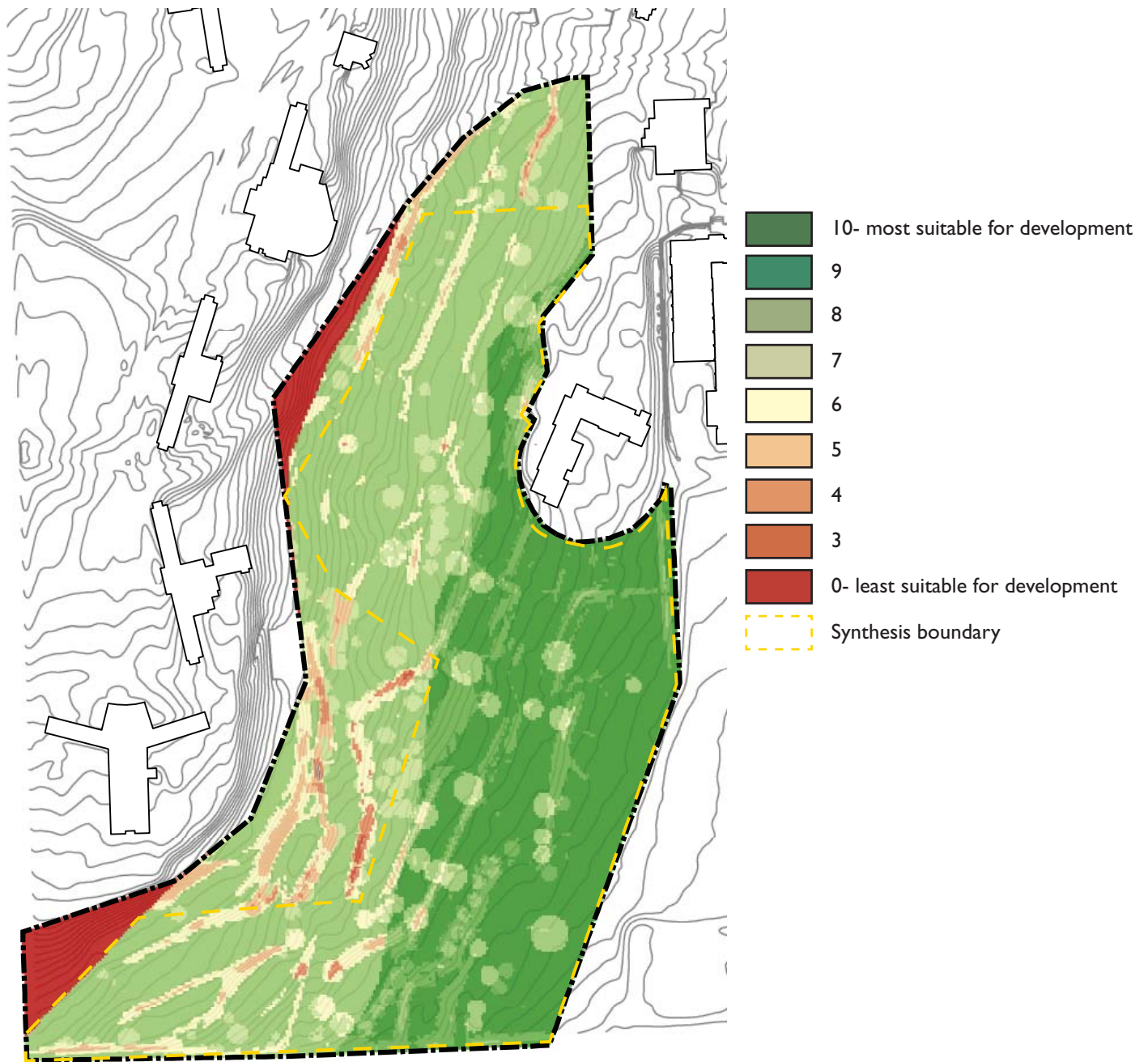
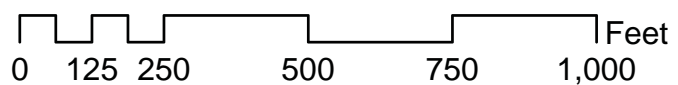


figure 5.26 Stouffer Place natural systems housing suitability



SOCIAL SYSTEMS:

A second overlay was completed solely with the distances to amenities. The distances were converted into walk times and ranked accordingly from shortest walk being most suitable, to the longest walk times being least suitable. The three proximities were balanced evenly:

19th Street = 33%

Irving Hill Road = 33%

Hilltop Childcare Center = 33%

The results indicate that to achieve a balance of shorter walk times to each of these amenities, the most favorable sites for development are towards the center of the site.

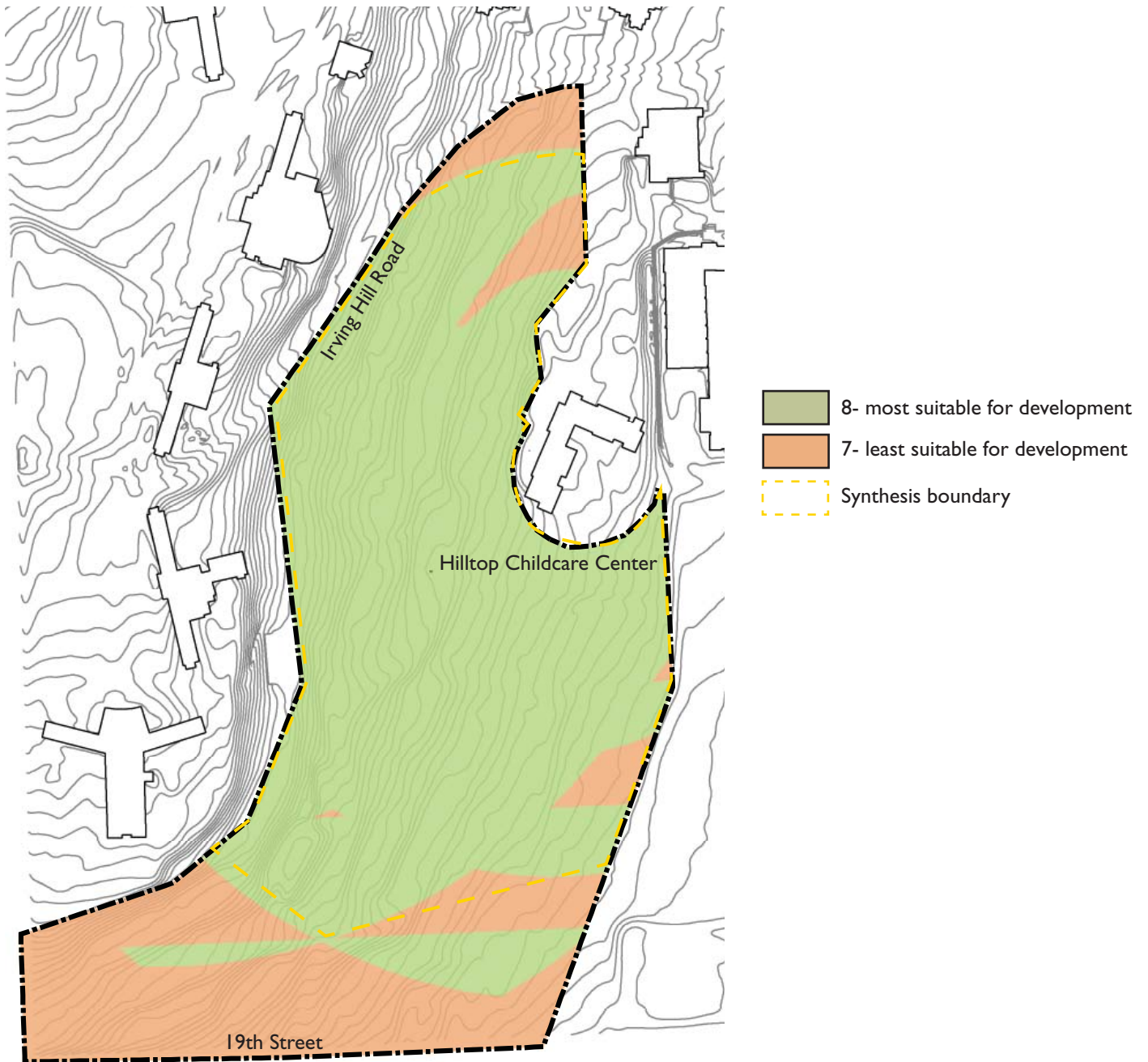
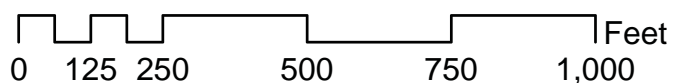
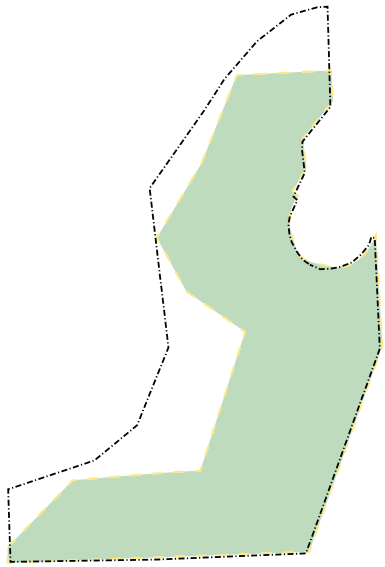


figure 5.27 Stouffer Place social systems housing suitability

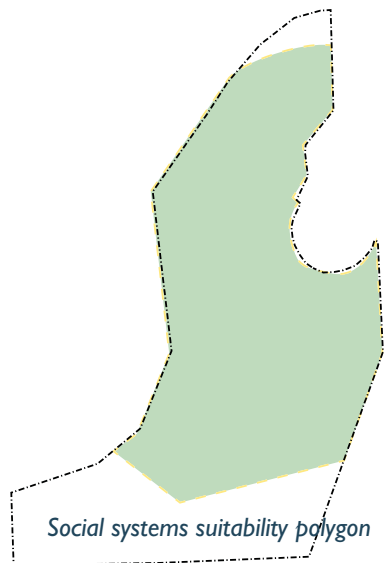


SUITABILITY SYNTHESIS:

Boundaries were formed to highlight the largest areas of the most developable land according to the suitability analysis. Polygons corresponding to the natural systems as well as the social systems suitabilities have been overlaid to reveal a synthesized suitability analysis that summarizes the analysis presented.



Natural systems suitability polygon



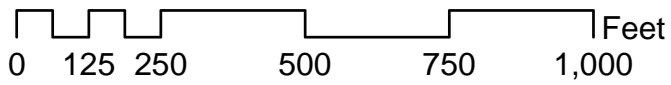
Social systems suitability polygon

figure 5.28 Suitability synthesis elements

Combining the social and natural systems suitability analyses shows that the center of the site is generally the most suitable area for new housing. This is based on the natural systems components of soils, slope, and existing vegetation. Proximity to 19th Street, Irving Hill Road, and Hilltop Childcare were the social systems elements combined to create the other half of this synthesis.



figure 5.29 Stouffer Place suitability synthesis



WIND RESOURCE UTILIZATION POTENTIAL:

Although Kansas as a whole has relatively high wind speeds, Lawrence is not ideal for capturing wind energy. According to AWS Truepower, a leader in the renewable resources industry, the average windspeed at 30m of height for Stouffer Place is 5.01 m/s (windnavigator.com). Other places in Kansas offer average speeds of nearly 9.0 m/s. Kansas is also unique in that it experiences shifting wind patterns throughout the year. As a general but frequently broken rule, summer winds come from the south, and winter winds come from the north.

Siting a wind turbine in an urban environment can prove to be quite challenging. Since buildings, trees, and other obstructions can disturb the wind, turbulent and infrequent wind patterns can develop. With this in mind, rules of thumb have been developed in the industry as a means of determining if a wind turbine can be sited near obstructions. Given the height of an obstruction (H), the region of highly disturbed airflow can be determined as indicated in the Skylands Renewable Energy diagram below.

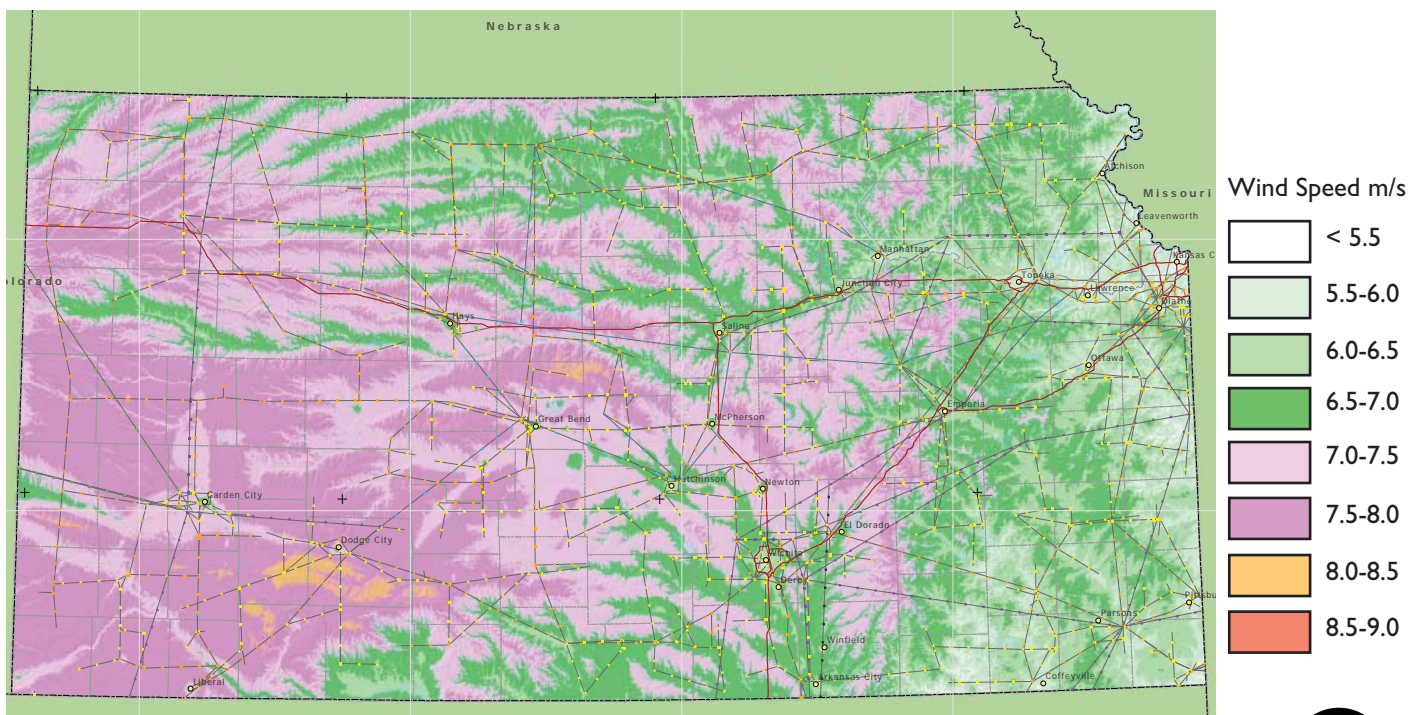


figure 5.30 Kansas wind resource potential

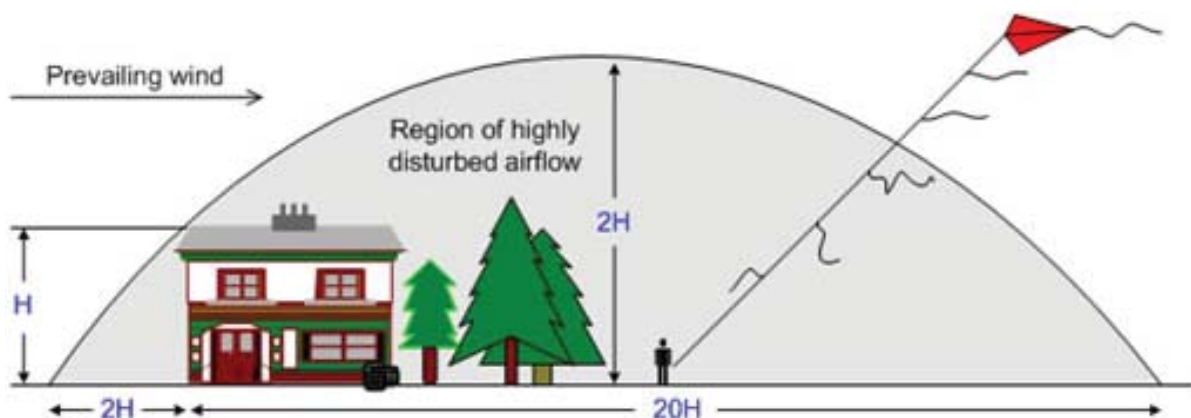
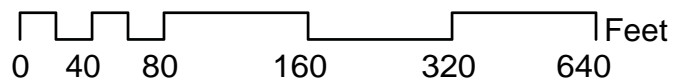


figure 5.31 Region of highly disturbed airflow

WIND TURBINE SUITABILITY:

After a consultation with Professor Ruth Miller, an expert in renewable energy at Kansas State University, it was determined that the most suitable places for a small scale wind turbine would be at the highest elevations of the site that would easily receive northern and southern winds. Also, it was suggested that when the turbine is sited, it should be located at least 200 feet from any obstruction taller than 30 feet. Abiding by these criteria, it is estimated that a 5 kWh turbine mounted at an 24 meter height with a blade span of 5 meters

could produce 528 kWh per month at an average 5.1 m/s wind speed (Fortis Wind Energy). To put that into perspective, this amount of electricity could power a refrigerator for almost three months (SLEMCO). Constructing a wind turbine could power some items in the community center, but would be largely symbolic given its expected costs and benefits. As a demonstration and site specific test it could nevertheless be of real educational value.



figure 5.32 Stouffer Place wind turbine suitability

0 125 250 500 750 1,000 Feet



SOLAR GAIN POTENTIAL:

Stouffer Place has great potential for utilizing solar radiation as a means of renewable energy. The slope aspects facing south, southeast, and southwest are most favorable for siting photovoltaic technologies. Those aspects facing north, northeast, and northwest are least favorable for active or passive solar gain. Careful attention should also be given to determine which of these favorable areas receive direct sunlight unobstructed by shade from buildings or trees.

To fully benefit from passive and solar radiation, the ideal strategy of development would be to site buildings longitudinally east to west. This would mean tucking or stepping the structures into the slope. Appropriate building design and photovoltaic layout could then benefit from the increased southern exposures. Passive solar strategies (inviting winter sunlight into buildings while shading out summer sun) and creating well-insulated buildings are essential to increase efficiency and reduce year-round energy demands.



figure 5.33 Stouffer Place solar gain potential

0 125 250 500 750 1,000 Feet



STORMWATER COLLECTION POTENTIAL:

Many strategies can be implemented to improve stormwater management at Stouffer Place. Special efforts can be made to slow the site's runoff by creating bioswales and raingardens, or simply by increasing a native plant palette wherever this is appropriate. Efforts can be made as well to collect the stormwater for irrigation or "greywater" use. Rain-barrels and underground cisterns are both technologies that can capture rainwater and transform it into a resource that will benefit residents.

Areas of the site with deeper soil will perform better at infiltrating stormwater and allowing it to filter through the soil. There is also a lot of stormwater infrastructure underground in the site. Treatments can be designed to manage the water at specific points in the system, or daylight segments of pipe completely. The ultimate goal here should be to design and maintain landscapes that protect the soils while at the same time meeting aesthetic and ecological concerns. These concerns include reducing or eliminating high volume, concentrated and polluted stormflows.

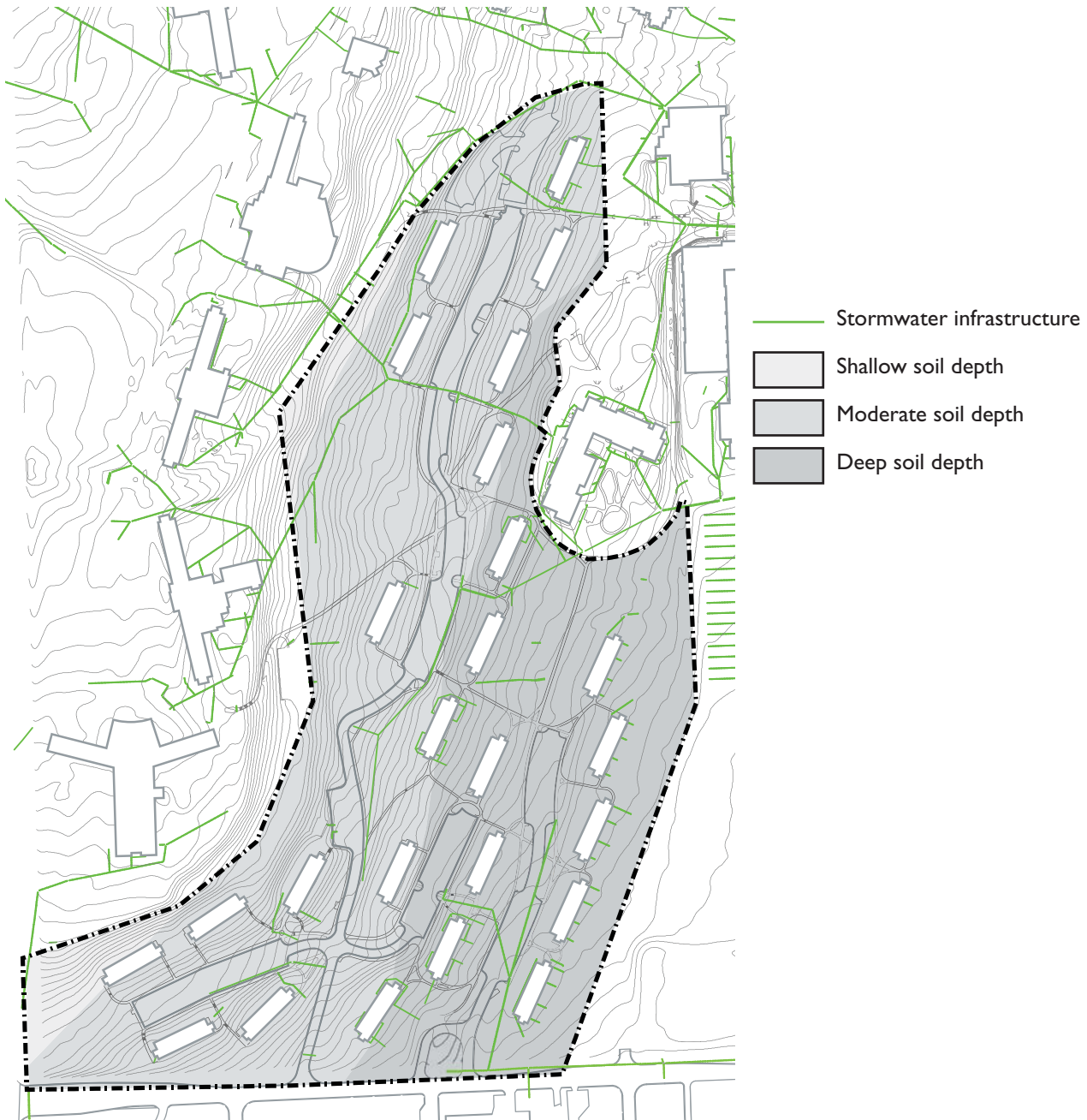
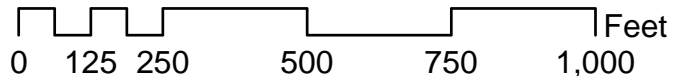


figure 5.34 Stouffer Place stormwater collection potential





6



FINAL VISION:

In chapter 6 the final solution to Rebuilding Stouffer Place is presented, providing a final vision and conceptual design based on previous research and analysis.

FINAL VISION:

The final vision for Rebuilding Stouffer Place is intended to be a look into the possibilities when considering the redevelopment of the site. The final plan is delivered as a product of a thoroughly developed design framework and concept. By reviewing the overall guidelines for this project, a much stronger solution will result.

PROGRAM GOALS:

Support + Sustain + Create

The program goals for Rebuilding Stouffer Place are the same as the overall project goals stated earlier. They are synthesized into: support, sustain, and create. The main goal of the project will be to support the missions of KU and DSH, while creating a community that seeks to be sustainable. Program elements were determined by site observations and meetings with DSH administration, as well as conclusions drawn from precedent studies. The programmatic elements will relate closely to these three underlying project goals. By analyzing the existing needs and preferences of the residents a basic program was developed. Further analysis of two precedents allowed for the development of a benchmark related to feature or element performance, form, and size.

RESIDENTS' NEEDS:

- Large-scale outdoor community space
- University transit stops
- More community gardens
- More small-scale outdoor spaces
- Improved pedestrian circulation to Burge Union
- Neighborhoods that create “place”
- A site identity that responds to the existing locality

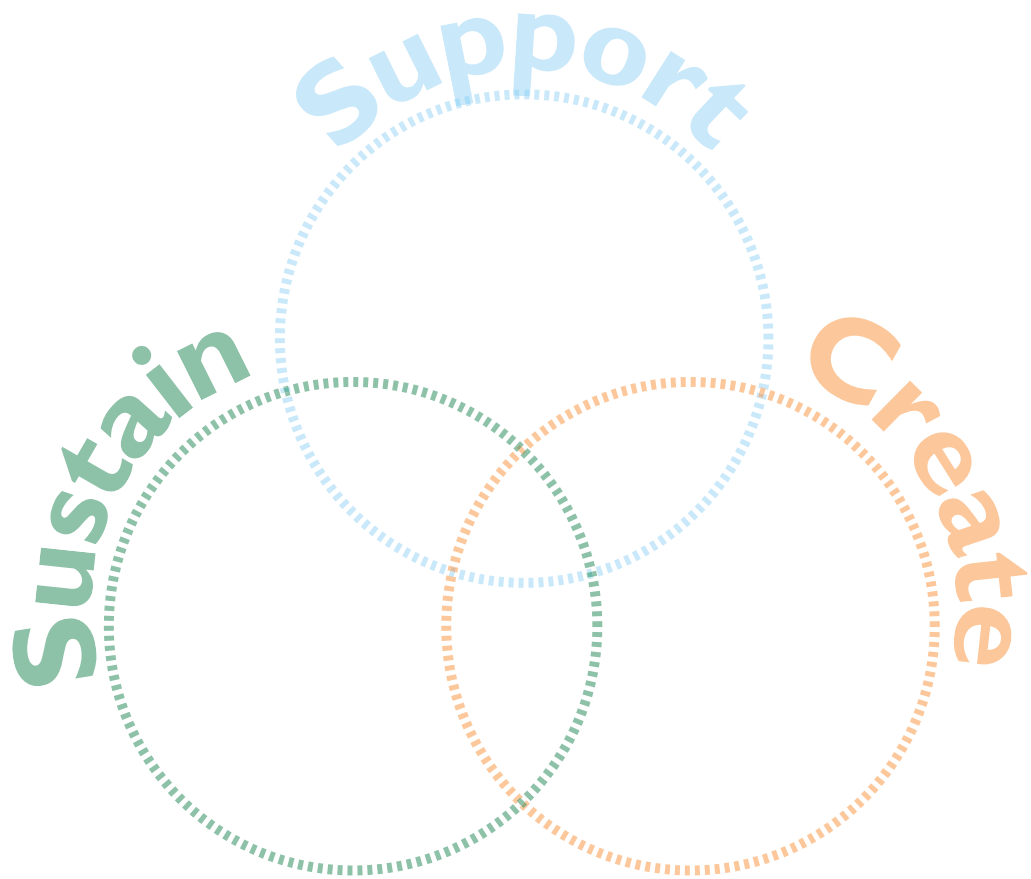


figure 6.1 Design framework

PROGRAMMATIC RELATIONSHIPS:

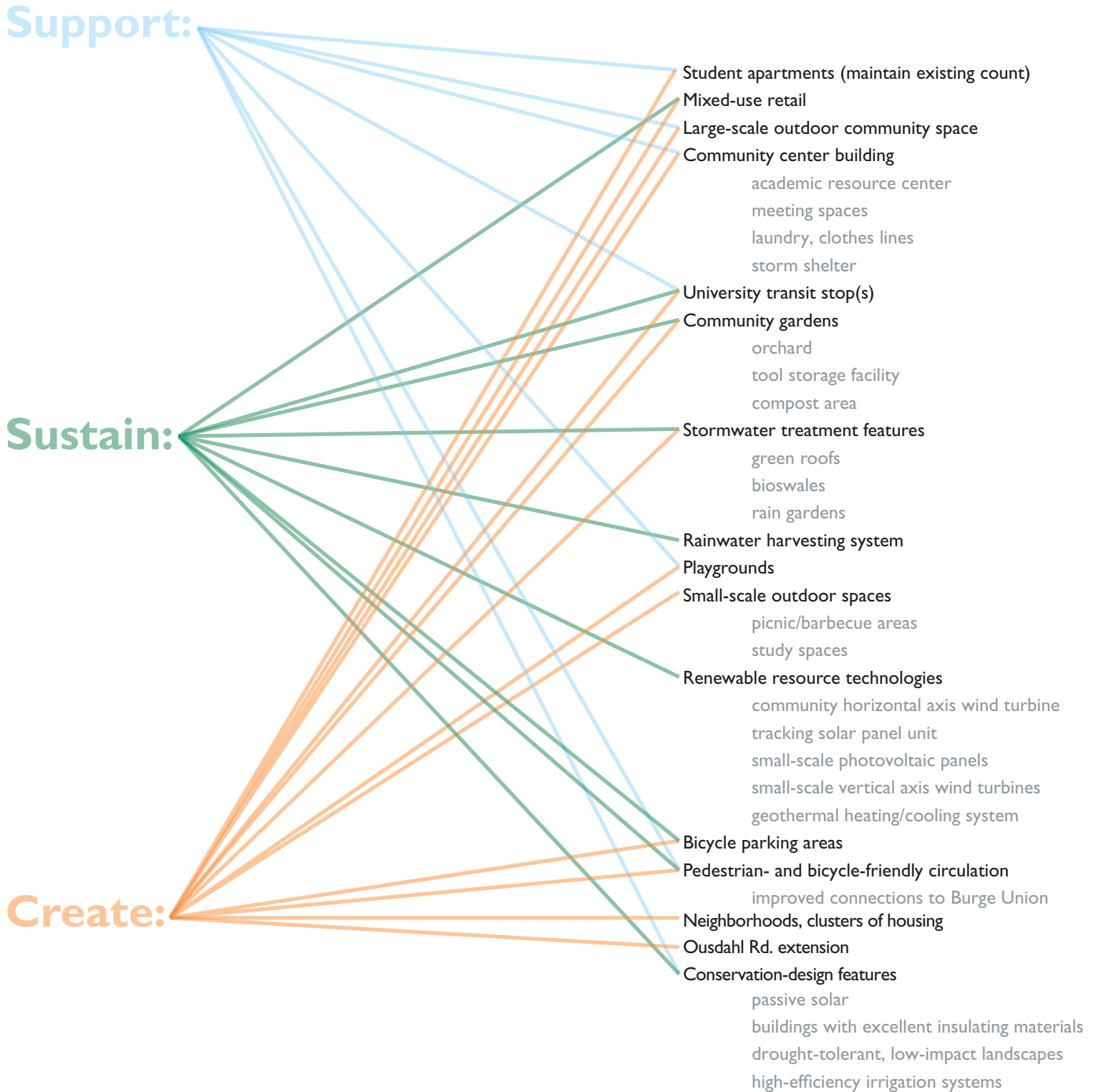


figure 6.2 Programmatic relationships

FORM + SIZE + PERFORMANCE:

Student apartments:

- maintain existing population (283 units)
- modern architecture, match style and materials of KU
- 4-6 building clusters of development
- two-story buildings, three if stepped form
- hidden entrances/stairwells (breezeways)
- hidden storage

Mixed-use retail:

- grocery
- cafe
- pharmacy
- high visibility
- adjacent to outdoor community space

Large scale outdoor community space:

- shaded
- 30,000-50,000 square feet
- adjacent to community center
- hardscape materials

Community center building:

- academic resource center
- meeting spaces
- laundry facilities
- storm shelters
- adjacent to outdoor community space
- centrally located

University transit stop(s):

- shaded
- centrally located
- provide bus access and turn around

Community gardens:

- minimum of one garden per cluster
- minimum of one compost area per cluster
- 40 square feet of garden space per unit

Stormwater treatment features:

- green roofs
- bioswales
- rain gardens

Rainwater harvesting system:

- rain barrels or underground cisterns
- usable for irrigating gardens

Playgrounds:

- one centrally located
- shared by all neighborhoods

Small scale outdoor spaces:

- private study spaces
- picnic/barbecue areas w/ tables at every cluster

Renewable resource technologies:

- horizontal axis wind turbine
- tracking solar panel unit
- small scale photo voltaic panels
- geothermal heating/cooling

Bicycle parking areas:

- at every building, one space per person

Pedestrian and bicycle friendly circulation:

- improved sidewalks to Burge Union

Neighborhoods, clusters of housing:

- 4-6 clusters of development

Ousdahl Rd. extension:

- private and transit circulation only

DESIGN PATH:

Following the development of a personal design philosophy (Figure 3.1), a framework needed to be established to guide this design through a thoughtful process that supports my work style. The design path began with the generation of ideas from different sources in an effort to solve the dilemma. Through a series of personal and mentor reviews, the ideas were questioned and evaluated in an effort to weed out

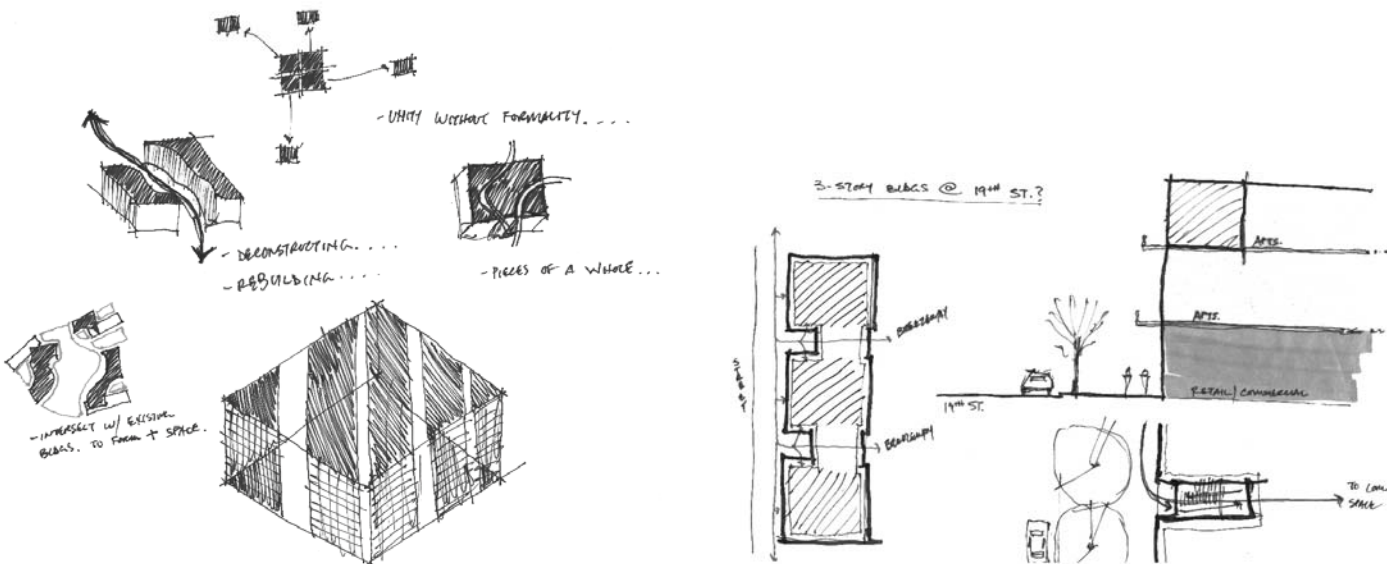
the weakest ideas, concepts, and theories. After a period of refinement and adjustment, a few of the strongest ideas were further reviewed, before combining them to form a comprehensive solution that supports the design philosophy.

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Generate

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Question & Evaluate



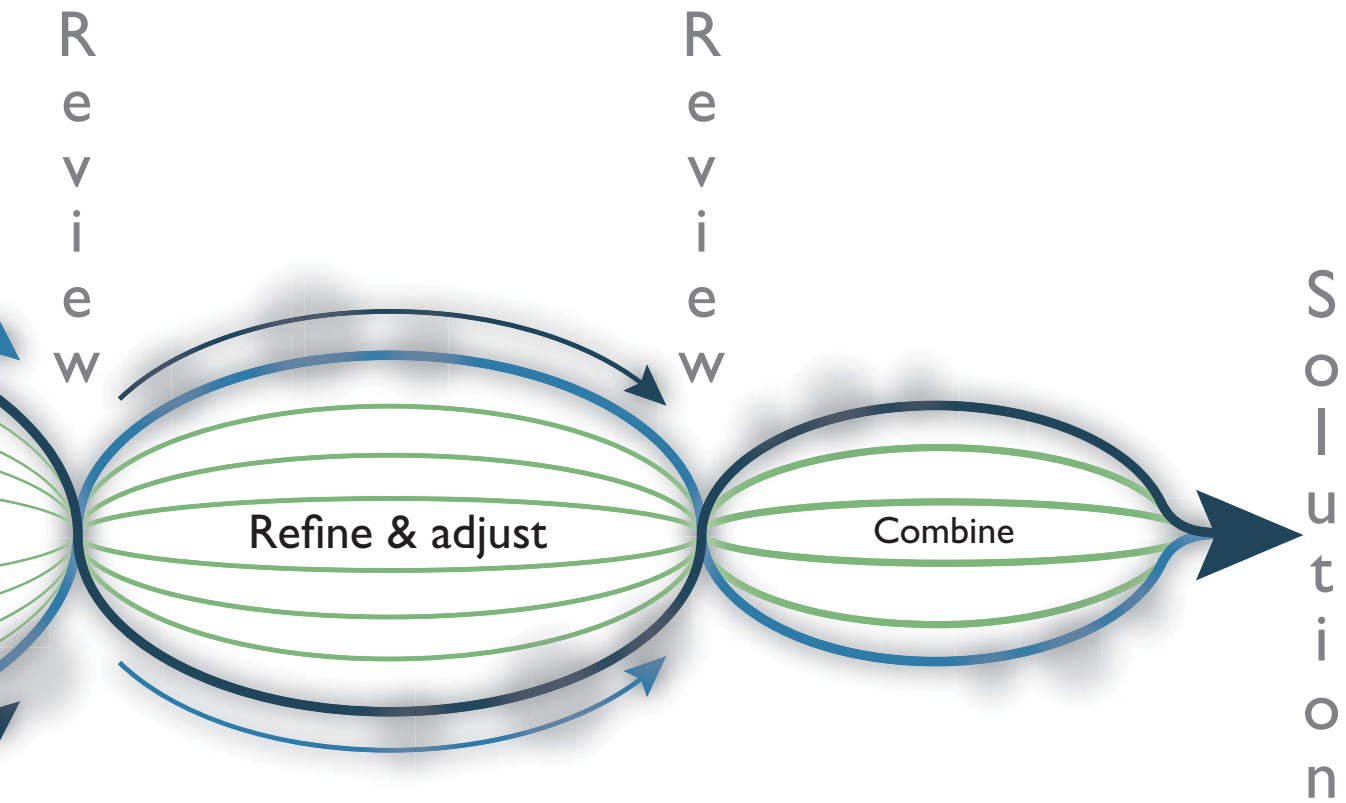


figure 6.3 Design path

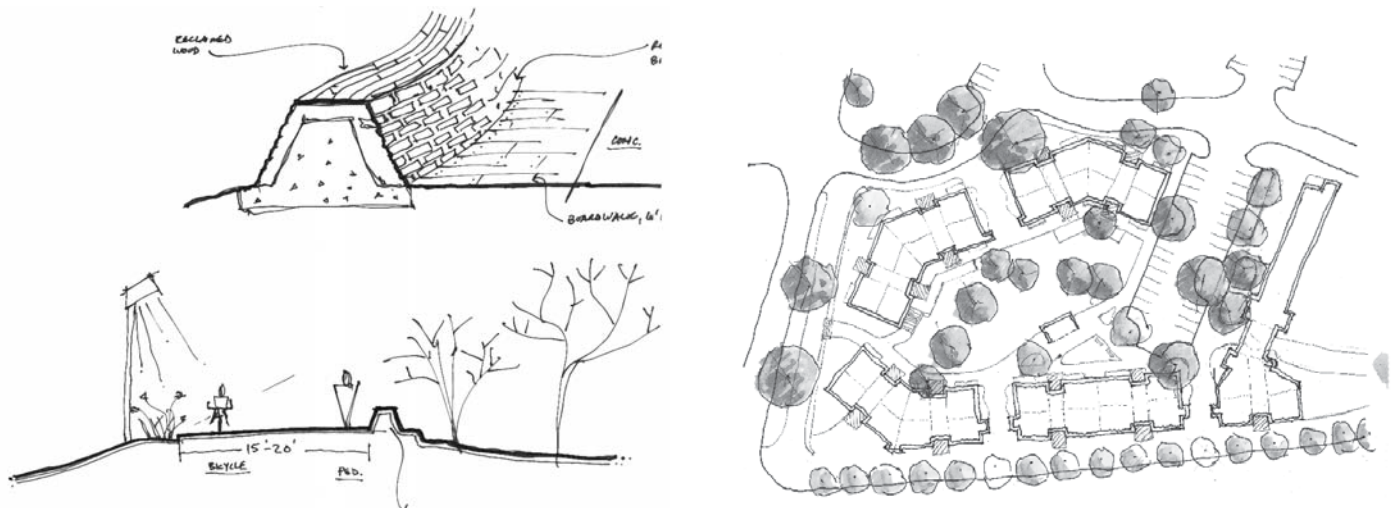
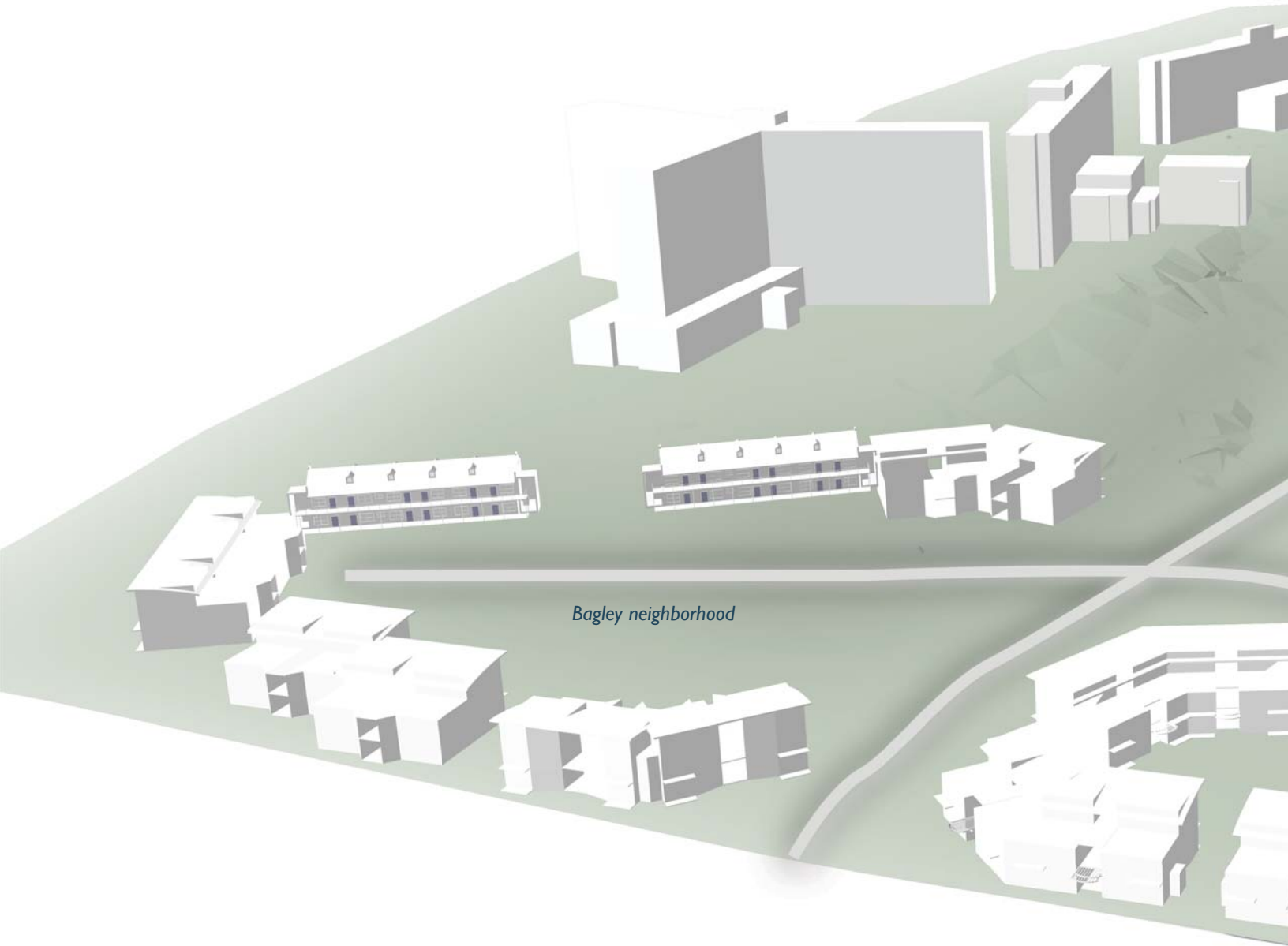
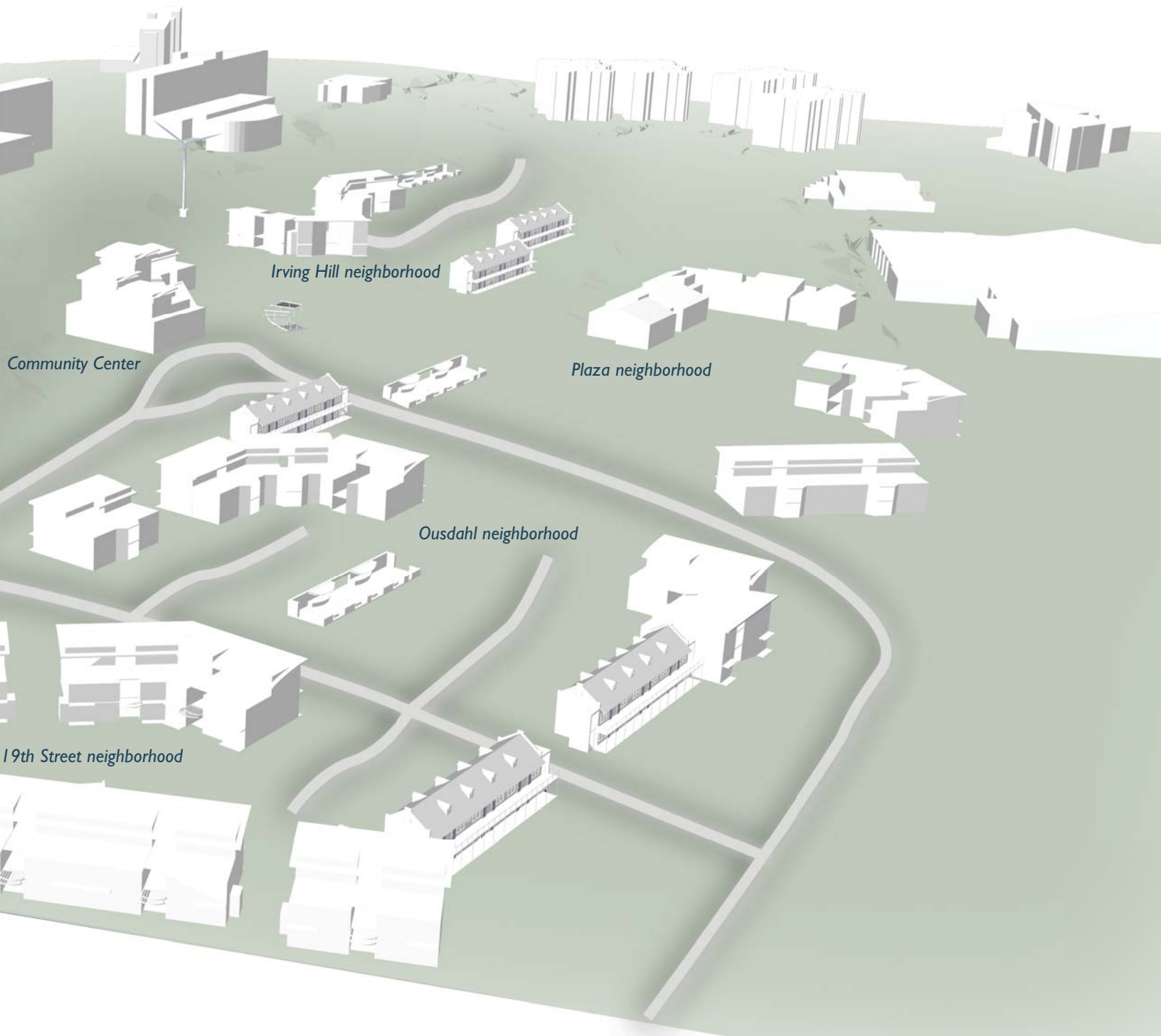


figure 6.4 Process sketches

SUPPORT:



Bagley neighborhood



Irving Hill neighborhood

Plaza neighborhood

Ousdahl neighborhood

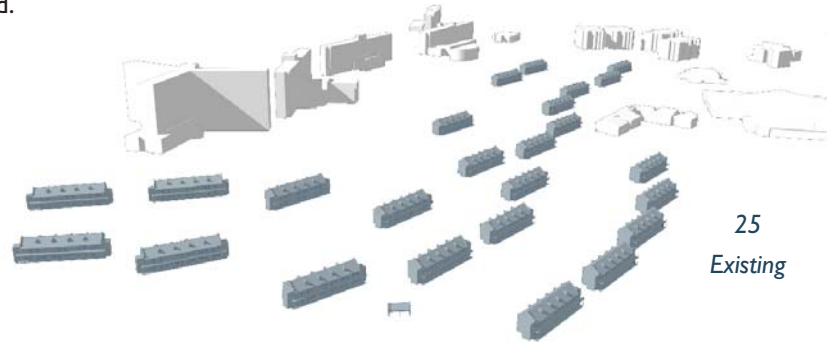
Community Center

19th Street neighborhood

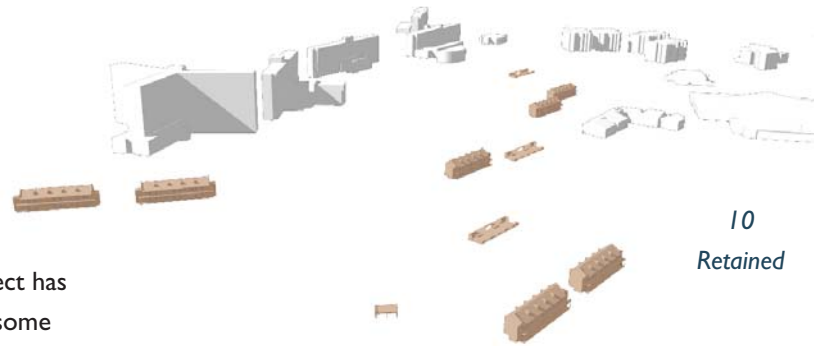
figure 6.5 Aerial view of proposed site

HOUSING STRATEGY:

The proposed housing strategy for Stouffer Place consists of the construction of 17 new apartment buildings, and one community center. With this arrangement, the plan retains seven of the original 25 apartment buildings for housing, and another three for community gardens and a playground.

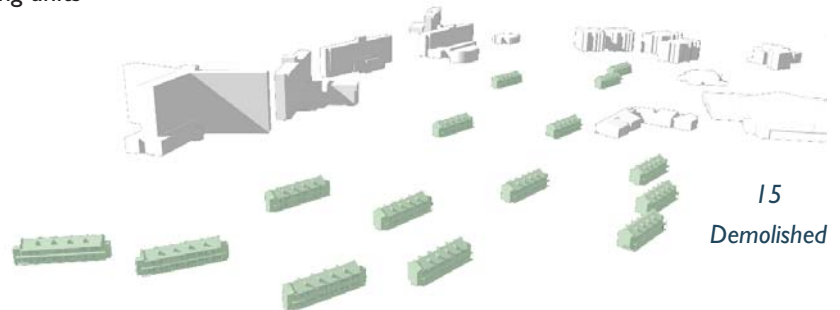


25
Existing



10
Retained

By retaining a portion of the existing buildings, the project has become more economically feasible, and still maintains some of the existing character and look of the site. This strategy of retention is important to the framework of redevelopment and allows for more flexibility and variety in creating housing units and concepts.



15
Demolished



17
Proposed

figure 6.6 Housing strategy

PHASING:

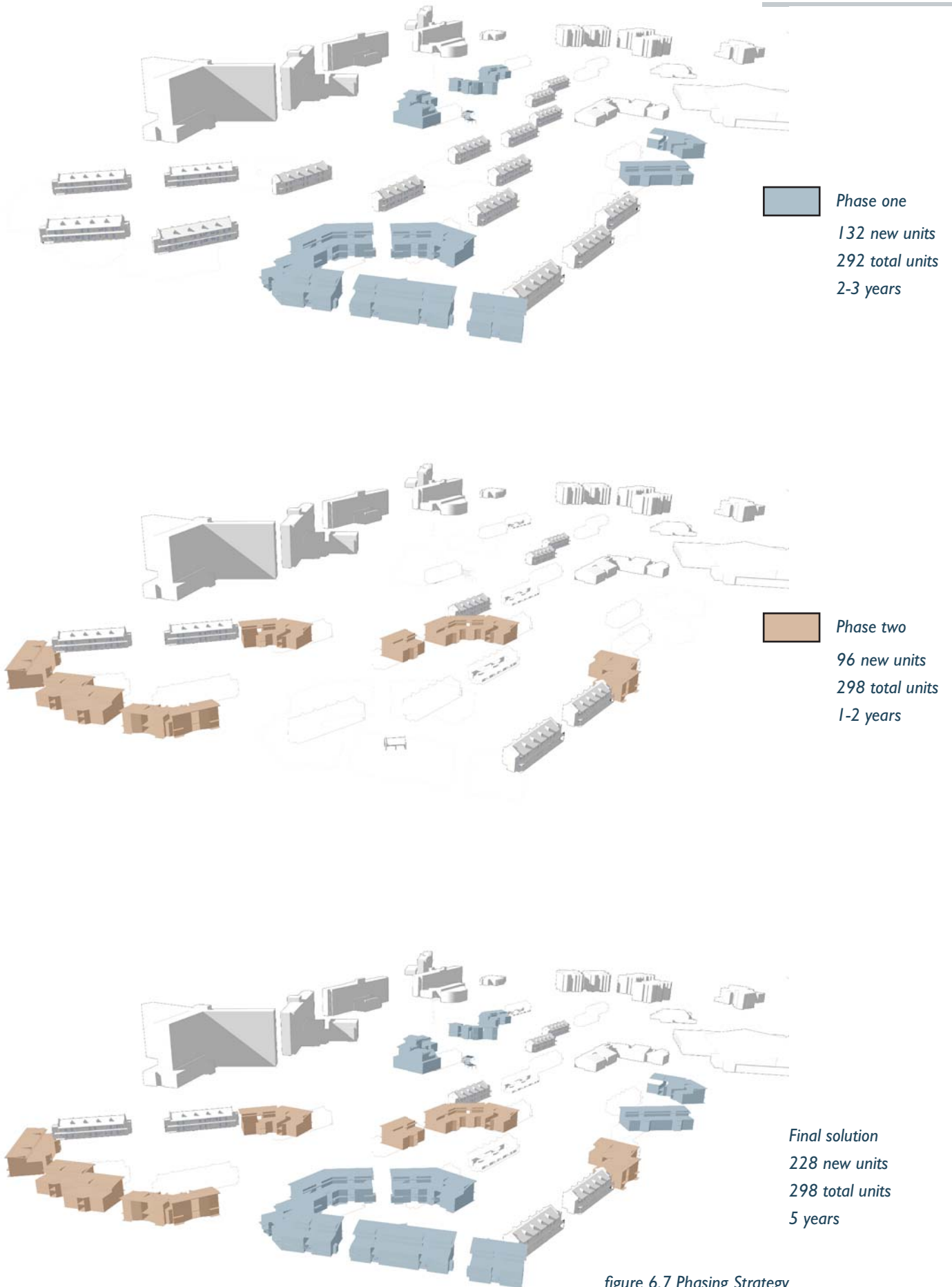


figure 6.7 Phasing Strategy

MASTER PLAN:



figure 6.8 Neighborhood clusters

Legend:

- A - Transit stop
- B - Community gardens
- C - Gathering space
- D - Pedestrian promenade
- E - Wind turbine
- F - Irving Hill neighborhood
- G - Plaza neighborhood
- H - Ousdahl neighborhood
- I - 19th Street neighborhood
- J - Bagley neighborhood

The design framework for Rebuilding Stouffer Place can be summarized by focusing on six main objectives:

- Increase pedestrian connectivity
- Develop neighborhood clusters to create a stronger sense of community
- Increase density along the 19th Street corridor and introduce mixed use buildings
- Centrally locate a community center and plaza
- Extend Ousdahl Road to create a transit route that serves the whole site
- Minimize disturbance to the site

As a result of this framework, five new neighborhoods were designed that link to a major pedestrian promenade stretching the length of the site. Five new buildings are proposed along 19th street, containing both apartments and retail shops. A community center is placed with high visibility and access in the center of the site creating the heart of the community. Ousdahl Road is also extended to the community center and circulates through the site to provide the opportunity for transit connections further into the site. By saving mature trees and reusing the existing materials of the site, disturbance to the environment has been minimized.

In recognition of the fact that a large part of the design inspiration and framework comes from the retention of the mature existing trees of Stouffer Place, careful consideration should be given to their longevity. As most of the prominent sycamores are at least 50 years old, a decision must be made about how to replace them. To reinforce and maintain the design of the pedestrian promenade and community center plaza, as a mature sycamore dies, it should be removed and replaced with a new tree of the same species in the exact spot when feasible. This is only necessary along the promenade and plaza where the paving patterns and other design intentions are based on the location of the existing trees.

Project Information:

- 298 apartment units
- 6,614 square feet of community gardens
- 1,916 foot long pedestrian promenade
- 20,670 square feet of green roofs
- 207 trees retained
- 14,452 square feet of retail space
- 18,440 square foot community center
- 39,872 square foot plaza



figure 6.9 Site plan

ARCHITECTURAL CONCEPT:

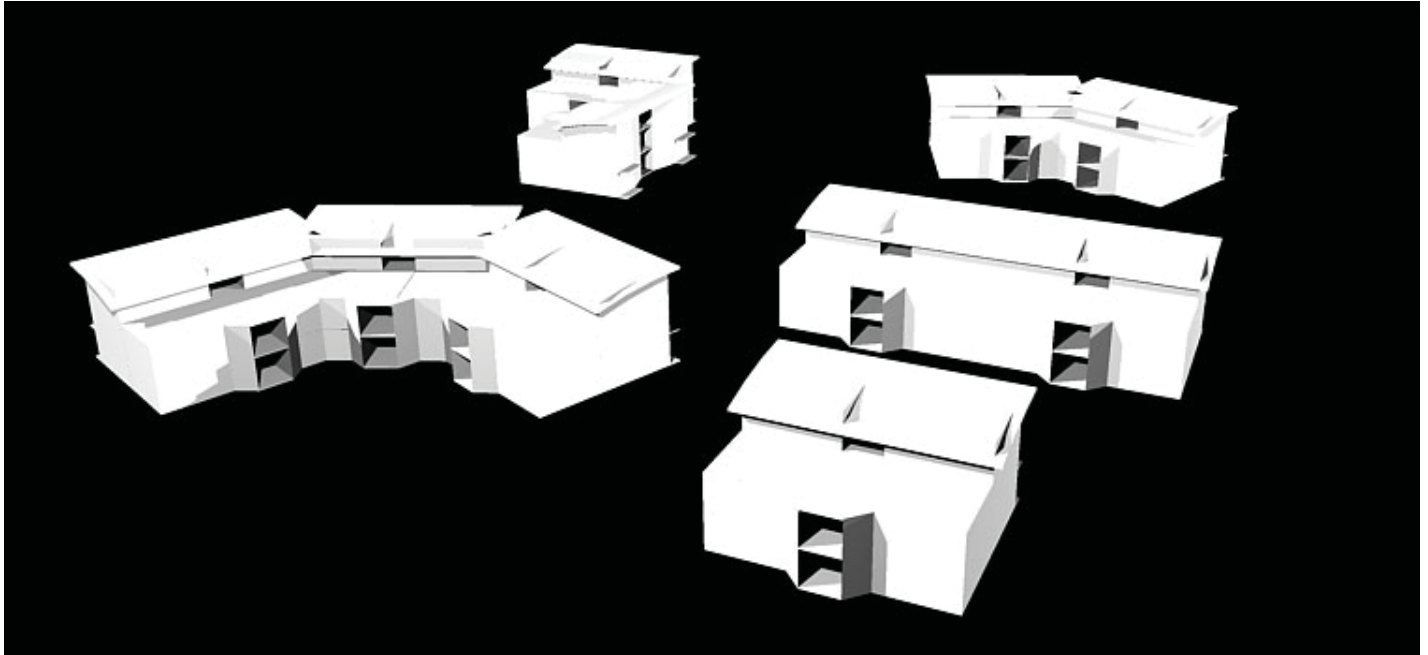
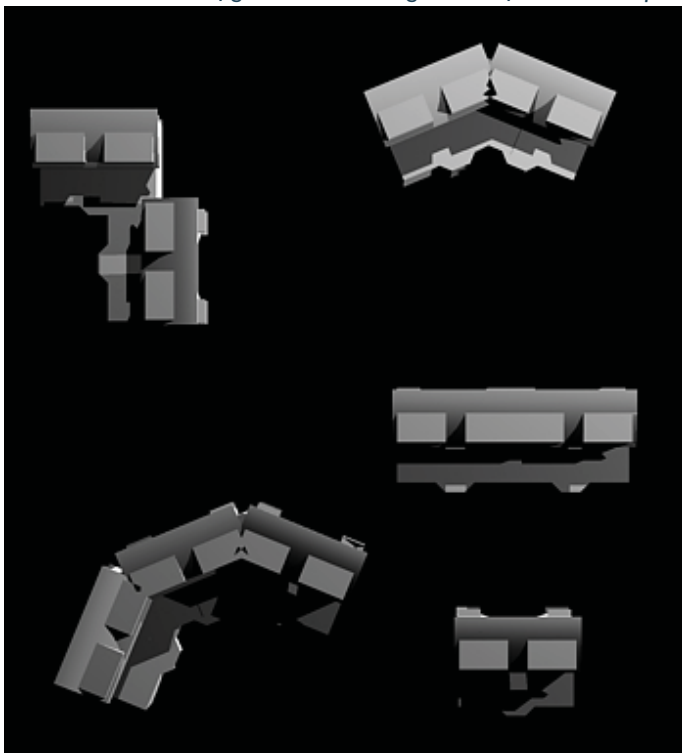


figure 6.10 Housing module formations

figure 6.11 Housing module formations in plan



Massing:

The architectural model developed for the apartment buildings of Stouffer Place is based on the garden style approach to housing. A module of four units was developed that can be manipulated and copied to form several different massing configurations of the same basic design. The open circulation between these modules provides visual access into the site between every four units, breaking up any long facades.



figure 6.12 Local limestone

Materials:

All buildings will be designed with the same material palette. Ideally, all materials used would be from a local supplier, and native to the region. To blend with the rest of the campus and the existing buildings of the site, limestone and red brick will provide the majority of the palette. With this in mind, these buildings should also use materials that reflect their modern design and massing arrangement. It is also important to point out that to gain passive solar heating on southern exposures, almost 80 percent of the southern facade should be glass. Green roofs will cover nearly a third of the entire roof, adding rooftop insulation to the structure.



figure 6.13 Reclaimed wood



figure 6.14 Reclaimed brick

Building Section and elevation:

These buildings were designed with the intention of siting them to have a large southern exposure. Taking a cue from the design of the buildings within the Center for Regenerative Studies at Cal Poly Pomona, in section the units are stacked to receive passive solar heat, and the roof line provides the opportunity to place photovoltaic panels for high efficiency. The upper units on the taller side of the building would ideally be loft type units, with direct access to shared green roof spaces. Clerestory windows at the top of the southern facade provide the opportunity for natural ventilation to sweep through these taller loft units. Every unit is designed to have a balcony (or patio) to create a private outdoor space for all arrangements.

In addition, each building has been designed to provide a community green roof space for the residents within. These areas not only work to slow rooftop runoff and insulate structures, but also bring residents together in a semi-private space that features lush native landscapes.



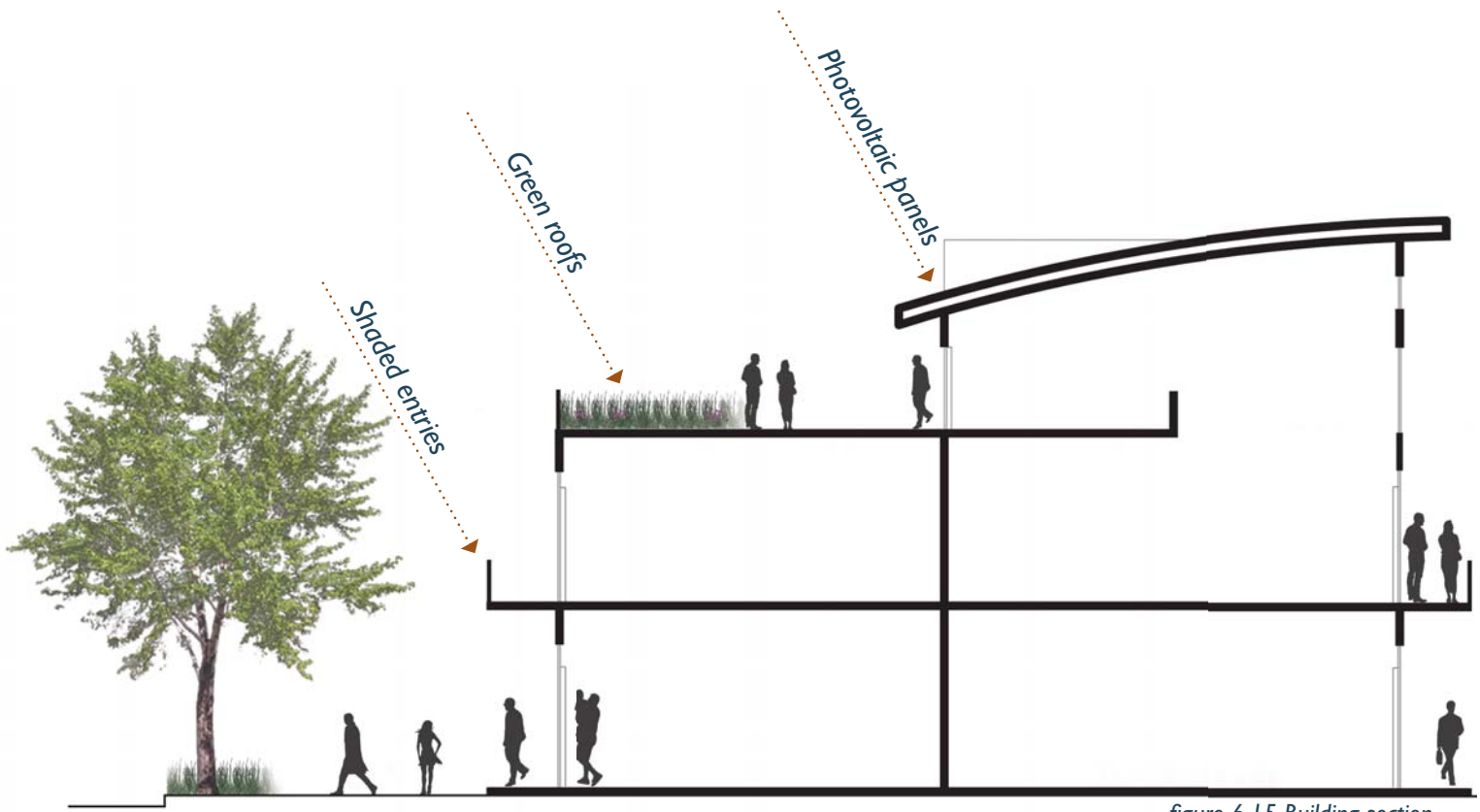


figure 6.15 Building section



The scale of the proposed buildings should reflect the original intent of the site design. Buildings will be roughly three stories tall at their tallest, and two stories tall on the green roof side.

figure 6.16 Building elevation

19TH STREET NEIGHBORHOOD:

The neighborhood at 19th Street was designed in greater detail to show how a cluster of buildings can form shared space for the residents of Stouffer Place. Five new buildings were arranged on the site with one existing building. Three buildings are oriented to 19th Street, and will contain retail units on the first floor. This cluster of buildings brings a total of 52 new apartments.

Overall neighborhood design considerations:

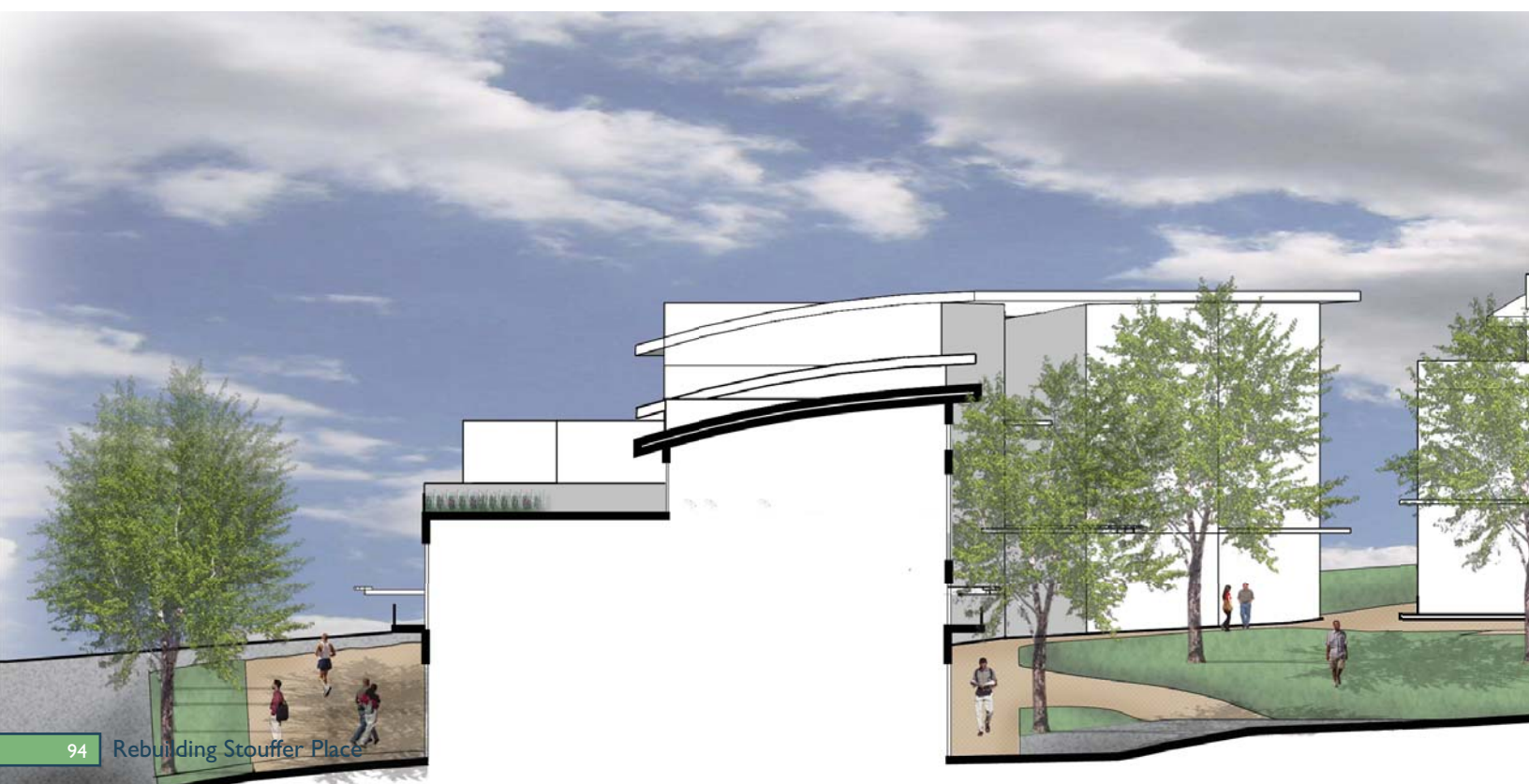
The improved streetscape of 19th street will bring a comfortable and safe atmosphere for pedestrians with multiple views and access points into the site. The pedestrian promenade starts here at the corner of Ellis Drive and 19th Street, providing a great node for small retail shops. This mixed-use development pattern will blend with the existing density to the south of the site, and create the opportunity for an active and vibrant community at Stouffer Place. More importantly, with high visibility of the street corridors and shared community space, the 19th Street neighborhood will be a safe place for residents of all ages.

Shared and private outdoor spaces:

The main shared space of the neighborhood is the outdoor space sloping down from the northern two buildings to the buildings on 19th Street. This space acts as both a unifying shared space for the cluster and as a division between the more private hardscape spaces adjacent to the buildings. Trellises and recessed entry corridors form gathering spaces at the entrances to each of the buildings. These intermediate spaces provide a place for residents to gather between the larger open courtyard and their front doors. Every unit is designed with a balcony or patio area for personal outdoor spaces with a view of the community.



figure 6.17 19th Street neighborhood diagram



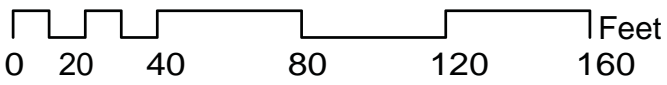


figure 6.18 19th Street neighborhood plan

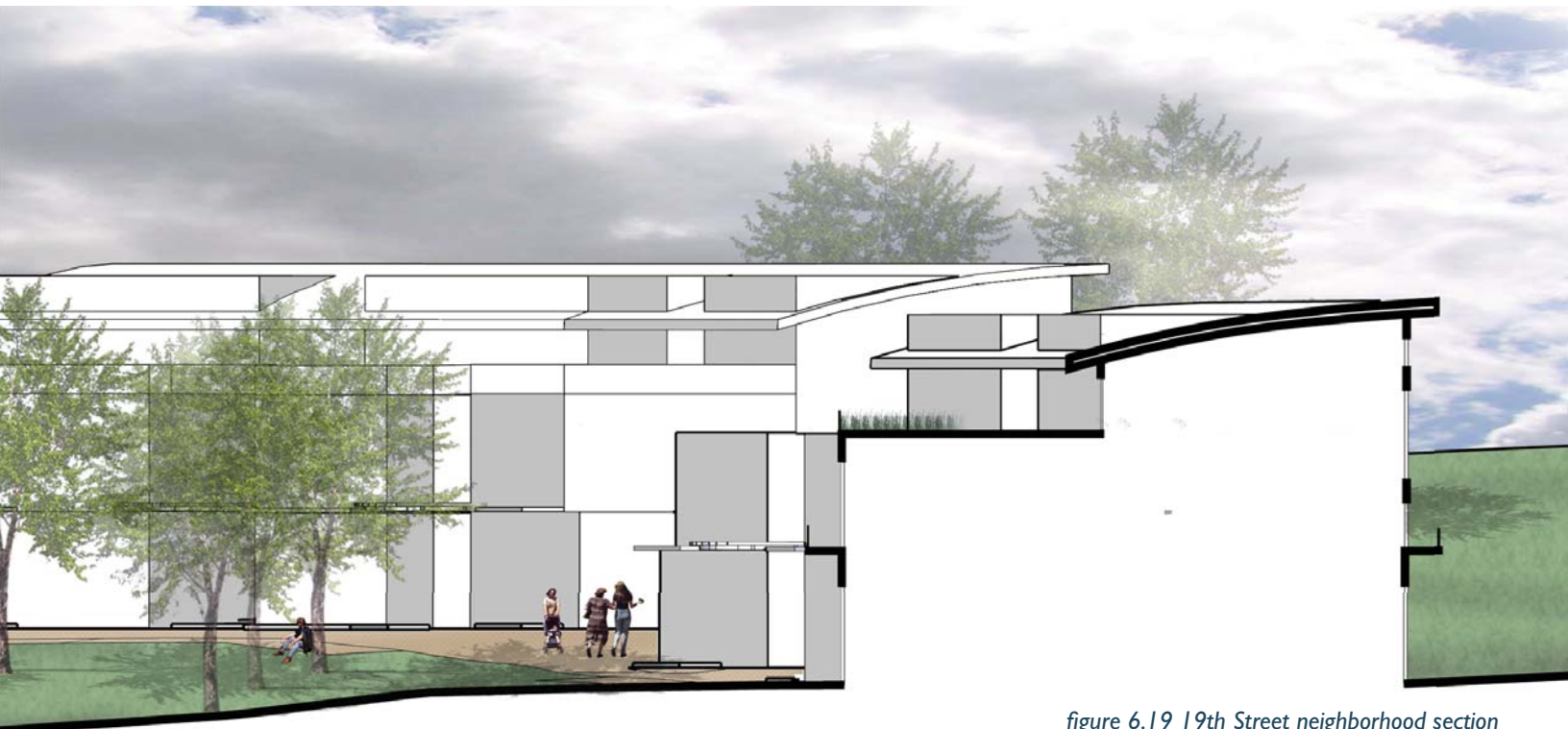


figure 6.19 19th Street neighborhood section

PLAZA:

The most significant outdoor space within the site is the plaza adjacent to the new community center. At nearly 40,000 square feet, the plaza is large enough to accommodate a variety of activities and uses, but is designed in a way to foster smaller gatherings as well. The plaza is set against the prominent backdrop of the community center. By using a vertical tower as part of the building, visual sight lines will guide pedestrians towards the space. The plaza steps down from the community center and is bisected by the pedestrian promenade, stepping down even further to a deconstructed building shell, which will be used to house community garden planters.

The experience of entering the plaza is active, useful, and engaging as the major transit stop of the site will be located just south of the space at a drop-off point along Ousdahl Road. A generous shade structure sits at the heart of the plaza, constructed from some of the reclaimed wood of the deconstruction process. Reclaimed bricks are also used as paving material along the perimeter of the space. Vegetation that includes trees and shrubs (including select fruit-trees and berry-laden plants), perennial flowers and grasses, and garden herbs and vegetables provide color, favorable aromas, culinary delight and sustenance.



figure 6.20 Plaza diagram



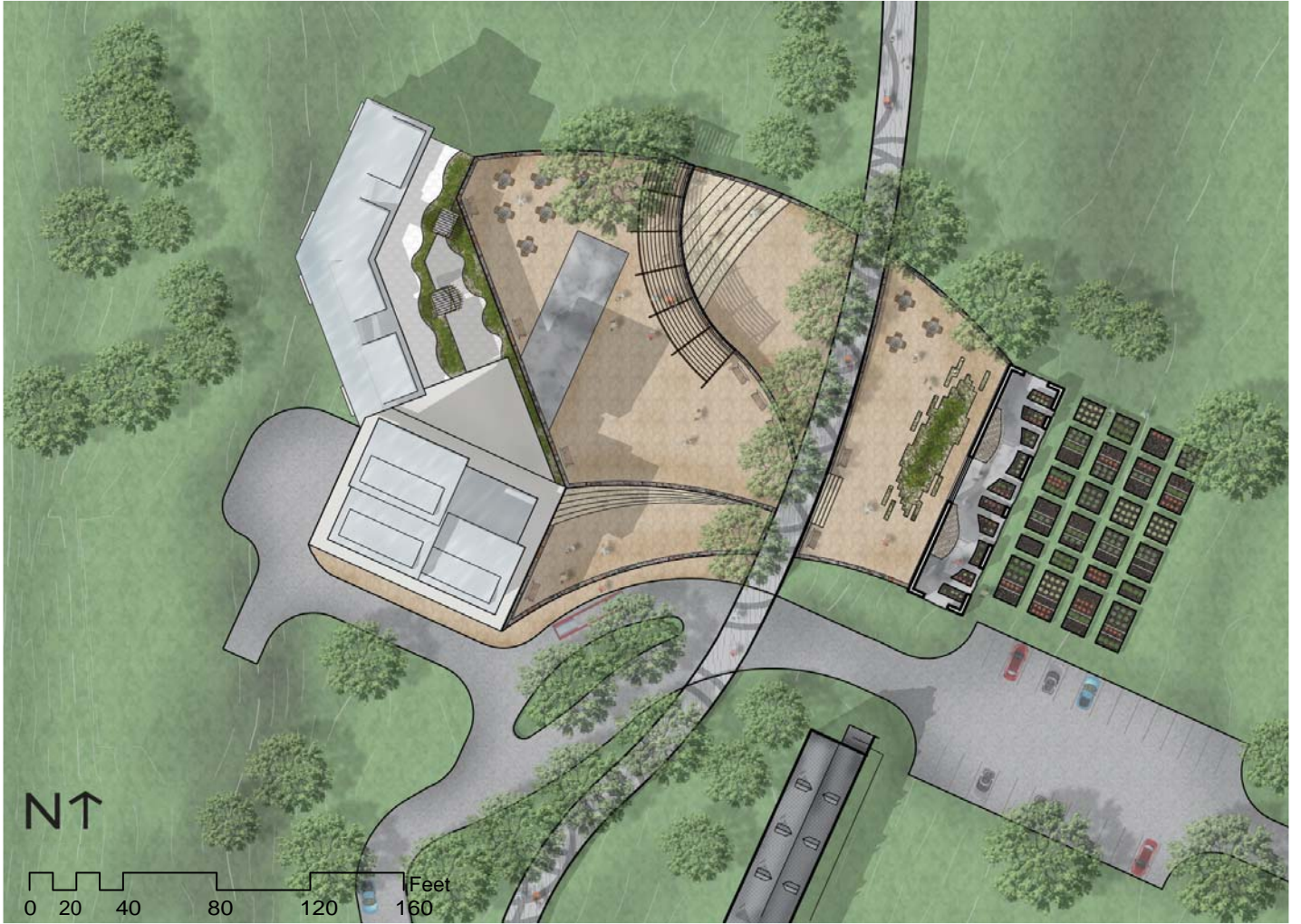


figure 6.21 Plaza plan



figure 6.22 View of plaza activity

SUSTAIN:





figure 6.23 View from greenroof

SUSTAINABILITY CRITERIA:

The figure below is a portion of the larger inventory and analysis process outlined earlier in the project process. Using Dinep and Schwab's (2010) sustainability criteria as a portion of the design framework, Rebuilding Stouffer Place can be broken down into five distinct criteria that all evaluate the success of the site's sustainability.

Figures 6.25 through 6.29 at the right show the individual design elements that reflect the use of the sustainability criteria as a guiding framework for the design of the site.

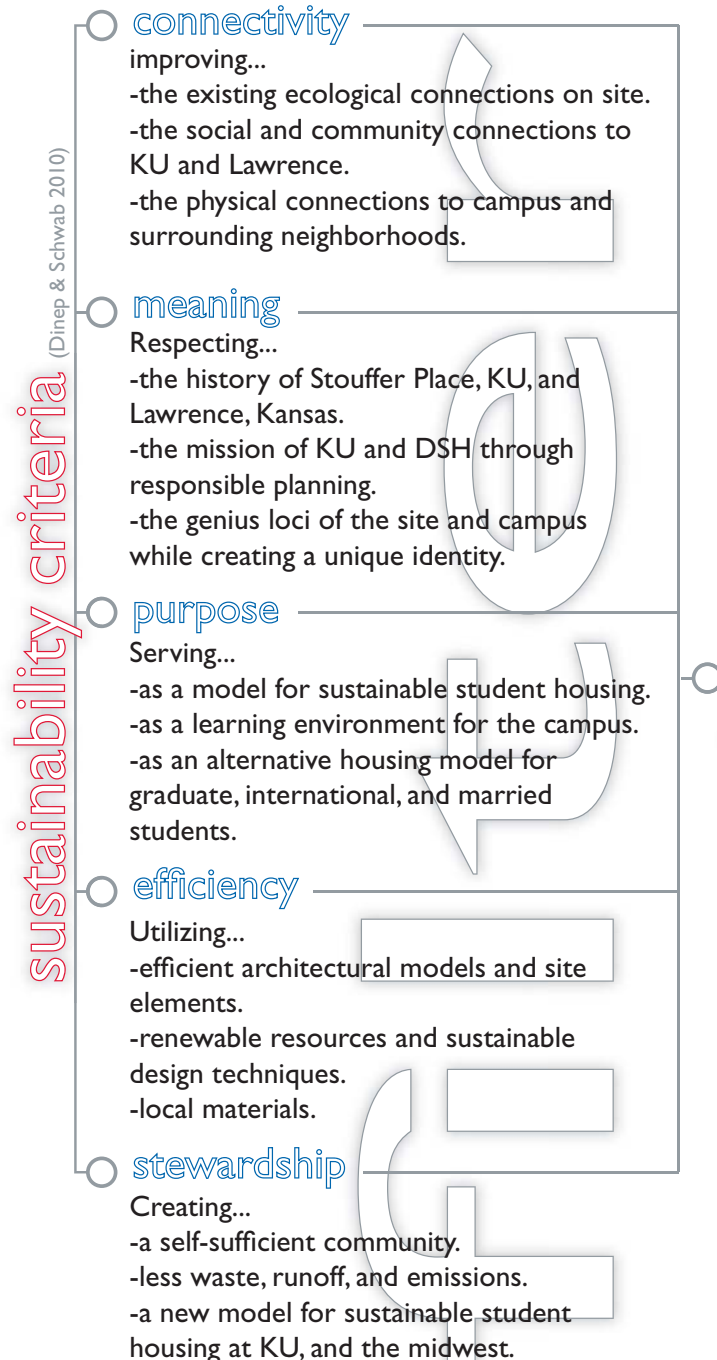


figure 6.24 Sustainability criteria

CONNECTIVITY

- neighborhood clusters
- community center
- pedestrian connections
- transit connections and improvements



figure 6.25 Connectivity diagram

MEANING

- trees retained
- buildings retained
- material reuse



figure 6.26 Meaning diagram

PURPOSE

- mixed use development
- community spaces
- productive landscapes-community gardens



figure 6.27 Purpose diagram

EFFICIENCY

- solar panels
- wind turbine
- permeable paving



figure 6.28 Efficiency diagram

STEWARDSHIP

- material reuse
- reduced runoff through green roofs and bioswales
- productive landscapes-community gardens



figure 6.29 Stewardship diagram

BUILDING SHELLS:

Two prototype examples have been proposed for the adaptation of deconstructed building shells within the site. These new uses will reuse the existing materials of the site to minimize waste, expenses, and pollution from construction processes. The adapted shells provide the opportunity to bring residents together socially, while maintaining a strong connection to the previous buildings of the site.



figure 6.30 Building shell garden prototype

The community garden prototype utilizes the existing concrete slab and brick walls of the building shell to frame a space for raised planters that residents can use for growing flowers and vegetables. Planters are raised two feet from the slab to allow enough depth for adequate root development. Each planter provides 50-70 square feet of gardening space for residents to call their own. Shaded structures constructed from reclaimed wood hang above storage lockers that are hidden under counter top work surfaces. Hoses and tools can be stored here out of sight to make the gardening process easier, orderly, and secure.



figure 6.31 Building shell gathering space prototype

A second reuse prototype will feature a picnic space for families of the site to use and enjoy. Reclaimed brick is used to make barbecue pits and frame the space for outdoor gathering. Shade structures are used here again from reclaimed wood to soften the spatial volume of the shell. Tables and chairs are intentionally left unfastened to allow residents to customize their space with moveable furniture.

CREATE:





figure 6.32 View from pedestrian promenade

PLACEMAKING:

To create a structure for the creation of an identity for Stouffer Place, the placemaking process from Project for Public Spaces has been utilized. This approach based on William (Holly) White's work (1975), helps to transform public spaces into vital places that highlight local assets, spur rejuvenation and serve common needs (PPS). The diagram below organizes the elements that go into creating great place. The key attributes are sociability, uses + activities, comfort + image, and access + linkages. These are recognized through the intangible feelings outlined in the green ring. Finally, this success of placemaking can be preliminarily evaluated through the attributes and performance measurements noted in blue.



figure 6.33 Sycamore in parking lot



What Makes a Great Place?

- key attributes
- intangibles
- measurements



© 2003

figure 6.34 What makes a great place?

ACCESS + LINKAGES:





To connect the site with 19th Street and the rest of campus, a major pedestrian promenade was designed. This linkage serves as the spine for pedestrian circulation and runs north to south, accommodating both bicycle and pedestrian traffic. Featuring a seat wall made from reclaimed brick from the site, this space becomes continuous place for residents to gather and move. Siting this walkway in a corridor adjacent to mature sycamore trees gives the space shade, protection, and retains the character of the site.

The promenade generally runs adjacent to Ellis Drive, and provides six feet for bicycle traffic and ten feet for pedestrian circulation. The entire length will be well lit and visible from many buildings throughout the site. Running from 19th Street, the promenade will intersect the plaza and community center before reaching Irving Hill Road.

Transit connections are improved by extending Ousdahl Road into the site to create a looped route for the #26 bus route to circulate into Stouffer Place. The proposed transit stop is sited adjacent to the community center at the heart of the site.



figure 6.35 Pedestrian promenade diagram

-  Neighborhood clusters
-  Community center transit stop
-  Proposed pedestrian route improvements
-  Proposed transit route improvements

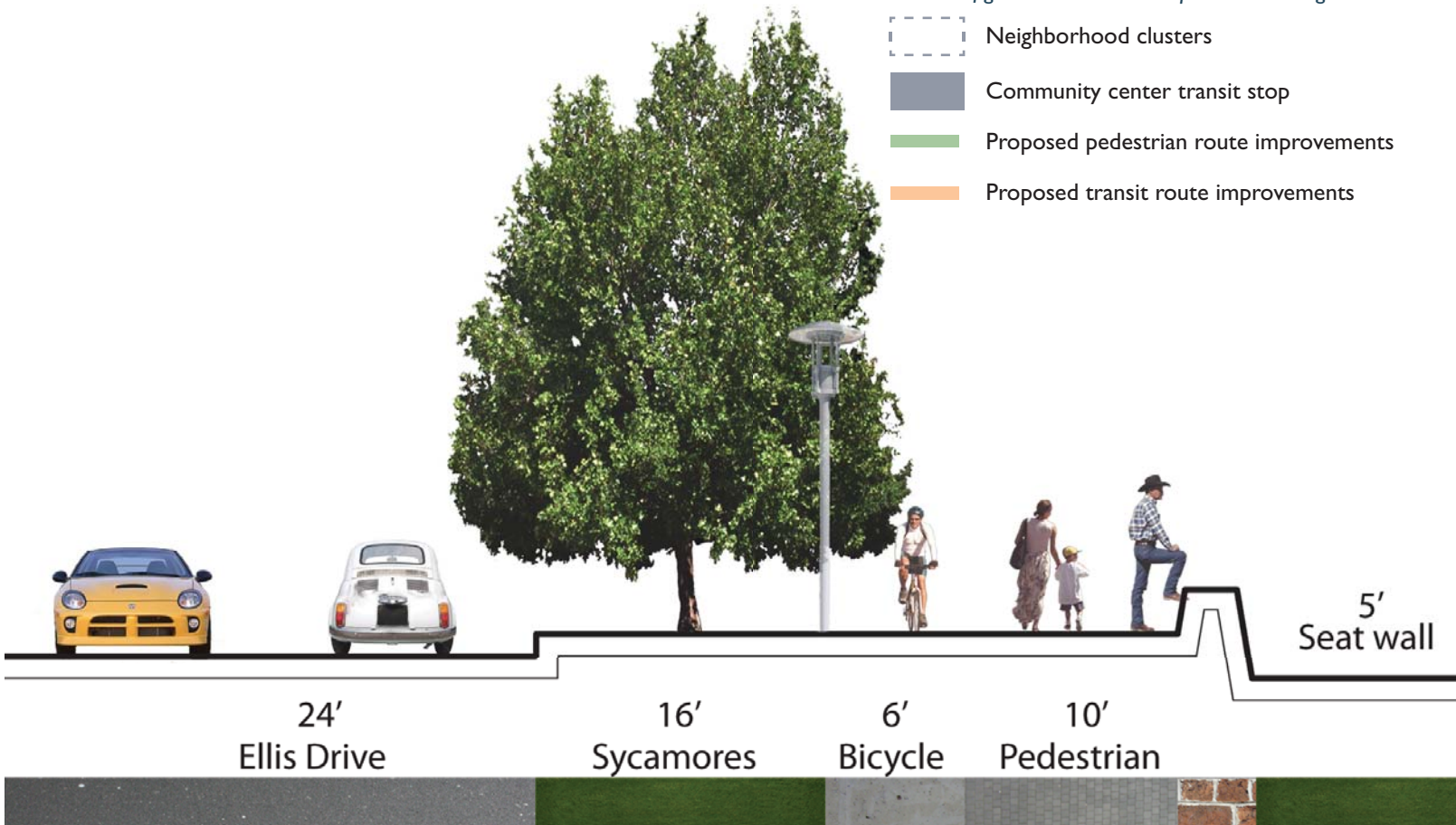


figure 6.36 Pedestrian promenade section

VEHICULAR CIRCULATION:

The proposed vehicular circulation generally follows the alignments of existing roads and parking bays. A new connection above the 19th Street neighborhood connects the site from east to west (Bagley Drive), allowing two parking bays to spread adjacent to housing clusters. Likewise, the Ousdahl Road extension completes a loop around the southern portion of the site, and allows for transit opportunities further into the site. This bus loop will encourage greater use of public transportation and be less of a burden on Stouffer Place residents desiring to take the bus.

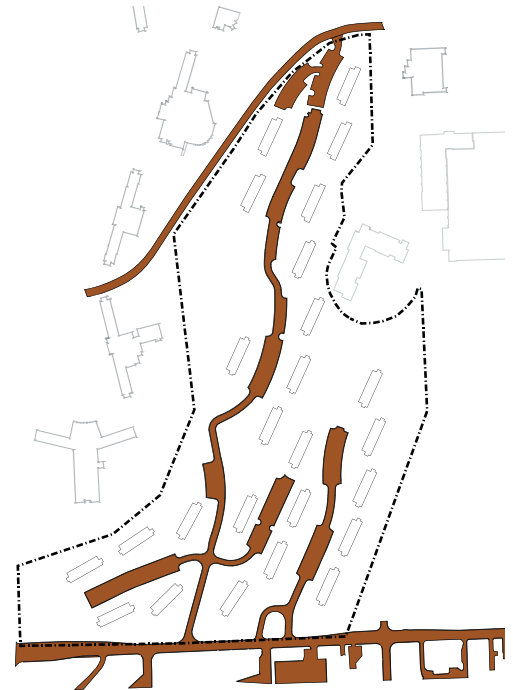


figure 6.37 Existing vehicular circulation

Ellis Drive is re-aligned to configure with the Ousdahl Road extension, creating views that align to the community center. Finally, Ellis Drive on the northern portion of the site has been extended towards the community center on its existing alignment, with the addition of a new turnaround at the Irving Hill neighborhood.

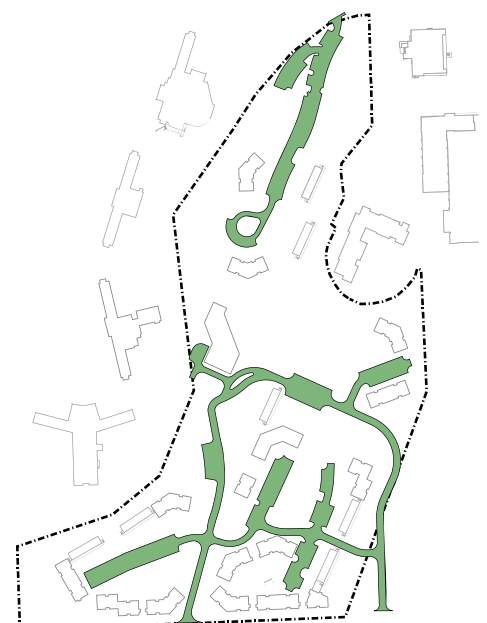


figure 6.38 Proposed vehicular circulation

USES + ACTIVITIES:

To reinforce the uses + activities portion of the PPS placemaking approach, the solution for Rebuilding Stouffer Place has a variety of programmed spaces throughout the site. These spaces range from highly active mixed-use neighborhoods to private clusters of residences sloped gently into the slope. By using a lands use pattern that encourages walkability and active spaces, the entire community becomes more useful and a sense of ownership can be formed.

19th Street:

The buildings along 19th Street have been designed to reinforce the activity along the street. By aligning the buildings a strong corridor is formed between the street and structure that harbors activity and creates a great entry to the site. Mixed-use development places retail shops and cafes along the street with high visibility from pedestrians. This denser section of the site is a great amenity to residents throughout the site.

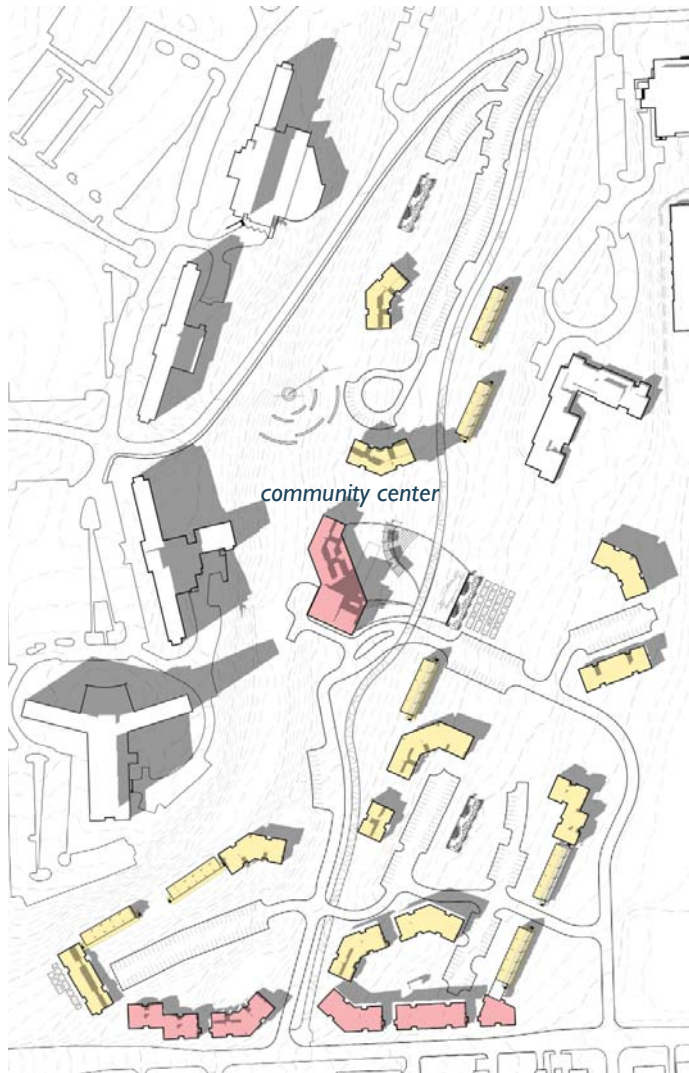


figure 6.39 Land use

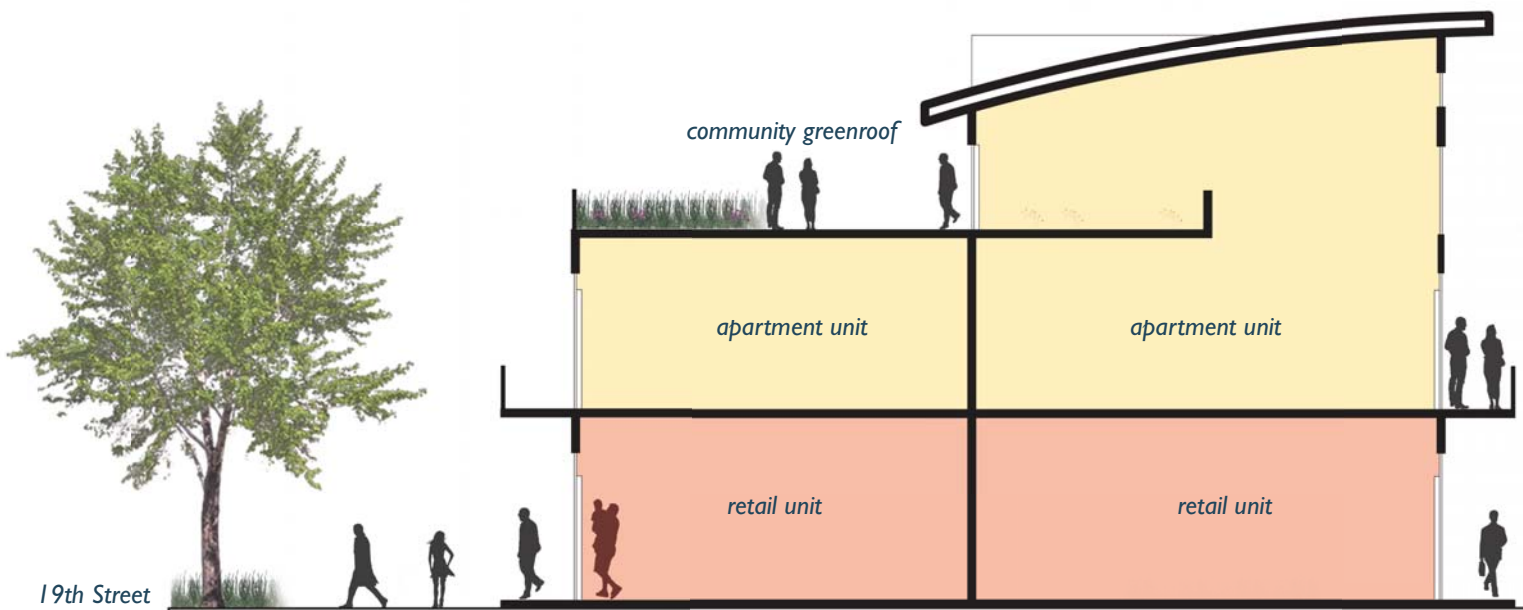


figure 6.40 19th Street mixed-use section



figure 6.41 Materials conceptual montage

To create a place with image, an attractive design must be implemented that respects the history of the site and region. By using reclaimed and local materials, the identity of Stouffer Place can be strengthened. To impact the comfort portion of the placemaking approach, a walkable community with a variety of safe spaces has been designed.

The materials collage above begins to show how using familiar materials in a human-oriented way can emphasize comfort and image within a place.



According to PPS, the intangible feelings that combine to produce sociability within a place are: welcoming, interactive, friendly, pride, neighborly, cooperative, stewardship, and diverse (PPS). Residents living, working, and socializing together at the activity core of the site helps make Stouffer Place a community. The community center and adjacent plaza bring residents together to eat, study, play, and relax. It is truly the social hub of the site, and serves as the town center for Stouffer Place.

SOCIABILITY:



figure 6.42 View of plaza activity



7



CONCLUSION:

A conclusion to Rebuilding Stouffer Place provides a retrospective response to the entire book, as well as to the project process.

RESPONSE TO PROCESS:

It is important to realize that the solution delivered in this book is not complete, or by any means the only path for future renovation of the site at Stouffer Place. Although this project will (hopefully) inspire ideas and conversations about the possibilities for Stouffer Place, the limitations and constraints incurred during the process must be recognized.

This project, from research question to the time it took to write these concluding notes, took almost nine months. In those nine months I have researched, listened, questioned, thought, and designed in an effort to spark some new ideas as to how this site could be redeveloped with a different framework and set of values.

These values that include supporting the core missions of the Department of Student Housing and The University of Kansas should always remain paramount when considering a new housing project on campus. Remembering to address the safety, shelter, nutrition, variety, while fostering a multicultural environment is a challenge that should not be taken lightly.

The second set of values that were developed during this process include the sustaining of the physical site itself in accordance to Claudia Dinep and Kristin Schwab's sustainability criteria in *Sustainable Site Design*. In the broadest sense, providing connectivity, meaning, purpose, efficiency, and stewardship will allow this place to become a sustainable community for the future generations of Lawrence and students of KU to enjoy for years to come.

Finally, creating a place and identity for this community might be the most important piece of the puzzle. This process utilized a process outlined by Projects for Public Spaces (PPS), but there are other acceptable models that are appropriate for creating place and identity. These attributes of place: sociability, uses and activities, access and linkages, and comfort and image really set up a great framework for the considerations of creating a great place.

This framework of supporting, sustaining, and creating was created with the intention of creating a balanced comprehensive plan for one site, but could ultimately be used and adapted for other projects as well.

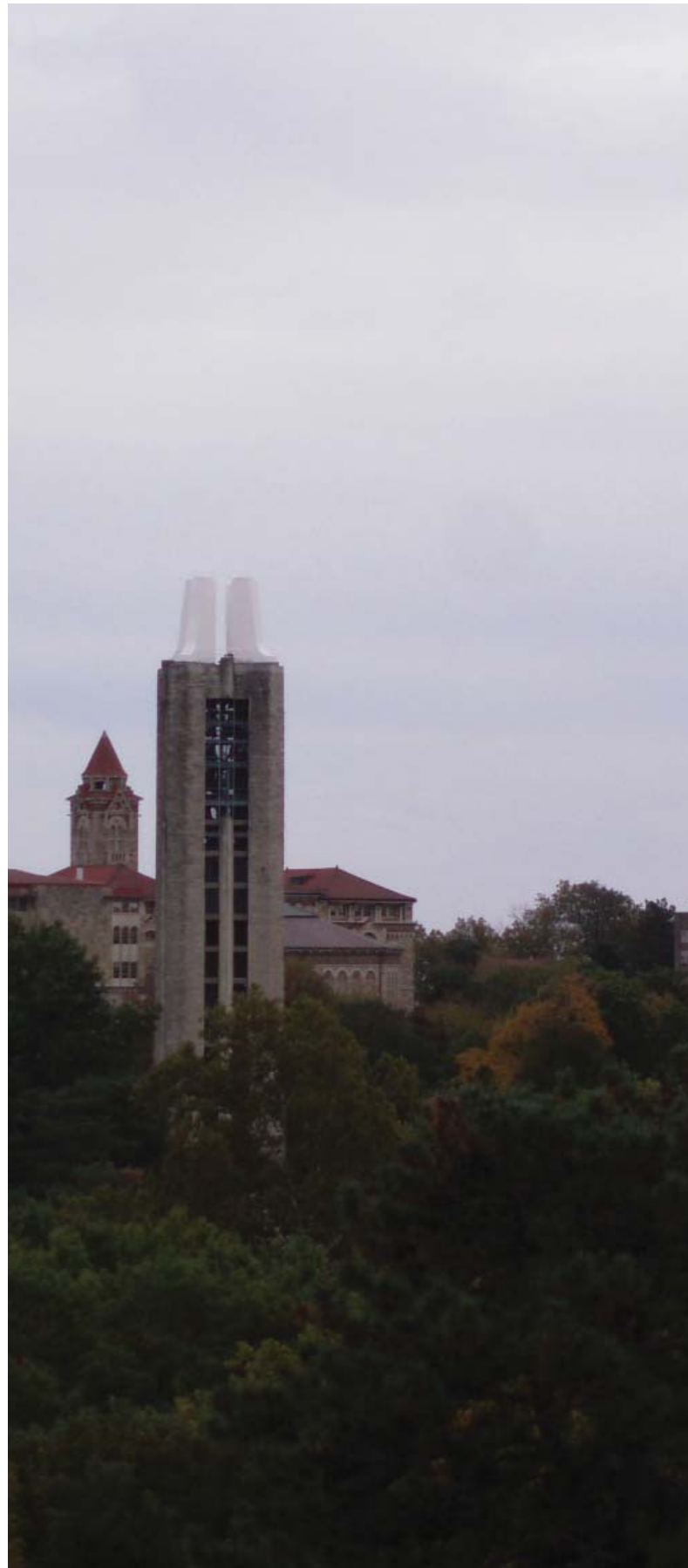


figure 7.1 View of the World War II Memorial Campanile on Mt. Oread

RESPONSE TO SOLUTION:



As a student of landscape architecture, I have realized that as a professional I will be fortunate to be able to work on a variety of very broad and diverse projects. That in fact is what attracted me to this field. This project was chosen for further development because of my attraction to broad projects that allow for different levels of focus and design. With this in mind, *Rebuilding Stouffer Place* covers many different topics at a larger scale, and fewer topics at a detailed level of development. With a project timeline as experienced with this project, it was important to set up a reliable and well-thought-out framework as the foundation for further design and detail.

This solution provides a good representation for the appropriate size, location, and relationships considered when addressing the interaction of proposed buildings and open space. This relationship is key to producing a sense of place and community that will ultimately determine the success of this site. Using proposed built structures in tandem with existing site features is a great and exciting challenge that should be carefully approached in the future.

In designing a student housing project within a university campus comes the challenge of relating the design to the context and character of the overall campus environment. This relationship should be addressed carefully and questioned to find the best solution. The new design for Stouffer Place should relate to the rest of the KU campus, but at the same time it should be unique in its look, feel, and character. The reality is that a livable community is being planned within a larger academic community that must regulate how this new place feels. Stouffer Place should be a unique community within The University of Kansas that also blends well with the traditional beauty and structure developed through years of thoughtful planning and design.

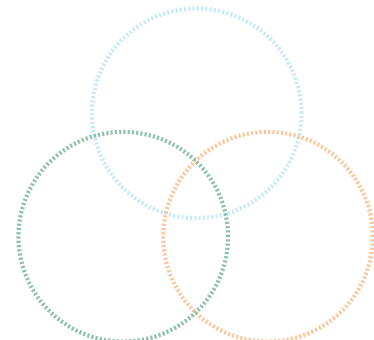


figure 7.2 Support Sustain Create

LIMITATIONS:

Certain topics addressed as part of the process for *Rebuilding Stouffer Place* should be discussed with regards to their overall level of development and limitations.

To begin with, it should be recognized that although the architecture of the site was addressed with great thought and consideration of the site, this is merely a concept. The intent of this concept was to show how appropriately sized units could be massed together into modules to frame open space and receive natural ventilation and solar heat. Careful thought was given to the overall size and form of the buildings, but none was given to the structural considerations of constructing these concepts. Further development from a professional architect should take these concepts into reality to form feasible buildings. Ideally collaboration between a team of different design professionals would create a well-rounded solution that addresses the dilemma from every angle. It is important for landscape architects to realize their role in the project process as leaders and designers, but also as collaborators in the larger picture of a multidisciplinary pursuit of a better future.

Another limitation of this project, brought on by the fast-paced project timeline of the academic year, is the lack of interaction with residents of Stouffer Place. Although the solution was developed with the needs of the residents in mind, ideally there would have been a greater interaction between the designer and residents. As a means of further development, questionnaires and ‘town hall’ style meetings should be implemented to address the needs of the residents in greater detail.

It is also important to realize at what stage in the project process this solution resides. In terms of the entire project process, *Rebuilding Stouffer Place* addresses the project site inventory and analysis, programming, conceptual design, and schematic design. Further development would take this solution to the next level of construction documentation.

It is my hope that the concepts and frameworks developed in *Rebuilding Stouffer Place* will inspire and inform the future redevelopment of Stouffer Place. The topics discussed in these pages are only a starting point, but can hopefully be used to catalyze the transformation to a well-designed sustainable community that the residents of Stouffer Place deserve.

figure 7.3 Squirrel







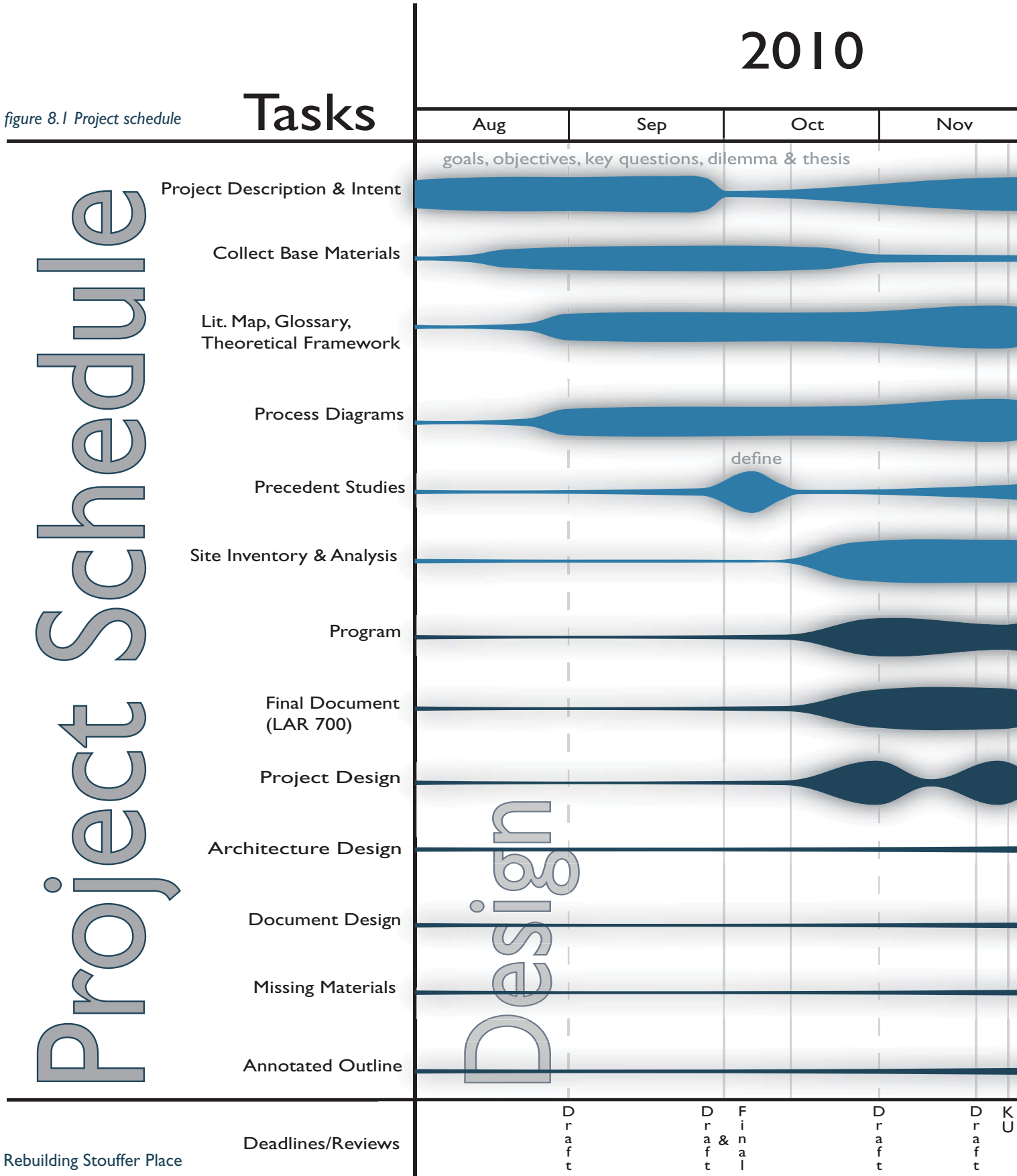


APPENDIX:

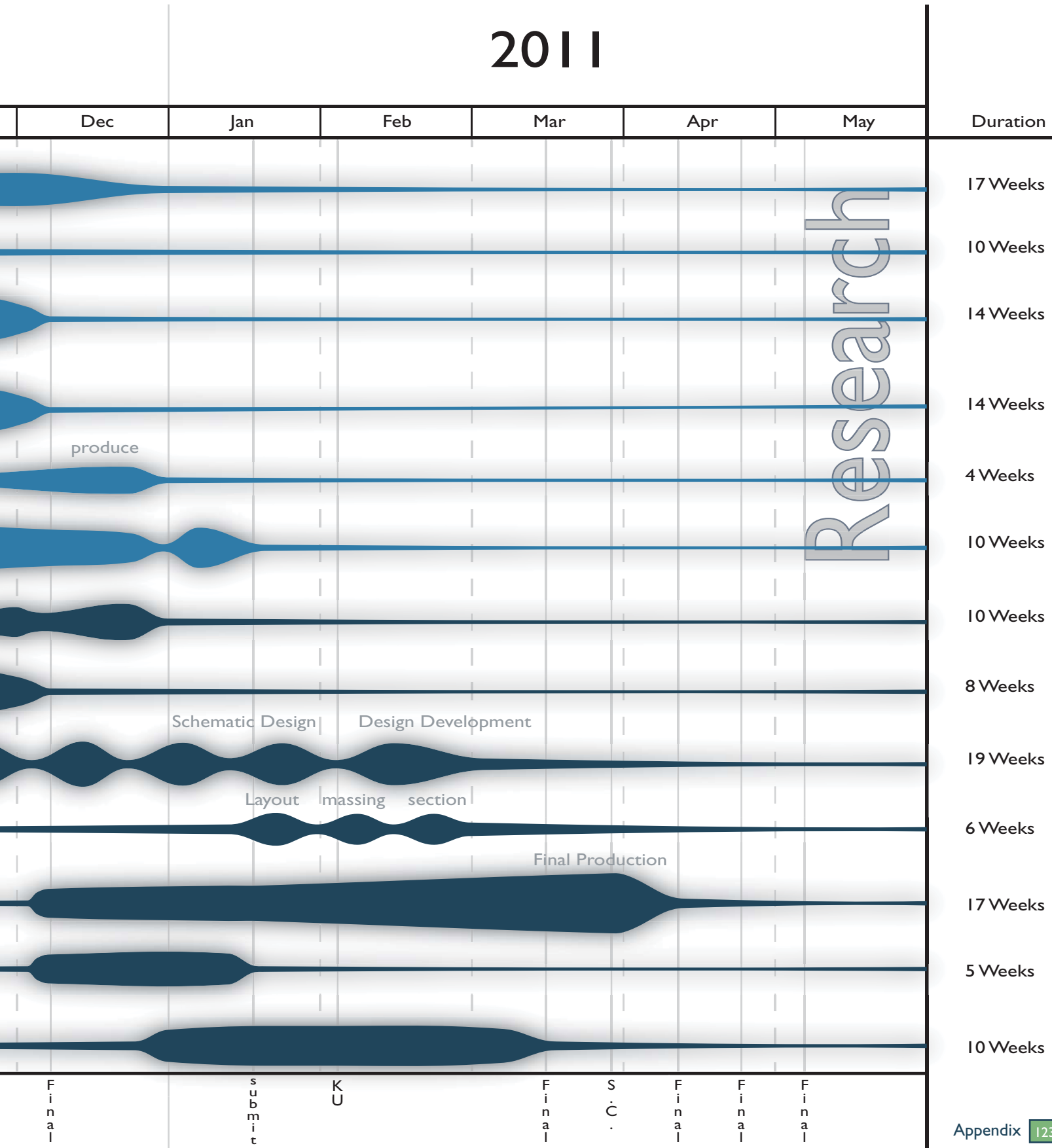
Supplementary documents include the project schedule, literature map, literature reviews, glossary, process diagrams, and references.

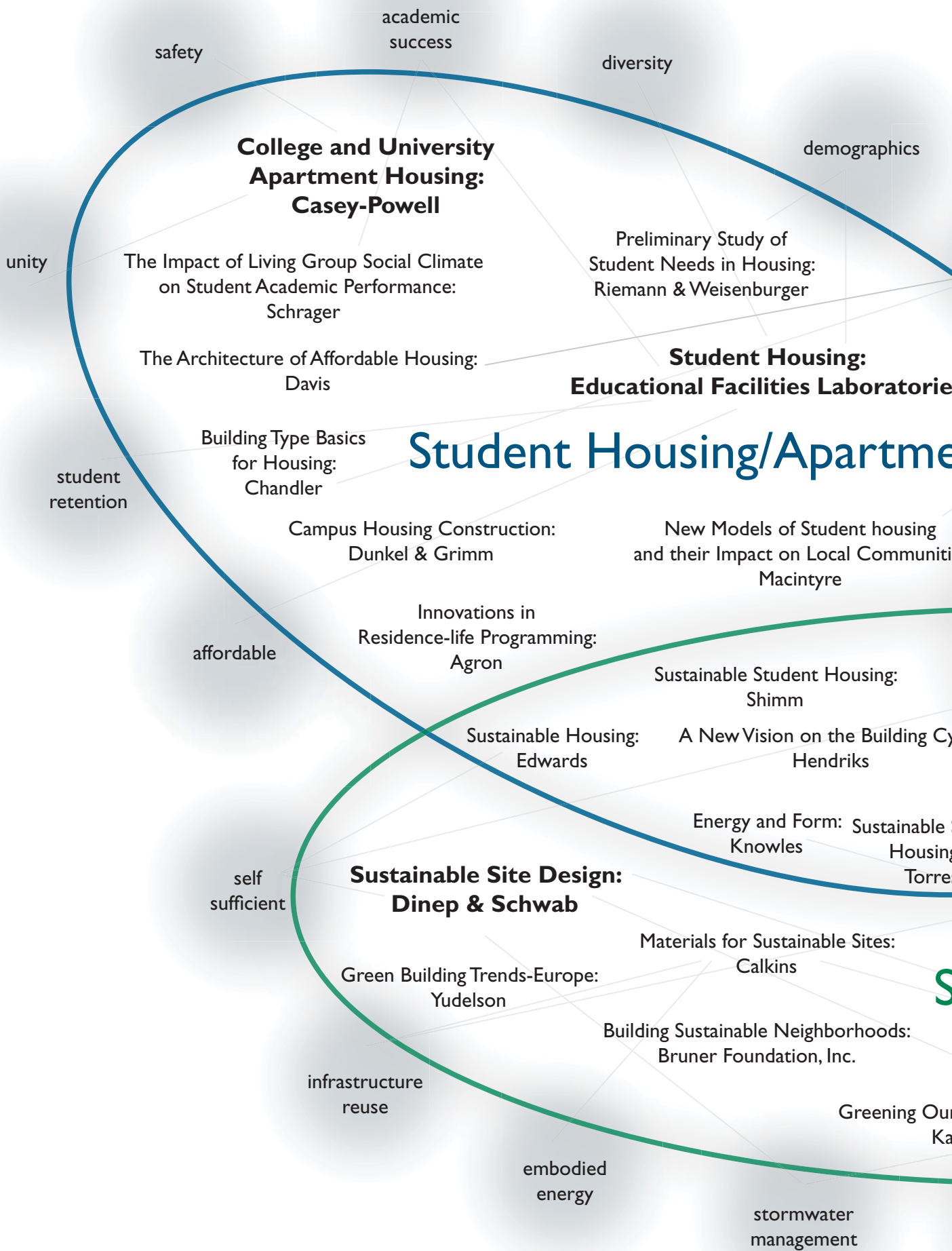
PROJECT TASKS + TIME:

In order to ensure every detail and component of this project is completed, a process diagram has been developed. This diagram documents specific project tasks, and the projected amount of time it will take to complete them. The year is split into two main categories, with the fall semester focusing on research and programming. The spring semester was dedicated to design and production. The blue lines represent the intensity and pattern of each task process.



The project design began in January 2011 and finished in the beginning of March 2011. A basic level of architectural design was undertaken as well, focusing on the layout, massing, and section of proposed buildings to achieve the project goals.





LITERATURE MAP:

The literature is broken up into three categories: student housing/apartments, sustainability, and campus design. Secondary topics that get at a more specific issue or element surround the perimeter of these three main categories. Sources that relate to other sources and key topics are connected to each other.

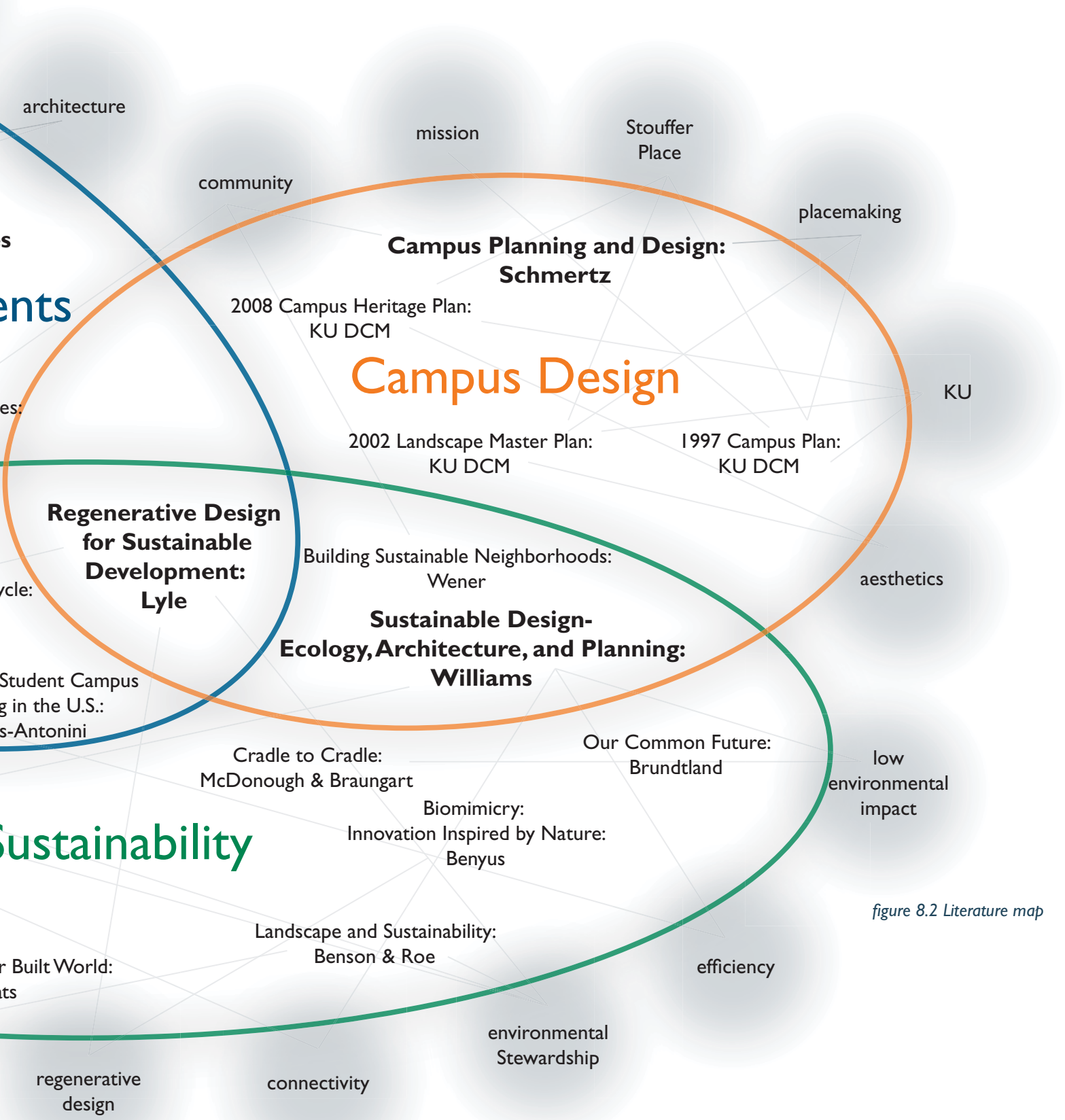


figure 8.2 Literature map

REVIEW OF KEY SOURCES:

The following sources have particular relevance to the redevelopment of Stouffer Place. The significance of these sources and their relation to student housing, sustainable design, and campus design is addressed by highlighting important ideas associated with each key text.

Sustainable Site Design : Criteria, Process, and Case Studies for Integrating Site and Region in Landscape Design

Claudia Dinep and Kristin Schwab 2010

This book is a great starting point to developing a vocabulary and mindset of sustainable design for the course of my project. A sustainability criteria and design process is outlined early in the reading as a way to evaluate and check the performance of site design projects. These criteria are: connectivity, purpose, meaning, efficiency, and stewardship (8-16). These criteria are major contributors to the definition of sustainability in regards to this project.

Dinep and Schwab use case studies to exemplify and reinforce their sustainable site design criteria and process. The six case studies are organized by a larger framework of questions related to the established sustainable criteria. These questions address program development, stakeholder influence, regional and site assessment, form-making, design efficiency, and user experience (vii). The two case studies that I found beneficial to my project and research are the form-making and design efficiency categories. These projects are the Paradise Valley Residence, and Gannett/USA Today Headquarters respectively.

Within these case studies are practical strategies and methods of obtaining sustainability through site design. The strategies suggested for sustainable form-making relevant to my project include: developing a natural landscape matrix, making functional form, anticipating change in form, framing landscape views and spaces with architecture, and using natural forms and spatial models for inspiration (145-146). The methods outlined for achieving these strategies are line diagramming and figure ground diagramming (146-147). These methods seem simple, but are effective in representing organizational and spatial patterns to transparently articulate the design process.

The strategies for design efficiency focus on conserving existing resources and regenerating new resources. They are broken down into vegetation, soils, hydrology, energy, and cultural connectivity (183-184). The most relevant to my project are avoiding the removal of existing trees, maximizing tree canopy cover, increasing stormwater infiltration, decentralizing site stormwater management, and using local materials. Some of the methods for achieving these design efficiency strategies at the site level are vegetated swales, green roofs, site history reflection, integrating architectonic forms with the natural environment, creating multi-use sites, and reducing maintenance regimes (184-188). These methods are crucial to the development of my program for Stouffer Place.

Regenerative Design for Sustainable Development

John Tillman Lyle 1996

Lyle's *Regenerative Design for Sustainable Development* provides an in depth summary of the years of work that he put into the Center for Regenerative Studies at Cal Poly. The book is broken down into three sections, the first of which covers his theories and opinions on the importance of regenerative design. It covers some of the historical and psychological reasons for the way we currently design and how there needs to be a change in order to achieve a sustainable future.

The second section provides applications and examples that implement regenerative design technologies and methods. These include an in depth look at renewable resource utilization and photosynthesis and biomass conversion. Lyle gives a case study analysis of the energy system for the Center for Regenerative Studies. His energy-flow model conceptualizes the intricate relationships between all of the biological systems that play a role in his energy system at the Center (81). His chapter on Habitat, Culture, and Energy Flow addresses some of the architectural and building form strategies that relate the larger energy system. His analysis of how buildings act as a mediator between the sun and earth gives great insight into topics such as building cooling, shading, openings, thermal mass, insulation, and thermal chimneys (105). His discussion on the regenerative qualities of building materials, and their embedded energy values is of particular

importance to the goal of reusing and recycling the apartment buildings at Stouffer Place (118-119).

Section three of Lyle's book focuses on the implementation of the previously discussed regenerative design theories and strategies. Lyle discusses some of the challenges of integrating this design type into the social fabric while society and technology are constantly evolving. He lists education as the primary driving force in a change towards regenerative design, and discusses how he has used the Center for Regenerative Studies as a learning environment and living laboratory (273-280).

This book proves to be essential to the way Rebuilding Stouffer Place is being framed from a project standpoint. Many of the technologies discussed in this reading have influenced the direction and goals of this project. Lyle's book is also the reason for choosing the Center for Regenerative Studies as a precedent study.

Sustainable Design - Ecology, Architecture, and Planning

Daniel E. Williams, FAIA 2007

In his book Williams makes the argument that "...a critical element in the change to sustainable living is in how we practice design and how we must, in fact, design a sustainable future" (xviii). He supports his argument through sections of the book that cover examples of regional design, urban design, and architectural design.

Chapter five focuses on the building scale, and how structures act as "organisms" rather than static objects (103). Williams outlines the process of designing architecture specific to the site through the relationships of site to region, site to site, and building to site (113-114). The chapter also discusses the valuable opportunities and benefits that come with redeveloping existing sites and buildings. Typically thought of as an obstacle towards achieving a sustainable design solution, the world is full of inefficient buildings and sites that can greatly benefit from the application of sustainable principles in their redevelopment. The goals of introducing natural ventilation and daylight, eliminating consumption of non-renewables are at the forefront of this strategy (121).

Sustainable Design – Ecology, Architecture, and Planning is a good source for gaining sustainable design insight through the lens of an architect. The book's overall pattern of challenges and opportunities provides a simple breakdown of complicated building and site systems.

Building Sustainable Neighborhoods

Richard Wener, PhD 2008

Building Sustainable Neighborhoods is a summary of the projects winning the 2007 Rudy Bruner Award for Urban Excellence. These projects have all in some way proved to be successful at creating a positive impact on the social, economic, and environmental systems they relate to. The projects range from a public plaza in New York, to a children's museum in Pittsburgh. The award-winning project I focused on was the High Point Housing Redevelopment in West Seattle, WA.

The authors do a great job at outlining the project history and goals before discussing the planning and design processes in detail. High Point's diverse social context is one that is similar to Stouffer Place. Many different races and ethnicities reside in this community, providing a unique culture (117). The site plan utilizes New Urbanism principles and significantly increases the physical connectivity of the neighborhood (120-121). High Point's program of varied open spaces provides many opportunities for the residents to enjoy.

Student Housing

Educational Facilities Laboratories 1972

This report by the Educational Facilities Laboratories addresses the changing trends in student housing during the 1970's. The text favors the shift from traditional residence halls to suite style clusters or rooms or apartments (7-10). Focusing mostly on renovating old dormitories and creating new living-learning residences, this report provides an interesting look into the changing needs and desires of the student residents. Not only do students want more from on-campus housing, but they want more variety of alternative living environments and models. This report also emphasizes

the importance of collaboration between students and housing administration in designing and planning new housing options (12).

The discussion of management styles and strategies is of great importance to Rebuilding Stouffer Place. Many universities and colleges are highlighted as successful renovation and redevelopment projects, including one at The University of Kansas (23).

Although this text is dated, it gives a historical perspective of the trends in student housing, and the shift from dormitories to suites and apartments. Much can be taken from the overlying conclusion that collaboration through listening and reacting to the needs of students is of key importance.

College and University Apartment Housing

Deborah Casey-Powell 1999

College and University Apartment Housing is a compilation of reports by the Association of College and University Housing Officers-International (ACUHO-I). It covers a broad spectrum of everything related to on-campus apartments. The first chapter gives great perspective into the dilemma that Stouffer Place shares with many universities who built student apartments after World War II. Many universities are dealing with the problems of aging facilities, radon and asbestos removal, and kitchen upgrades (9). The decision must be made to address the significant deferred maintenance of these 50-60 year old apartment buildings that face demolition (86).

The final chapter addresses future trends in student apartments, and the projected shifts in demographics and enrollment. Specific considerations on the changes in international students are relevant to the future of Stouffer Place. "It would also be worthwhile to note that 67% of international students provide their own funding and 70% of international graduate students are married. Taken together, it becomes increasingly clear that international students place a high value on keeping the family together... In this analysis, it may be worthwhile to consider specific institutional factors that might influence international enrollment such as the mission, policies on recruitment, and availability of funding sources" (209).

Campus Planning and Design

Mildred F. Schmertz, AIA 1972

Campus Planning and Design is a collection of articles published in Architectural Record between 1966 and 1970. The articles cover built examples of successful campus buildings of varied function and use. Most relevant to Rebuilding Stouffer Place, the articles also address the complexities of designing a single building or complex of buildings as part of a campus master plan. Section 4 deals with the overall architectural identity that gives a campus unity and cohesion. The principles of designing with a vocabulary of consistent forms, structural systems, and material palettes are crucial to the identity and unified character of a campus (85).

Although this text focuses largely on architecture and the design of single buildings, it supports the importance of relating all projects on a university campus to a master plan. Building types, styles, materials, and scale must all relate to a larger mission and identity that belongs to the university and student community.

The Living Landscape: An Ecological Approach to Landscape Planning

Frederick Steiner 2000

Steiner's The Living Landscape provides a comprehensive and extremely detailed commentary on realm of landscape planning guided by the science of ecology. This text covers everything from identifying issues and establishing planning goals, to design implementation and administration. The inclusive sections on inventory and analysis provide detailed summaries of inventory elements as well as major sources for where to find information on these elements. These chapters are a great starting point to determining relevant inventory items for Stouffer Place, and how to use them to complete a thoughtful analysis. Following the information on inventory and analysis is a guide to suitability analysis methods. Among these methods are the LESA (Land Evaluation Site Assessment) and McHarg methods (198-200). Simple overlay graphics help to explain the suitability methods for application to any site

Landscape and Sustainability

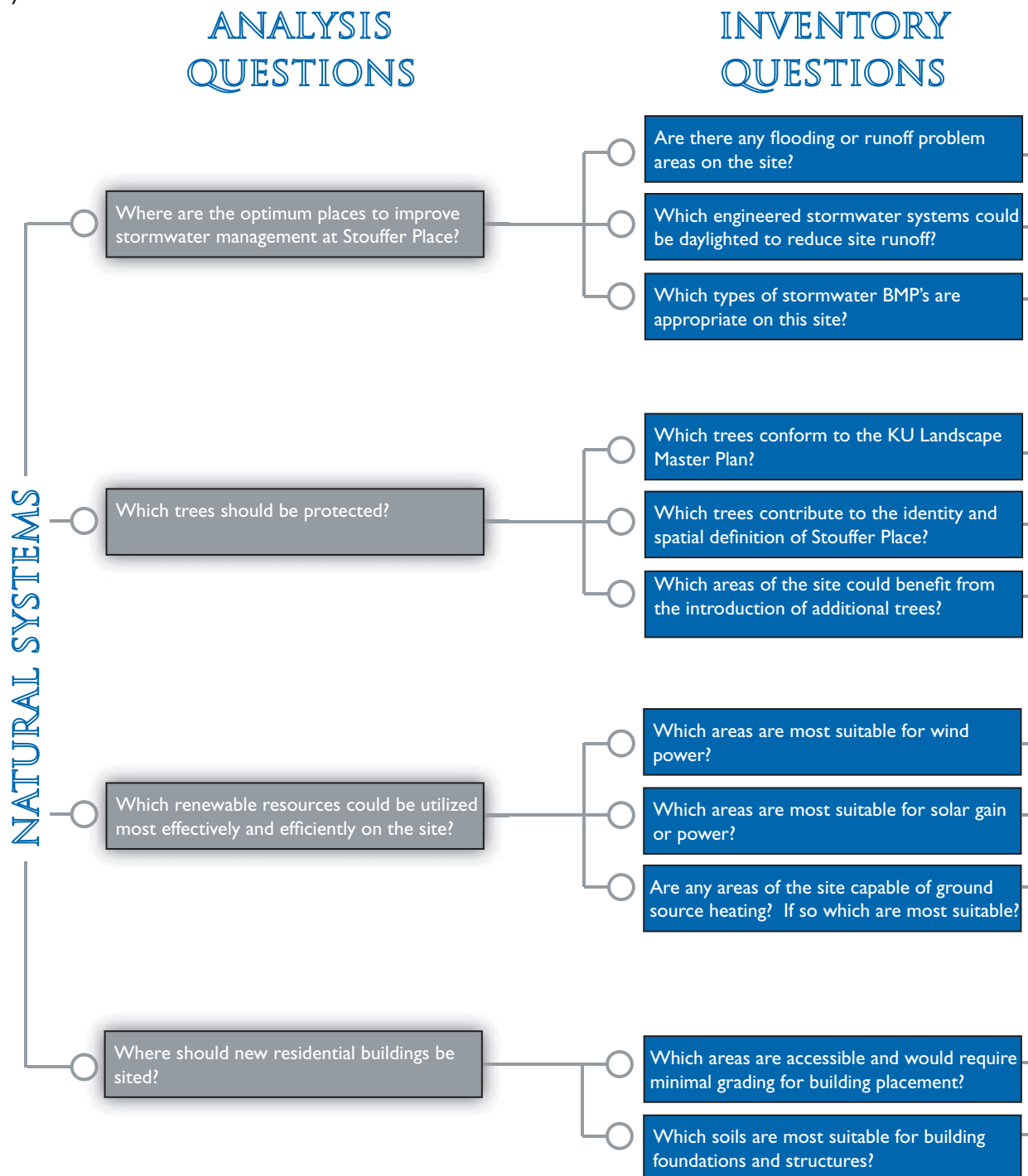
John F. Benson and Maggie H. Roe 2000

Landscape and Sustainability is a collection of articles regarding sustainable landscapes by British design professionals. Like so many of the related texts of this topic, this book covers the gamut of landscape planning considerations. Chapter ten, Resources; The Raw Materials of Landscape is the most relevant to the design considerations of Rebuilding Stouffer Place. The chapter begins with an explanation of the benefits of designing 'closed systems' within the landscape (180). By using renewable materials and resources as inputs, the system has a greater chance of creating positive outputs.

The considerations of Life Cycle Assessment (LCA) provide a quantitative look at the environmental impacts of materials from their extraction from the Earth, to their demolition (193). Emphasis is placed on designing for re-use, and multiple methods are given to implement a closed system.

NATURAL SYSTEMS INVENTORY + ANALYSIS PROCESS:

The natural systems portion of the site analysis process primarily focuses on the topics of renewable resources and building siting. These questions are framed from an ecological perspective and are intended to maximize the sustainability of the site. Using the Center for Regenerative Studies as a precedent for implementing sustainable technologies, critical questions are asked to determine the relevancy of these elements. From there, their criteria are analyzed to determine specific siting suitability.



INVENTORY

ANALYSIS METHODS & RESOURCES

ANALYSIS PRODUCT

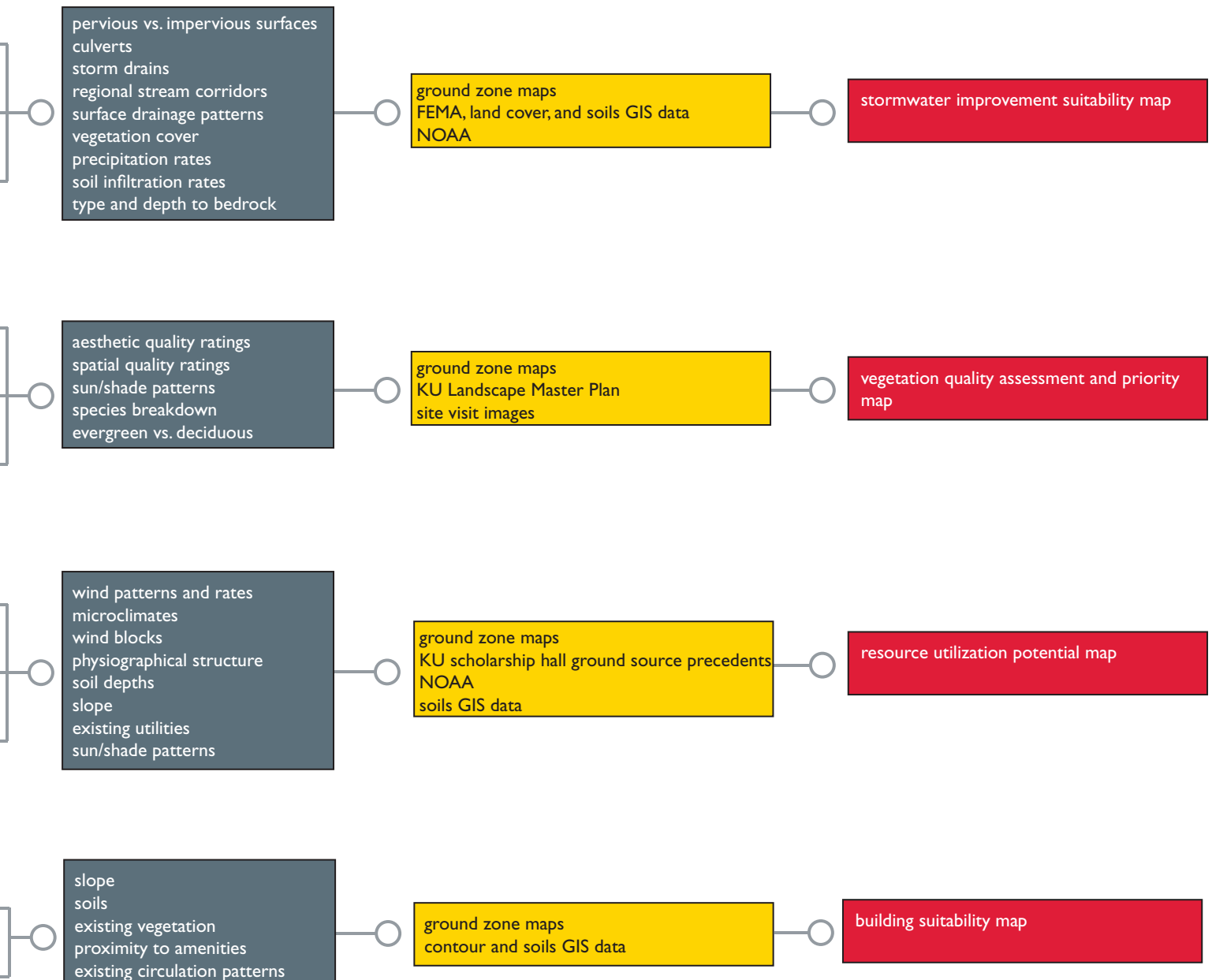
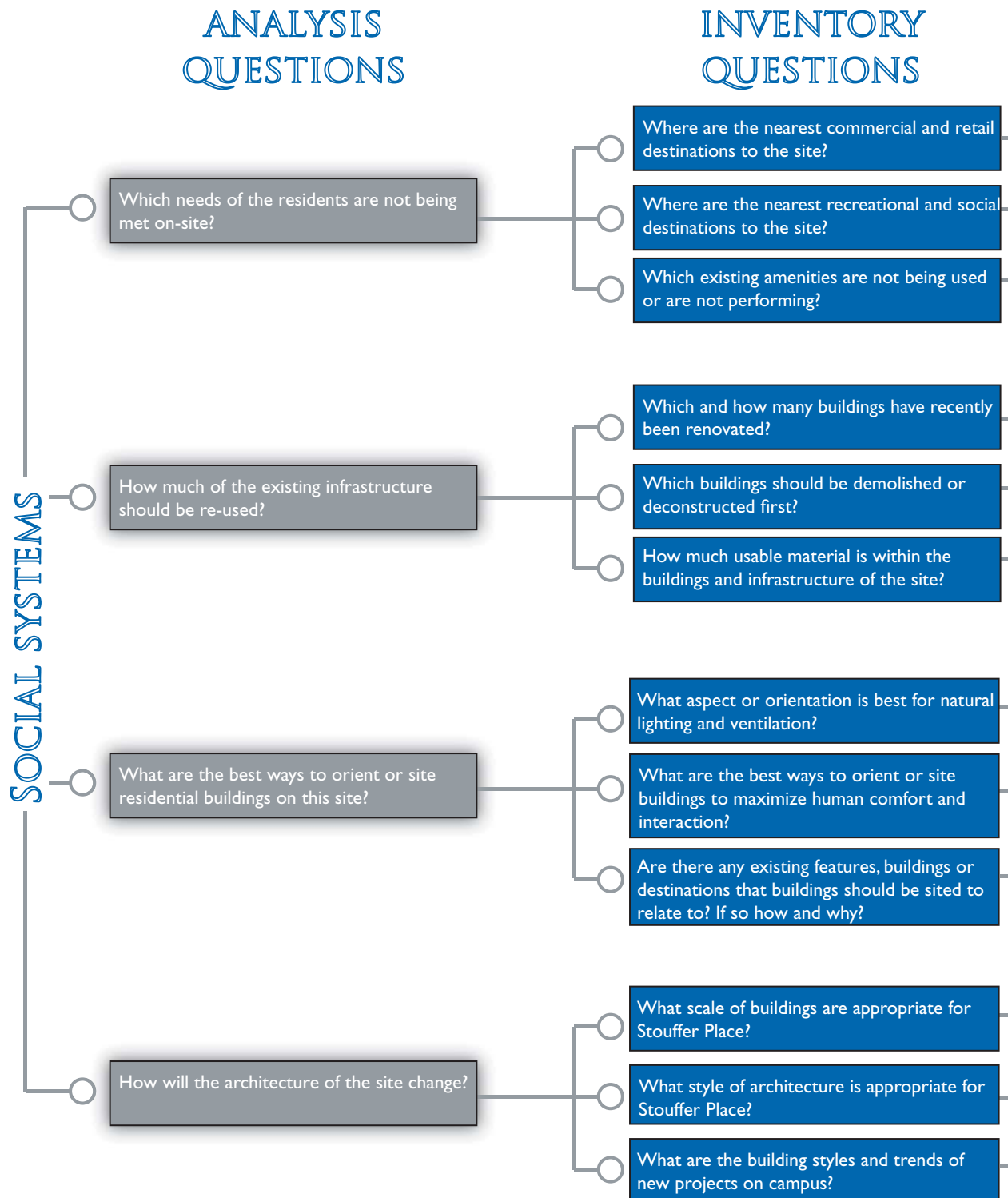


figure 8.3 Natural systems analysis and inventory process

SOCIAL SYSTEMS INVENTORY + ANALYSIS PROCESS:

The social systems portion of the site analysis process considers the needs of the residents, as well as the existing infrastructure of the site. Specific inventory questions are proposed to drill down to the deficiencies of the site and begin to formulate a plan for development. Analysis products for this section include building phasing and priority maps.



INVENTORY

ANALYSIS METHODS & RESOURCES

ANALYSIS PRODUCT

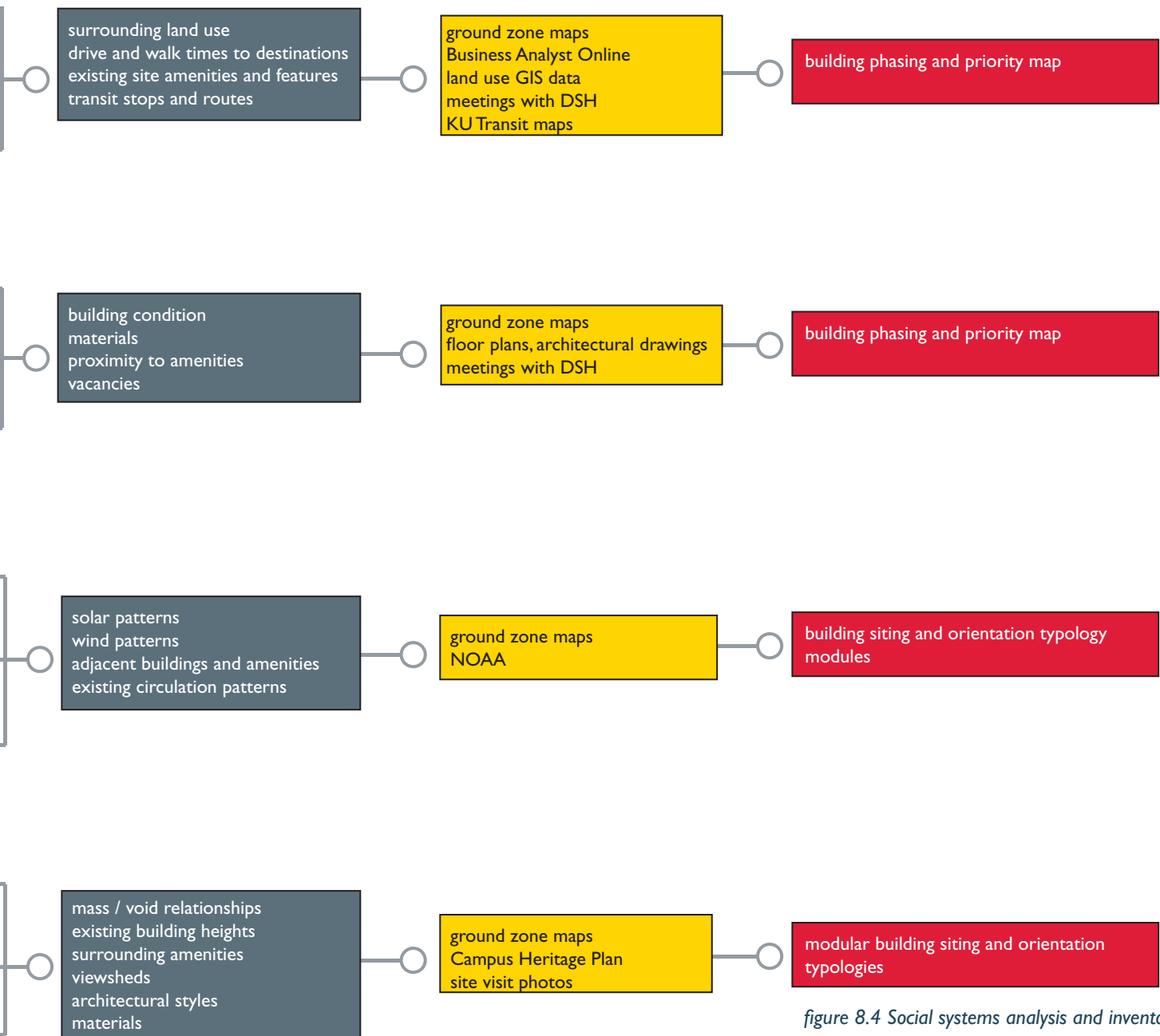
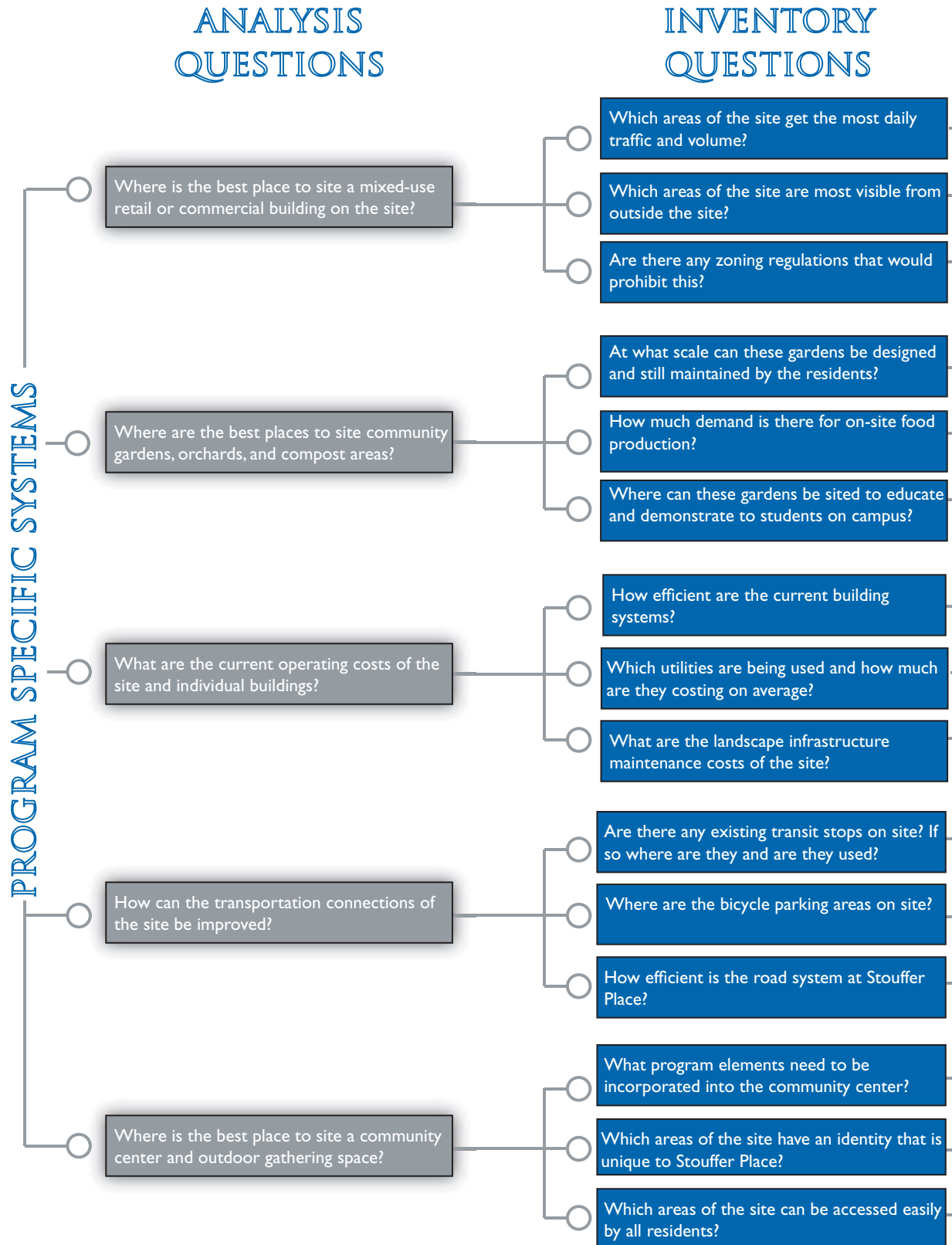


figure 8.4 Social systems analysis and inventory process

PROGRAM SPECIFIC SYSTEMS INVENTORY + ANALYSIS PROCESS:

The final section of the site analysis process is aimed at developing a rough program of elements to be implemented.

By asking specific questions about spatial elements, a series of suitability maps can be developed.



INVENTORY

ANALYSIS METHODS & RESOURCES

ANALYSIS PRODUCT

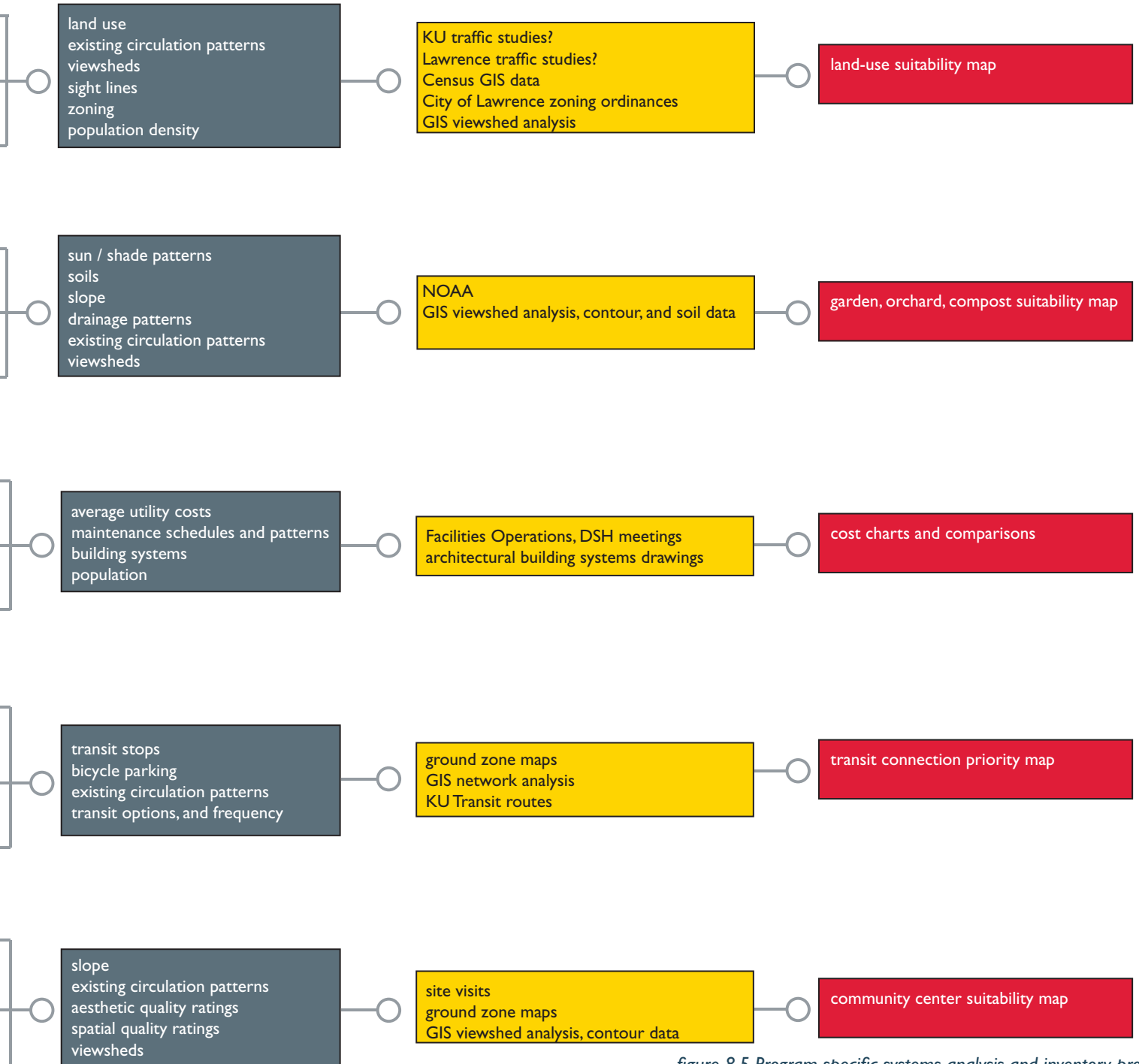


figure 8.5 Program specific systems analysis and inventory process

GLOSSARY:

affordable	reasonably priced; comparable to similar facilities in the surrounding community; the good value for a student's dollar.	(Robertson, 2011)
community	a variety of physical and social areas and institutions within which and with which people live.	(Steiner 2000)
connectivity	site to context connections, cultural systems and natural systems connections, and temporal connections that recognize the life of landscapes over time.	(Dinep 2010)
cradle to cradle	a phrase in biology that describes the continuous usefulness of most elements in nature. Cradle to cradle is a concept introduced by architect William McDonough, FAIA, in his book of the same name. It prescribes that at the end of a product's useful life it should be used as a post consumer resource and given new life in the form of new products and materials or recycled into new products and materials or alternative uses.	(Williams 2007)
efficiency	requiring relatively low resource inputs for implementation and maintenance; creating economic, human health, and social benefits; satisfying multiple land uses.	(Dinep 2010)
embodied energy	the sum total of energy used to grow, extract, and manufacture a product, including the amount of energy needed to transport it to the job site and complete the installation.	(Williams 2007)
environmental impact	the effect of an activity or substance on the environment	(EPA)
identity	the distinguishing character or personality of an individual [community].	(Webster Dictionary)
infrastructure	systems of roads, schools, utilities, and other community amenities that provide functional networks for entire communities and regions.	(Dinep 2010)
meaning	a well-defined sense of place, and engagement of site users with landscape process and phenomena.	(Dinep 2010)
mission statement	a brief declaration of the purpose for which a unit exists and functions. A mission statement can help define the purpose of a plan.	(Steiner 2000)

neighborhood	an area that is identifiable based on proximity and/or like purpose and use.	(Robertson, 2011)
purpose	landscape as spatial and living medium, fulfilling land-based cultural and ecological program goals.	(Dinep 2010)
regenerative design	the idea that development does not just consume resources, but also can regenerate or produce them.	(Dinep 2010)
regenerative system	provides for continuous replacement, through its own functional processes, of the energy and materials used in its operation.	(Lyle 1994)
renewable resources	naturally occurring raw material that comes from a limitless or cyclical source such as the sun, wind, water (hydroelectricity), or trees. When properly used and managed, renewable resources are not consumed faster than they are replenished.	(EPA)
self-sufficient	able to maintain oneself or itself without outside aid: capable of providing for one's own needs.	(Webster Dictionary)
stewardship	involving collaborative and participatory design processes; evoking a sense of long-term responsibility of site users, constituents.	(Dinep 2010)
student apartments	a building or group of buildings where students enrolled in an academic institution reside.	(author)
suitability analysis	the process of determining the fitness of a given tract of land for a defined use. Suitability is often used interchangeably with capability.	(Steiner 2000)
sustainable	meeting the needs and aspirations of the present generation without compromising the ability of future generations to meet their needs.	(Bruntland 1987)

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