

The calming campus: using green infrastructure on college campuses to help reduce stress

by

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A REPORT

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Abstract

College campuses are the primary locations where students spend most of their time during their college careers and a place that some even call home. This relationship between students and their campus demands that the campus support the needs of the students. However, this is often not the case, as many college greenspaces do not support student activity but operate as special event spaces. This lack of student-focused greenspace design relates to the mental health crises many campuses are facing, as research has concluded that the simple act of viewing and interacting with a natural environment can help manage feelings of depression, reduce feelings of stress, and improve one's self-esteem. While therapeutic gardens are not a substitute for therapy, they help maximize the healing potential of green space through designs that lessen users' feelings of stress and anxiety. To fully maximize the healing potential of therapeutic gardens, design professionals have taken an interest in artistic green infrastructure to provide these mental health benefits in a way that appeals to campus developers through the additional benefit of stormwater management. This research area has recently gained attention as a response to climate change, and deeper evaluations of therapy gardens and green infrastructure systems are needed to help intertwine green infrastructure systems into therapeutic gardens to promote the well-being of students on college campuses.



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using green infrastructure on college
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Fresh air is as good for the mind as for the body. Nature always seems trying to talk to us as if she had some great secret to tell. And so she has.

– John Lubbock

acknowledgments

I want to thank everyone who supported me on this journey and throughout my academic career.

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To my parents, thank you for having my back and supporting me in achieving whatever I set my mind to. Your belief in me is what brought me to this milestone. I love you guys.

For my friends, thank you for everything. You know me better than I know myself and are always there for me with whatever I didn't think I needed. Your love and support mean the world to me.



chapter 1

introduction

abstract

College campuses are the primary locations where students spend most of their time during their college careers and a place that some even call home. This relationship between students and their campus demands that the campus support the needs of the students. However, this is often not the case, as many college green spaces do not support student activity but operate as special event spaces. This lack of student-focused green space design relates to the mental health crises many campuses are facing. Importantly, research has concluded that the simple act of viewing and interacting with a natural environment can help manage feelings of depression, reduce feelings of stress, and improve one's self-esteem. While therapeutic gardens are not a substitute for therapy, they help maximize the healing potential of green space through designs that lessen users' feelings of stress and anxiety. To fully maximize the healing potential of therapeutic gardens, design professionals have taken an interest in artistic green infrastructure to provide these mental health benefits in a way that appeals to campus developers through the additional benefit of stormwater management. This research area has recently gained attention as a response to climate change, and deeper evaluations of therapy gardens and green infrastructure systems are needed to help intertwine green infrastructure systems into therapeutic gardens and promote the well-being of students on college campuses.

Chapter 1 Page Break KSU Campus Aerial (Kzollman 2005). Used under Creative Commons.

Figure 1.01 Flowers in Jamaica (Smithsonian n.d.). Used under Creative Commons.



dilemma

Developments on college campuses often prioritize building new facilities, minimizing available green space, or reducing the expendable budget for designing outdoor spaces.



goal

Design therapeutic green spaces on college campuses that enhance a project's appeal to developers, address environmental issues on campuses, and enhance the well-being of students.



problem

Students on college campuses experience heightened stress levels due to the pressures related to achieving high academic performances, suffering from financial instability, and experiencing changes in social dynamics. They are often not connected with outside help due to a lack of a perceived need or unfamiliarity with services and insurance coverage. Historically, it is known that the simple act of viewing and interacting with a natural environment can help reduce feelings of stress and improve one's self-esteem. However, many outdoor green spaces on K-State's campus lack therapeutic quality and do not help students relax.

research question

How can the design principles of therapy gardens be intertwined with green infrastructure systems to reduce stormwater runoff and establish healing spaces on college campuses for students and faculty?

glossary

Green Infrastructure (GI): a network of natural and semi-natural areas that are planned and managed to provide environmental services and enhance biodiversity (Venkataramanan et al. 2019; Ryan 2018).

Artful Rainwater Design (ARD): the art of designing “creative, yet practical, landscapes that treat on-site stormwater management as an opportunity to enhance site design” (Echols & Pennypacker 2015).

Artistic Green Infrastructure: the integrated use of green infrastructure, placemaking, and artistic expression to create a sense of place in an area and provide ecological benefits.

Attention Restoration Theory (ART): an idea suggesting that spending time in nature can help restore mental fatigue and improve concentration (Kaplan & Kaplan 1995).

Stress Reduction Theory (SRT): a theory that explains how natural environments can reduce stress, while artificial environments can increase it (Marcus & Sachs 2014a).

Runnel: a narrow channel in the ground for water to flow through.

Scupper: an outlet in the side of a building for draining water.

Check Dam: a small structure built across a channel, swale, or ditch to reduce erosion and sediment control.

Bioswale: a shallow, landscaped (often native plant or turf grass) channel that collects and treats stormwater runoff.

Permeable Paving: a walkable and drivable surface that promotes water to soak into the ground (subsurface area) instead of flowing directly off of paved surfaces into storm drains.

Rain Garden or Bio-filtration Basin: a landscaped depression that uses vegetation and soil to filter and treat stormwater runoff.

Flow-through Planter: vegetated planter that filters and treats stormwater runoff before flowing downstream.



chapter 2

background

context

Kansas State University's main campus (typically called K-State) covers a large portion of Manhattan, Kansas, and features frequent construction projects adapting to its growing student body. Additionally, K-State's environment can be very stressful for students throughout the semester, with frequent testing and deadlines inflicting feelings of stress. In contrast to many of K-State's past developments prioritizing building expansions, research has shown that enhancing the presence of greenery and providing people contact with nature can improve their mental well-being by engaging their passive mind to reduce feelings of stress (Barron et al. 2019; Kaplan & Kaplan 1995; Paul et al. 2020).

As part of recent master planning efforts in 2024-2025 led by the university and design firm SmithGroup, there is a newfound interest in developing the leftover green space to maximize student and user activity while being mindful of the well-being of students. Green infrastructure projects have the potential to provide stress-relieving benefits with the addition of capturing stormwater and reducing runoff (Paul et al. 2020). Project managers and landscape designers associated with K-State and SmithGroup can prioritize green infrastructure projects while aiming to provide access to tranquil green spaces to mitigate the damaging ecological effects of past campus developments.

Chapter 2 Page Break Central Campus Aerial (The University of Missouri 2013).
Used Under Creative Commons.

Figure 2.01 Blooming Clover (c. 1897) by Jac van Looij
(The Rijksmuseum n.d.). Used under Creative Commons.



k-state master planning

K-State strives to update its master plan every decade to stay relevant to the growing needs of the campus and students. The goal of their master planning process is to articulate the ideas of students, faculty, staff, and stakeholders into meaningful design concepts that create a distinct identity for a campus that the users enjoy.

SmithGroup was hired as the lead design firm for the ongoing master plan and is providing services in multidisciplinary planning and design, thought leadership, data visualization, and research planning. The firm kick-started its three-phase effort in November of 2023 and will conclude its process and present its final plan in September 2025.

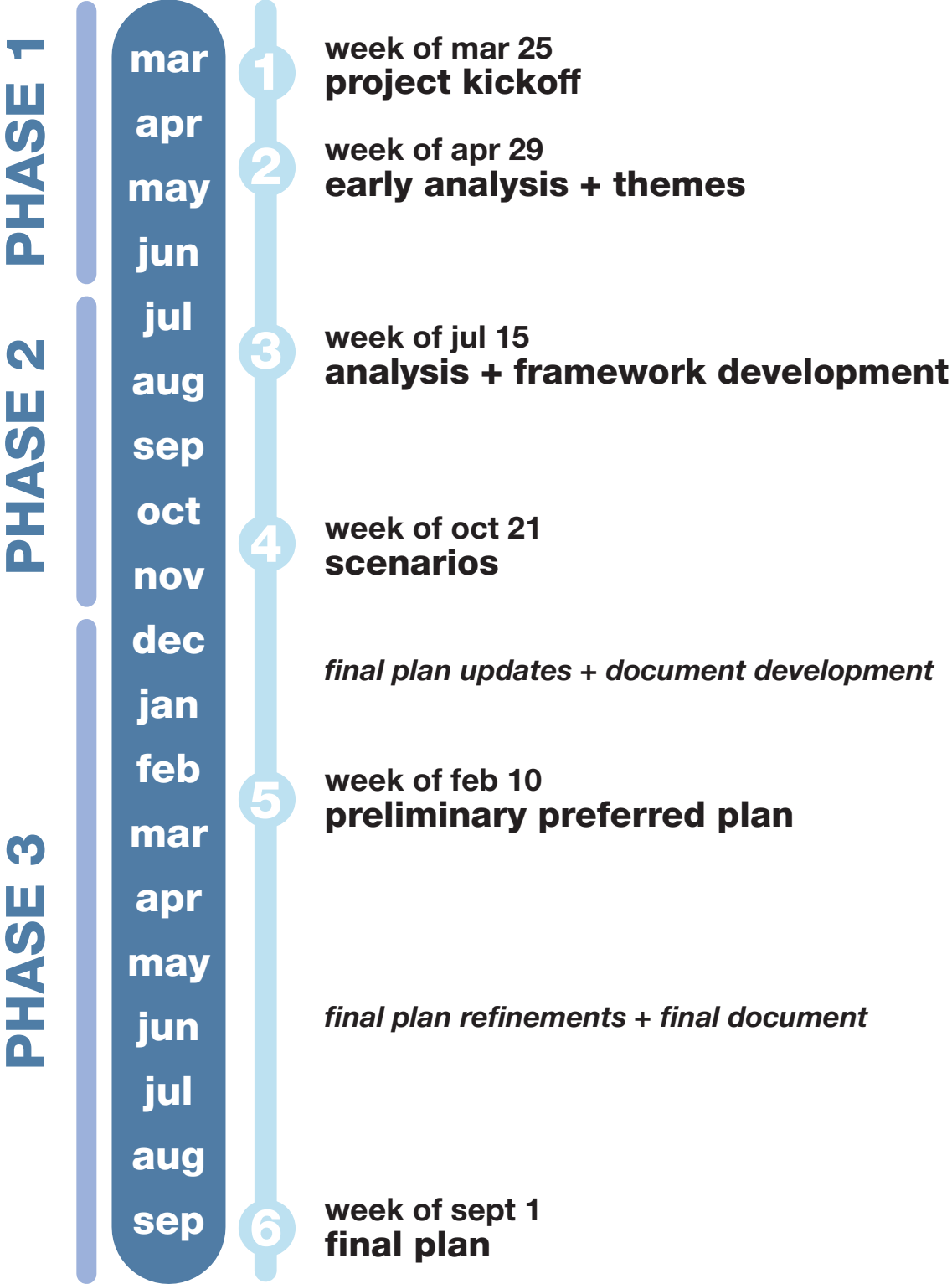


Figure 2.02 K-State Master Plan Timeline Diagram.
Adapted from (Kansas State University & SmithGroup 2023).

master plan review team
executive leadership team

- **Richard Linton**
president
- **Debbie Mercer**
interim provost and executive vice president and dean of the College of Education
- **Marshall Stewart**
senior vice president for executive affairs, university engagement and partnerships, and chief of staff
- **Ethan Erickson**
vice president for administration and finance
- **Thomas Lane**
vice president for academic success and student affairs and dean of students
- **Alysia Starkey**
dean and chief executive officer of K-State Salina

steering committee

- **Tim de Noble**
former dean of the College of Architecture, Planning and Design
- **Casey Lauer**
associate vice president for facilities
- **Bonnie Rush**
dean of the College of Veterinary Medicine
- **Chris Culbertson**
dean of the College of Arts and Sciences
- **Karen Goos**
vice provost for enrollment management
- **Corey Williamson**
assistant vice president for diversity, equity, inclusion and belonging
- **Derek Jackson**
director of housing and dining services,
associate vice president for student life
- **Gene Taylor**
director of athletics
- **Jane Schuh**
director and associate dean for the College of Agriculture’s
research and graduate programs
- **David Rosowsky**
vice president for research
- **Greg Lohrentz**
senior vice president of operations and finance
for the Kansas State University Foundation
- **Cassie Jones**
professor and teaching coordinator in the department of
animal sciences and industry, co-chair of the Faculty Senate
Committee on University Planning
- **Caleb Stout**
student body president
- **Chad Bristow**
director of facilities for the Kansas Board of Regents

decision making hierarchy

With the help of the steering committee, the core team of executive leaders was responsible for selecting which firm would lead the planning process. SmithGroup’s responsibility is to generate future investment ideas for the campus-based on stakeholder sessions and data collection processes. While the firm has sought to engage with as many partners as possible to receive input and put forth ideas that represent the entirety of K-State, their closest partner is the division of facilities who seek to balance the wants of administrators, students, staff, faculty, and stakeholders with the feasibility of those having to maintain it. The final plan put fourth by the firm is not a guarantee of what the future of K-State’s campus will look like but rather a final concept based on data findings from the public and input from the review team. What happens after the final plan is published is ultimately up to K-State’s team and steering committee to take action and make these ideas a reality.



Figure 2.03 K-State Master Plan Decision Making Hierarchy Diagram. Adapted from (Kansas State University & SmithGroup 2023).

k-state's well-being initiatives

K-State has committed to prioritizing the university's physical, mental, and emotional health. The campus provides multiple outlets and resources for students to connect with to improve their well-being. From Well-Being Advising, a free service that offers one-on-one support and guidance, to Well-Being Workshops that equip students with practical tools for personal growth, K-State is increasing its commitment to providing students access to the help they need. Initiatives like the Green Bandana Project raises awareness around mental health and suicide prevention, encouraging students to recognize signs of distress and show visible support for one another. 'Cats Connect brings students together in small, peer-led groups to foster new friendships and build community, while THRIVE Navigators, a student organization backed by Lafene Health Center and the Morrison Family Center for Student Well-Being, empowers students to take the lead in promoting emotional wellness across campus. Together, these efforts reflect K-State's proactive investment in the overall well-being of its students. These outlets and the university's growing interest in student well-being further highlight the need for spaces on campus to take a similar approach and strive to promote the well-being of its users.

well-being advising

free service for students to gain support in the areas of social and emotional well-being. advisors listen and help students develop skills and access resources

well-being workshop

k-state offers actionable and relevant workshops to help students actively participate in their well-being journey.

green bandana project

k-state is partnered with the green bandana project to spread suicide prevention and mental health awareness. this workshop educates students on signs of distress and provides a green bandana to tie onto their backpack as a show of solidarity.

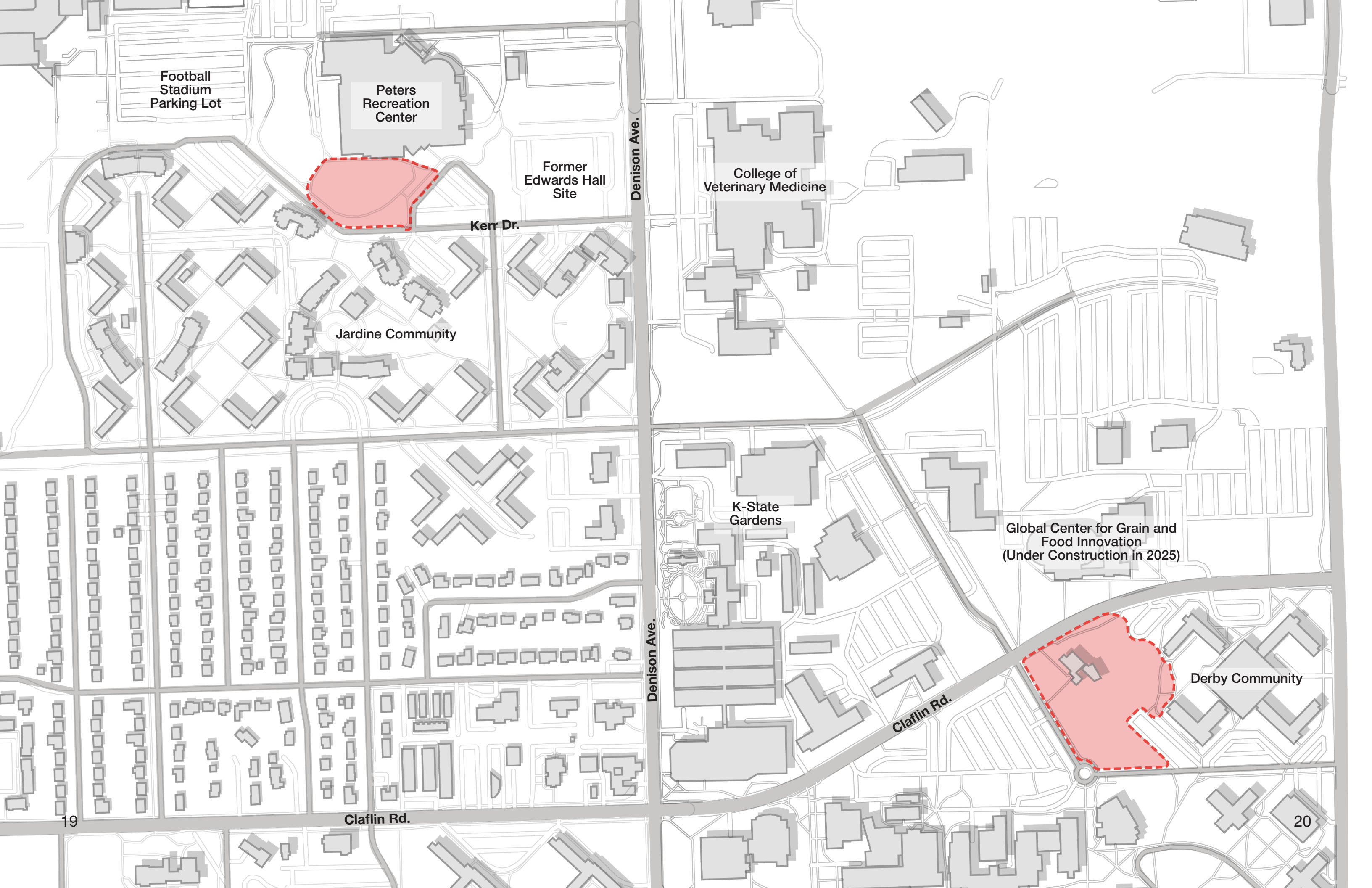
'cats connect

peer-facilitated program designed to build social networks and community on campus. participants are placed in groups from outside of their social groups where members will get to know each other.

THRIVE navigators

student organization under the leadership of lafene health center and the morrison family center for student well-being passionate about students' emotional well-being.

Figure 2.04 K-State Well-Being Initiatives. Adapted from (Kansas State University n.d.).



Football
Stadium
Parking Lot

Peters
Recreation
Center

Former
Edwards Hall
Site

Kerr Dr.

Jardine Community

College of
Veterinary Medicine

K-State
Gardens

Global Center for Grain and
Food Innovation
(Under Construction in 2025)

Derby Community

Denison Ave.

Denison Ave.

Clafin Rd.

Clafin Rd.

peters recreation complex and football stadium background

The northern portion of K-State's campus east of Bill Snyder Stadium surrounding the Peters Recreation Center has made a name for itself with the high runoff it produces, flooding the streets frequently. The channels south and west of the Recreation Center Building have been an issue for maintenance and facilities for quite some time, with the fast-moving waters from the stadium parking eroding the banks. K-State Facilities staff have sought to address this issue by filling the channels with rock, yet the banks continue to deteriorate, and the two rock swales need to be addressed differently. SmithGroup's proposed preliminary master plan for the campus focuses its interventions further south and does not highlight any changes for this location. Another essential condition of this area is the recent demolishing of Edwards Hall between 2023-2024. The university has no definite plans for this area, but through discussions with project managers and facilities on campus, it could become surface parking.

Figure 2.05 K-State Campus Map With Projective Design Site Locations (Tilley 2025).



Figure 2.06 Image Showcasing Existing Condition of Peters Recreation Complex Detention Basin and Overall Size (Tilley 2024).



Figure 2.07 Image Showcasing Interior-Exterior Relationship Between Peters Recreation Complex and Detention Basin (Tilley 2025).



Figure 2.08 Existing Channels on the West Side of the Recreation Complex are Filled with Rock (Freelove 2024).



Figure 2.09 The Stadium Parking Lot is in Full Use During Game Days (Tilley 2024).



Figure 2.10 The Stadium Parking Lot is Underutilized outside of Game Days (Tilley 2024).



Figure 2.11 The Recreation Center's Proximity to the Football Stadium Attracts Visitors for Tailgates (Freelove 2024).



Figure 2.12 Northwest Outlet Pipe During Rain Event (Freelove 2024).



Figure 2.14 Rock Channels Overgrown with Ragweed (Freelove 2024).



Figure 2.13 Rock Channels During Rain Event (Freelove 2024).



Figure 2.15 Rain Event Drainage along Kerr Drive (Freelove 2024).

international student center background

In September 2024, K-State confirmed its plans to demolish the three International Student Center (ISC) buildings that rest along Campus Creek after deferred maintenance concerns and locating asbestos. The center functioned as the hub for gatherings and events for the international student populations before being relocated to the Jardine Community. Additionally, the buildings are architecturally unique and stand out on campus, pulling inspiration from Asian architecture. They were designed with the help of William R. “Bill” and Patricia Eidson, alumni of the K-State College of Architecture, Planning and Design program. SmithGroup’s proposal for campus includes this space in its concepts and is focused on activating areas along Campus Creek. However, their concepts for this space appear to leave no trace of the International Student Center and utilize a design language different from the current site. Many faculty and students have expressed that the redesign should maintain as many unique architectural elements as possible and use a similar design language to pay homage to the center, the students, and the designers involved with the International Student Center.



Figure 2.16 The Central Courtyard and Thick Concrete Pillars are a Primary Feature of the International Student Center (Tilley 2024).



Figure 2.17 The ISC Rain-Garden Slows, Holds, and Slowly Infiltrates or Releases Rooftop and Landscape Runoff. (Tilley 2024).



Figure 2.18 The Primary Entrance into the Site is a Bridge that Spans Across Campus Creek (Tilley 2024).



Figure 2.19 The Layout of the Existing Buildings and Courtyard Highlight Views Outward and Create Prospect-Refuge (Tilley 2024).



Figure 2.20 Rain-Bowls and Salvaged Limestone Splash-Pads are used to Dissipate Rooftop Runoff. (Tilley 2024).



Figure 2.21 Moon Shape Cutouts can be Found on the Door of the Buildings (Tilley 2024).



Figure 2.22 The Taiwan and Main Wing are Partially Sunken (Tilley 2024).



Figure 2.23 The ISC has Strong Entry Definition (Tilley 2024).



Figure 2.24 Opportunities for Overlooks (Tilley 2024).



Figure 2.25 Site Contains Angled Wall Features (Tilley 2024).

literature review introduction

The presented research and design project integrates several topics: green infrastructure, students' mental health on college campuses, and the designing of therapeutic gardens. The following literature review explores these topics, studying present-day findings and ideas to inform the research question.

Professionals have found that even minor exposure to greenery leads to better health outcomes (Marcus & Sachs 2014b). Therapy gardens are frequently recognized for their mental health benefits as they seek to maximize the healing potential of the outdoor environment. While the life of a college student is often glamorized and viewed as a time of endless opportunity, the demands of high-stress learning and research can be overwhelming and negatively affect students. College students have been found to experience heightened levels of stress resulting from the pressures related to achieving high academic performance, financial instability, and changes in family dynamics by moving away from home (Souter-Brown 2014a; Lau & Yang 2009; Foellmer, Kistemann & Anthonj 2021).

College campuses have an opportunity to provide students with calming landscapes to help manage their stress. Many campuses are already seeking ways to improve green spaces to encourage students to get outdoors. For these reasons, including green infrastructure-based therapy gardens centered on college campuses will help students manage stress and improve their perceived well-being.

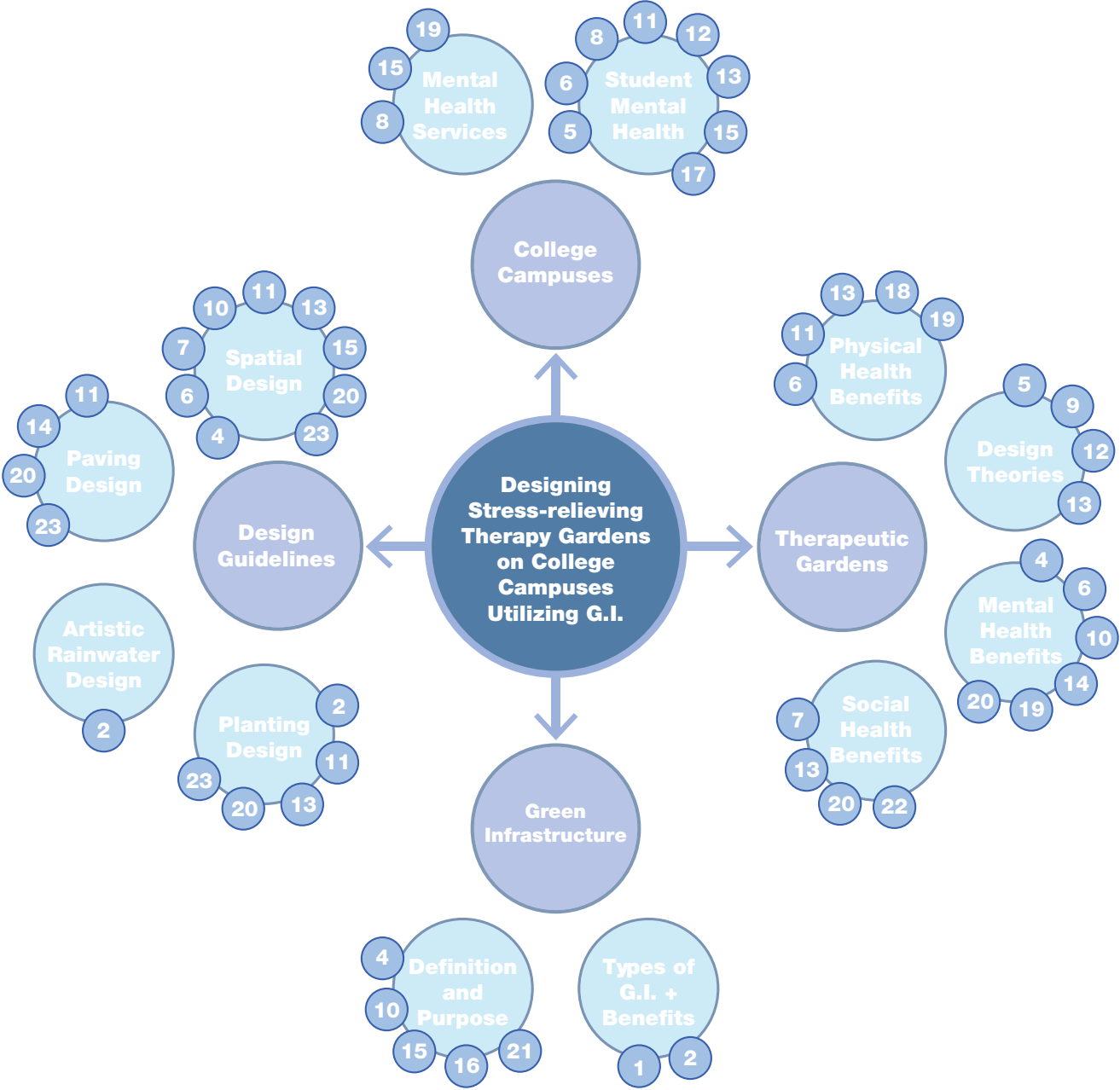


Figure 2.26 Web Map Showcasing The Primary Subjects and Subsections of Literature Reviewed (Tilley 2024).

mental health on campus

Research indicates that the heightened levels of stress college students face put them at a higher risk for developing symptoms of depression than the general population (Liu et al. 2022; Hunt & Eisenberg 2010). This heightened stress and likelihood of depression results from the pressures related to seeking to achieve high academic performances, as well as the financial and social stresses that moving away from home causes (Souter-Brown 2014a; Lau & Yang 2009; Foellmer, Kistemann & Anthonj 2021). To tackle some of these challenges, students often focus on studying or engaging in extracurricular activities to help build their resumes. However, this constant application of oneself and the demand for attention these tasks require can lead to mental strain. Mental strain can result in students experiencing decreases in their academic performance, and prolonged strain can grow into students experiencing symptoms of anxiety and depression, creating a negative feedback loop (Lau & Yang 2009; Reese et al. 2020; Felsten 2009). Stress also has short- and long-term impacts on physical health, from sleep disturbances, heightened heart rate, blood pressure increases, and weakened immune systems (Marcus & Sachs, 2014a).

Campus professionals have recognized these issues and are responding by expanding campus mental health services. While these efforts are a step in the right direction, many factors create a disconnect between the students and the help they need. As mentioned by Hunt and Eisenberg, some common barriers between students and campus services include “a lack of a perceived need for help, being unaware of services or insurance coverage, and skepticism about treatment effectiveness” (2010, 7). Aside from the student’s desire to get in contact, the availability of these services can become easily exhausted when analyzing counselor-to-student ratios. In 2008, a survey showed that academic institutions’ counselor-to-student ratio averaged around 1,900:1, with more significant gaps amongst more populated colleges (Hunt & Eisenberg 2010). These barriers have resulted in fewer than half of those with mood disorders and less than 20% of those with anxiety disorders receiving the treatments they need (Hunt & Eisenberg, 2010). Because of this, many researchers have looked to green spaces to help with this growing healthcare problem on campuses (Reese et al. 2020; Souter-Brown 2014c).

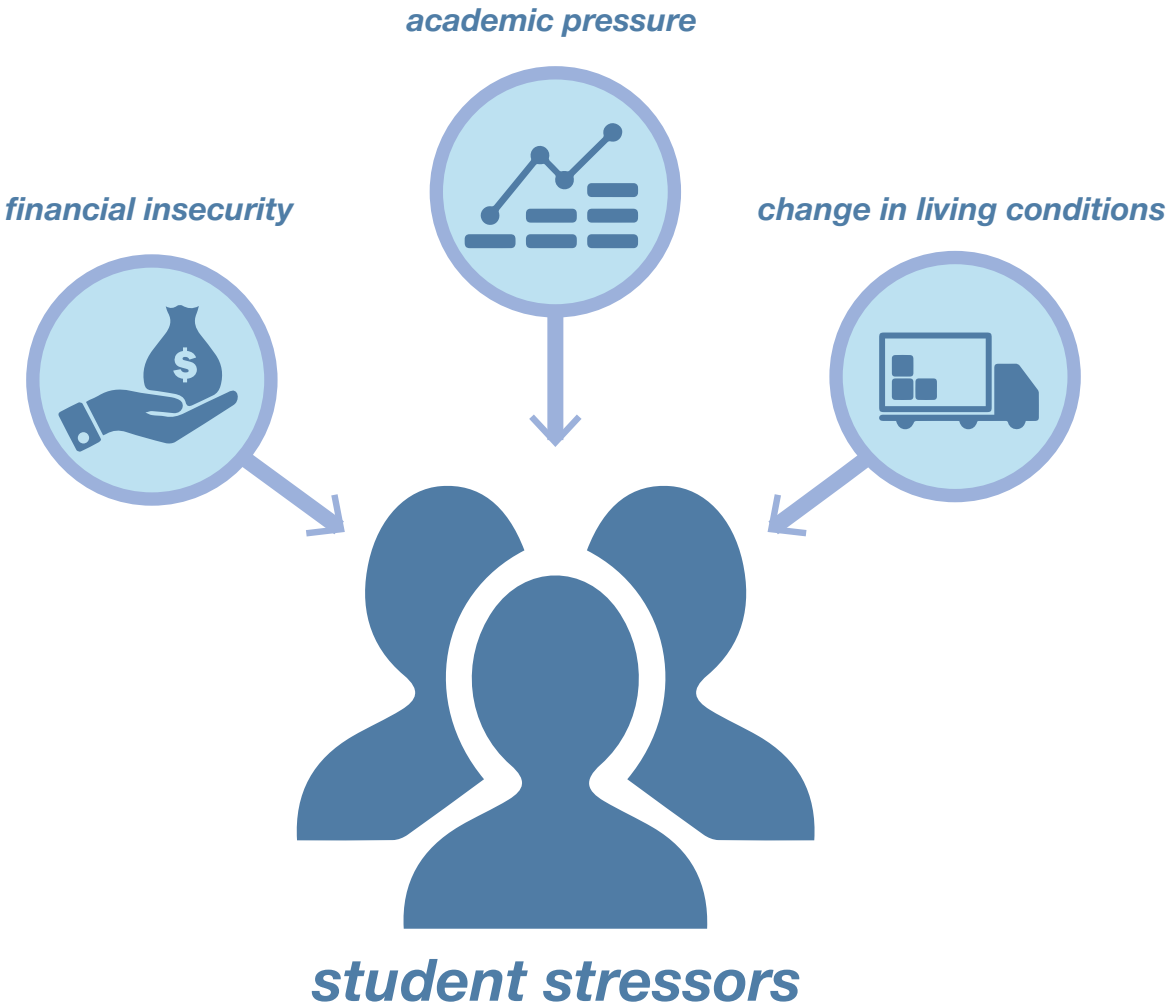


Figure 2.27 Three Core Stressors Weighing on College Students as Identified in the Literature (Tilley 2024).

therapeutic gardens benefits

mental health

Therapy gardens are frequently recognized for their mental health benefits. These landscapes present barrier-free, nature-based solutions that support individuals and reduce feelings of stress, depression, anxiety, risk of burnout, and other mental health challenges (Souter-Brown 2014c; Edwards 2022; Foellmer, Kistemann & Anthony 2021). Marcus and Sachs have found that even minor greenery exposure leads to better health outcomes, as many of life's stressors stem from urban environments (2014b). Therapeutic gardens seek to maximize the healing potential of landscapes by providing visually appealing, sensory-stimulating environments that reconnect users with nature to distract them from their daily lives and stressors (Edwards 2022). Planting design is a core tool designers use to establish this. By crafting plant palettes that appeal to multiple senses, therapy gardens become more attractive and increase their ability to disconnect users from their daily lives (Krasilnikova, Zhuravleva & Zaika 2021). The concept of place-making is also vital in helping reduce stress. As Souter-Brown notes, "a sense of place and an ability to identify with that place are important for mental health" (2014d, 255). When individuals feel connected to a space, it helps foster feelings of belonging and emotional stability. This connection to place is a crucial component of therapy gardens, as they provide an escape and a space of personal significance where users can find solace.

social health

Social isolation is recognized as a significant contributor to developing feelings of stress and symptoms of depression (Souter-Brown 2014d). Therapy gardens have proven to be powerful tools to mitigate feelings of isolation and enhance users' satisfaction with their environments. In designing spaces for different uses and being sensory-rich, therapeutic gardens increase a space's allure and increase social interactions through a heightened presence of people (Souter-Brown 2014d; Han 2021). Studies have shown that engaging in group activities proves to be more effective in mitigating stress and enhancing feelings of satisfaction (Han 2021). Likewise, feelings of isolation can decrease through the positive psychological responses people get when observing others socialize (Han 2021). Social health also increases by incorporating therapy gardens with their ability to enforce feelings of safety and a sense of community (Wilson et al. 2009). Given that individuals view their living environments as a reflection of themselves, therapeutic gardens where users experience a positive sense of belonging through social interactions result in less stressed individuals who think more positively of themselves (Wilson et al. 2009). In school settings, therapeutic gardens also boost productivity, concentration, and overall satisfaction (Marcus & Sachs 2014a).

physical health

Therapy gardens promote physical health by offering natural environments that help individuals recover from stress, resulting in decreased blood pressure levels, muscle tension, and skin conductance (Lau and Yang 2009; Souter-Brown 2014c). Encouraging walking and light physical activity, therapy gardens also help stimulate endorphin production that effectively mitigates stress and counteract feelings of depression (Souter-Brown 2014b). Additional studies have linked the positive effects of therapy gardens to the duration of time spent in them, with longer stays providing more significant stress relief (Foellmer, Kistemann, and Anthony 2021). Walking loops invite users to stay and enjoy the environment by inspiring users to achieve their fitness goals. Moreover, users often adopt a greater appreciation for their surroundings when outdoors, motivating them to become less car-reliant and walk more frequently, further enhancing their physical health (Souter-Brown 2014b). Lastly, therapy gardens function as natural pain relievers that help heal physical ailments, with hospital patients exhibiting shorter hospital stays and decreased medicine consumption when provided access to a therapy garden (Marcus & Sachs 2014a).

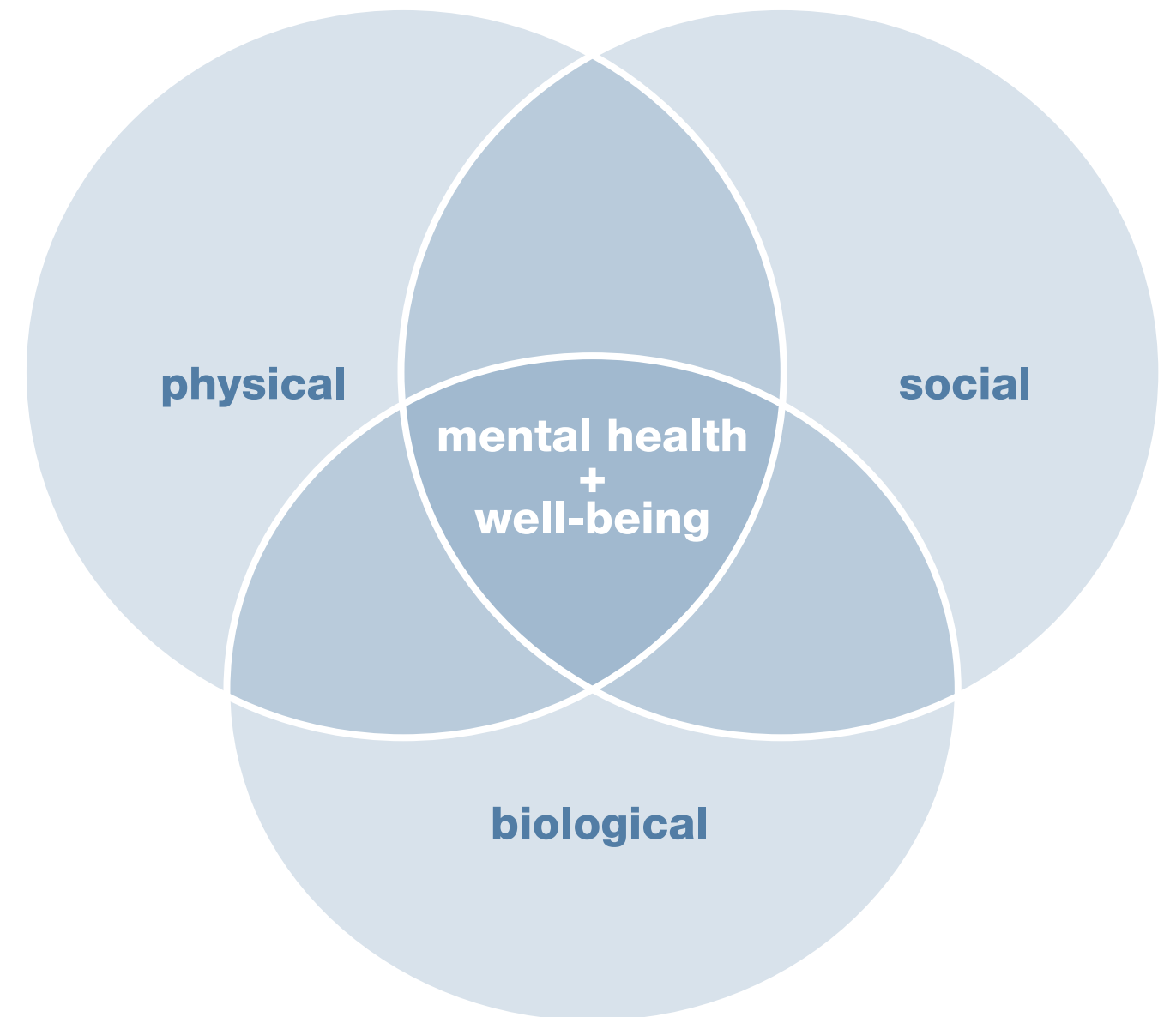


Figure 2.28 Mental Health and Well-being is Affected by Social Health, Physical Health, and Unique Biological Conditions (Tilley 2024).

therapeutic garden design theories

Three significant theories influence the design process for therapeutic gardens:

- Stress Reduction Theory (SRT)
- Prospect-Refuge Theory
- Attention Restoration Theory (ART)

stress reduction theory

Stress Reduction Theory (SRT) expresses that natural environments facilitate stress recovery by triggering biological responses that lower blood pressure, reduce heart rate, and diminish stress-related hormones (Marcus & Sachs 2014a). Concerning college campuses, Liu et al. claim that “SRT proposes that students can achieve the effect of relieving stress through biological reactions to specific attributes of the natural environment after contacting campus green spaces” (2022, 2). Aside from greenery, water features and the user’s sense of control over the environment help contribute to this theory (Marcus & Sachs 2014a).

prospect refuge theory

Prospect-Refuge Theory suggests that humans’ preference for environments relates to whether they support basic survival needs. This theory claims that individuals are naturally drawn to landscapes where they can see potential threats while feeling protected from danger (Marcus & Sachs 2014a). This instinctive reaction is linked to evolutionary survival strategies, where open views and sheltered spaces provide safety (Marcus & Sachs 2014a). These principles are crucial in therapeutic gardens, as they help people feel safe and secure and contribute to a therapeutic garden’s calming atmosphere.

attention restoration theory

Attention Restoration Theory (ART) claims that therapeutic gardens benefit users by allowing them to take a break from sustained concentration. This theory refers to two kinds of attention: voluntary and involuntary. Voluntary attention describes scenarios where people concentrate to pay attention. On the other hand, involuntary attention refers to things inherently engaging where no energy is needed to pay attention (Kaplan & Kaplan 1995). When the involuntary mind is active, it restores the mind and combats mental fatigue. Kaplan & Kaplan highlight that the four factors contributing to attention restoration are being away, fascination, extent, and compatibility (1995). Together, these factors express that therapeutic gardens should provide an escape from regular activities, can allow users to feel immersed in the environment, capture attention effortlessly, and be a place users appreciate and want to be in (Kaplan & Kaplan 1995; Felsten 2009; Marcus & Sachs 2014a).

• Being Away

Experiencing separation from one’s usual thoughts and concerns. To be psychologically detached from your present worries and distracted from the environment drains your attention and energy (Kaplan & Kaplan 1995).

• Fascination

Holding one’s attention without any effort. Restorative environments hold your attention without you having to focus or direct it a certain way (Kaplan & Kaplan 1995).

• Extent

Refers to the quality of the environment to make you feel immersed. Typically, these environments have no unexpected features, and the user feels at ease (Kaplan & Kaplan 1995).

• Compatibility

Feeling peace and delight in your environment. The environment must be one where the individual chooses to be out of personal preference (Kaplan & Kaplan 1995).

focal design experiences

nature

Planting design is crucial to creating sustainable and effective therapeutic gardens. In therapeutic garden design, planting should beautify the space, draw visitors in, and entice them to explore (Souter-Brown 2014d; Marcus & Sachs 2014a). Plantings should create intrigue by offering hidden views that invite exploration and reward users with areas of discovery. They can also frame areas like the garden entrance or pleasant views beyond the gardens. Furthermore, plantings can provide function by helping provide shelter, screen unsightly elements, and create intimate settings (Marcus & Sachs 2014a). Aesthetically, color theory plays a substantial part in plant selection for therapy gardens and sensory stimulation (Marcus & Sachs 2014a; Winterbottom and Wagenfeld 2015).

movement

Paving is crucial in enhancing a space's therapeutic and functional quality. Thoughtfully designed paths create movement, meditation, and social interaction opportunities. In therapy gardens, paths are essential for providing therapeutic benefits by connecting users to nature, offering moments for reflection, or encouraging physical exercise (Lau and Yang 2009). The layout of these paths significantly influences how visitors interact with the space. Aside from orientation, a path design should promote navigation with tactile and visual cues (Winterbottom and Wagenfeld 2015; Souter-Brown 2014d).

sensory

Rich sensory experiences are essential to a therapeutic garden, with visual, tactile, and aromatic experiences typically considered during design (Marcus & Sachs 2014a; Winterbottom and Wagenfeld 2015). While visuals are the most common sense designed for in the garden, the best ones engage all the senses. Implementing planting and built/architectural elements based on textural qualities and touch stimulation is a tool commonly seen in the most successful gardens (Marcus & Sachs 2014a). Fragrances can also ease the mind and remind users of past experiences (Marcus & Sachs 2014a). When a garden is designed solely for its visual quality, it misses out on untapped opportunities to fully engage its users in the space, thus reducing their stress.

spatial

Therapeutic gardens' spatial design and layout play a significant role in fostering well-being and reducing stress. Arranging the garden into different "rooms" allows for varying levels of privacy and activities which users prefer, such as central open spaces for socializing or smaller, more secluded areas for quiet reflection (Winterbottom and Wagenfeld 2015; Reese et al., 2020; Lau and Yang 2009). Topographic considerations are also factors relevant to spatial design. Landform changes can enhance biodiversity by providing more opportunities for habitat while offering visual intrigue and increasing a sense of depth for users to appreciate (Winterbottom and Wagenfeld 2015). Lastly, spaces for light exercise should be incorporated, given the benefits of physical activity to stress relief and mental health promotion (Marcus & Sachs 2014a; Han 2021; Foellmer, Kistemann, and Anthony 2021; Felappi et al. 2020).

green infrastructure systems

As campuses look to improve students’ mental health through green spaces utilizing the principles of therapeutic gardens, the environment’s health should be prioritized as well. According to Felappi et al., “complex health and ecological challenges should be addressed through holistic systems-thinking that recognizes the interconnections between the health of humans, animals, and the environment” (2020, 2). Ecologists, environmentalists, and students value this approach. Through student-led assessments, researchers have concluded that sustainable developments are often valued more than less eco-conscious spaces (Reese et al., 2020). Adopting ecologically sensitive design strategies complies with action plans beyond the campus setting as cities are looking at sustainable greening systems to combat the effects of climate change (Krasilnikova, Zhuravleva & Zaika 2021). To address these environmental issues and design spaces users take pride in, green infrastructure (GI) has become a popular technique for designers, mimicking natural systems to help manage stormwater, maintain clean air and water, and provide habitat for wildlife (Venkataramanan et al. 2019; Ryan 2018). Utilizing GI to improve the environment’s health ultimately improves the health of communities and individuals, too, with fewer flood events and stress due to economic loss (Venkataramanan et al. 2019). There are a variety of GI techniques designers incorporate into their projects, these strategies include:

- Water Harvesting Containers
- Bio-Infiltration Basins
- Rain Gardens
- Tree Plantings
- Permeable Pavement
- Green Roofs

water harvesting containers	bio infiltration basins	rain gardens	tree plantings	permeable pavement	green roofs	benefits of green infrastructure types
						yes maybe no
						reduces water treatment needs
						improves water quality
						reduces gray infrastructure needs
						reduces flooding
						increase available water supply
						increases groundwater recharge
						reduces salt use
						reduces energy use
						improve air quality
						reduces atmospheric carbon
						reduces urban heat island
						reduces noise pollution
						urban agriculture
						improves habitat
						cultivates public education opportunities

Figure 2.29 Utility Benefits of Different Green Infrastructure Strategies. Adapted From (CNT 2010).



chapter 3

methodology

overview

The methods informing the projective designs include an analysis of two branches of literature, four precedent studies, and site analyses conducted at the campus and site-specific scales. The first literature analysis focused on designing therapy gardens was performed to pull key design considerations to include in the final framework. From there, an analysis of the literature included in *Artful Rainwater Design* by Echols & Pennypacker (2015) was performed to understand the leading research in designing green infrastructure as an art and using it to create an enjoyable user experience. Next, four precedents were studied, analyzing existing areas on college campuses that successfully created a unique sense of place by artistically utilizing green infrastructure and making it the focal point of the space's design. The information uncovered in the selected literature analysis and four precedent studies were used to formulate an overarching design framework and serve as the base for the projective designs. The final method, site analysis, identifies site conditions for the two projective design sites and is combined with the design framework adapted from the literature and precedent studies to create a projective design most fitting for each site. Figure 3.02 highlights the various conditions that will be evaluated for the International Student Center and Peters Recreation Center sites.

Chapter 3 Page Break Aerial Shot of Howard University Campus (Wikimedia Commons 2012). Used Under Creative Commons.

Figure 3.01 Adirondack Mountain Wildflowers (The Library of Congress n.d.). Used under Creative Commons.



methods process

literature analysis

1. Therapy Garden Design

Defining The Core Principles of Therapy Gardens

- Nature
- Movement
- Spatial
- Sensory

2. Artful Rainwater Design

Adding Amenity to Green Infrastructure

- Education
- Recreation
- Safety
- Aesthetic Richness

precedent studies

1. Southwest Recreation Center at the University of Florida

- Summary
- Amenity Assessment

2. Stephen Elper Hall at Portland State University

- Summary
- Amenity Assessment

3. G.B. Dealey Center for New Media at University of Texas Austin

- Summary
- Amenity Assessment

4. Underwood Family Sonoran Laboratory at The University of Arizona

- Summary
- Amenity Assessment

site analysis

1. K-State Campus Conditions

- Campus Watershed
- Campus Green Infrastructure
- Local Climate

2. Peters Recreation Center Specific Conditions

- Topography
- Soils
- Hydrology
- Vegetation
- Circulation
- User Analysis
- Building Programming
- Design Opportunities

3. International Student Center Specific Conditions

- Topography
- Soils
- Hydrology
- Vegetation
- Circulation
- User Analysis
- Building Programming
- Design Opportunities



outcomes

projective design

1. Redevelopment of Peters Recreation Center

2. Redevelopment of the International Student Center

Figure 3.02 Methodology + Process Diagram (Tilley 2025).

part 1

literature review analysis

therapeutic gardens

The background chapter of this report contains a literature review that focuses on the mental health of college students, various health benefits of therapeutic gardens, and green infrastructure types and their associated utility. Building off this, an analysis and summary were completed to identify design considerations within the literature review. The study of the design considerations within the literature is highlighted in Figure 3.03, identifying the core design principles of therapeutic gardens and their functioning pieces based on information conveyed in the literature. The following summary highlights design considerations derived from the literature and categorizes them into objective headings that form the overarching experience.

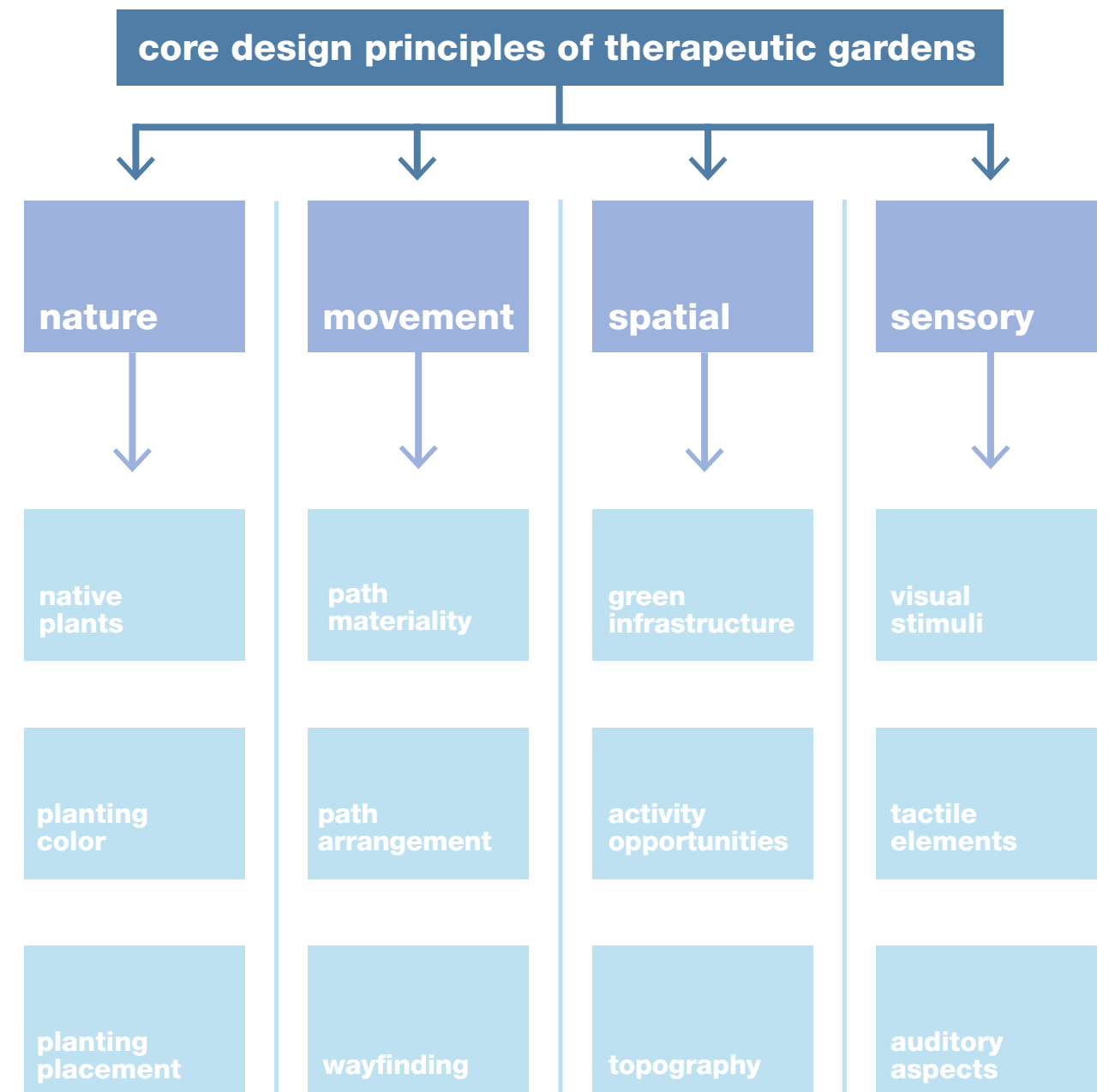


Figure 3.03 Therapeutic Gardens Core Design Experiences (Tilley 2025).



nature

native plants

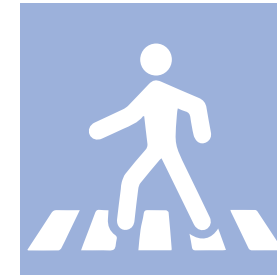
- Do not require fertilizers to thrive
- Require less maintenance
- Provide habitat and attract wildlife

planting color

- Cool colors help establish soothing environments
 - Blues, greens, purples, and whites
- Prioritize soft contrasts in color to generate fascination
- Consider seasonality of planting colors
- Enhance place-making with colors that align with campus branding

planting placement

- Preserve mature vegetation if possible
- Group plantings based on similar water needs
- Incorporate a gradient of groundcover types and shrubs to add depth
- Create hidden views to invite exploration
- Movable planters create a fresh spaces that adapt to the seasons
- Frame entrances and views with visually prominent (taller) plantings
- Taller plantings should be placed around intimate areas to create privacy
- Plantings should be placed to screen unsightly elements and utilities
- Tree plantings should promote opportunities to sit in the sun or shade



movement

path materiality

- Concrete with 1/8" joints provide the most accessible paths
- Concrete or textured stone unit pavers with tight joints are more aesthetic ADA compliant paving options
- Permeable or porous pavements increase stormwater infiltration
- Brick, smooth-cut stone, slate, and river rocks should be avoided due to their slickness when wet

path arrangement

- Straight paths are functional and legible
- Meandering paths offer more therapeutic relief
- Gentle curves encourage slowing down and experiencing nature

wayfinding

- Primary path edges should rise 6+ inches for tactile and visual clues
- Soft contrast in color and texture draw attention and help with wayfinding
- Darker, heat resistant, pavements combat glare and heat retention
 - Do not to incorporate strong dark pavements
- Primary paths should be wider than secondary paths for legibility
 - Primary paths must be 6-8 feet in width and no path should be less than 3 feet wide



spatial

green infrastructure systems

- Systems like bioretention and infiltration basins require adequate space
- G.I. systems should be closely located near seating areas for visibility

activity opportunities

- Group and private gatherings should be designed for with spaces of different sizes and levels of visibility
- Quiet areas allows users to reflect in peace
- 'Rooms' designed at varying sizes help promote different functions
- Open spaces for group activities and combat feelings of isolation
- Open spaces that include opportunities for people watching
- Walking loops or trails for light exercise

topography

- Berms can help direct stormwater into G.I. systems
- Rolling topography helps enhance biodiversity
- Mounds can help block out noise from the surrounding environment



sensory

visuals

- Select plants based on the pops of eye-catching color they offer
- Prioritize subtle changes in color for passive engagement of the mind
- Textured materials provide an eye-catching detail

tactile

- Consider the tactile quality of plants and specify plantings that can withstand human interaction
- Using natural landscape materials promotes interaction with the space

auditory

- Tall grasses rustle in the wind and create soothing sounds
- Built materials should exert pleasing sounds during rain events or human interactions
- Specify trees and native plants that attract birds, squirrels, and butterflies

part 1

literature review analysis

artistic green infrastructure

While green infrastructure and artistic green infrastructure achieve the same in terms of utility, what sets artistic green infrastructure apart is its provided amenities. These amenity features help draw the public’s attention, establish interest in the designed systems, and celebrate stormwater as a core component of a project’s design. In Artful Rainwater Design, four key amenity goals are identified. These goals are education, recreation, safety, and aesthetic richness (Echols & Pennypacker 2015).

Understanding the ways to design around these goals, each section includes two or three objectives that help achieve these overarching goals, creating an amenity. These objectives express that a design can promote education, recreation, safety, and aesthetic richness in various ways. Still, it must ultimately integrate at least one of the objectives to promote the overarching amenity in the design. Under these different objectives, important design guidelines and considerations are listed. The following section translates the information showcased in Figure 3.04 into four design guideline sheets representative of each goal, as noted by Echols & Pennypacker (2015).

education

recreation

safety

aesthetic richness

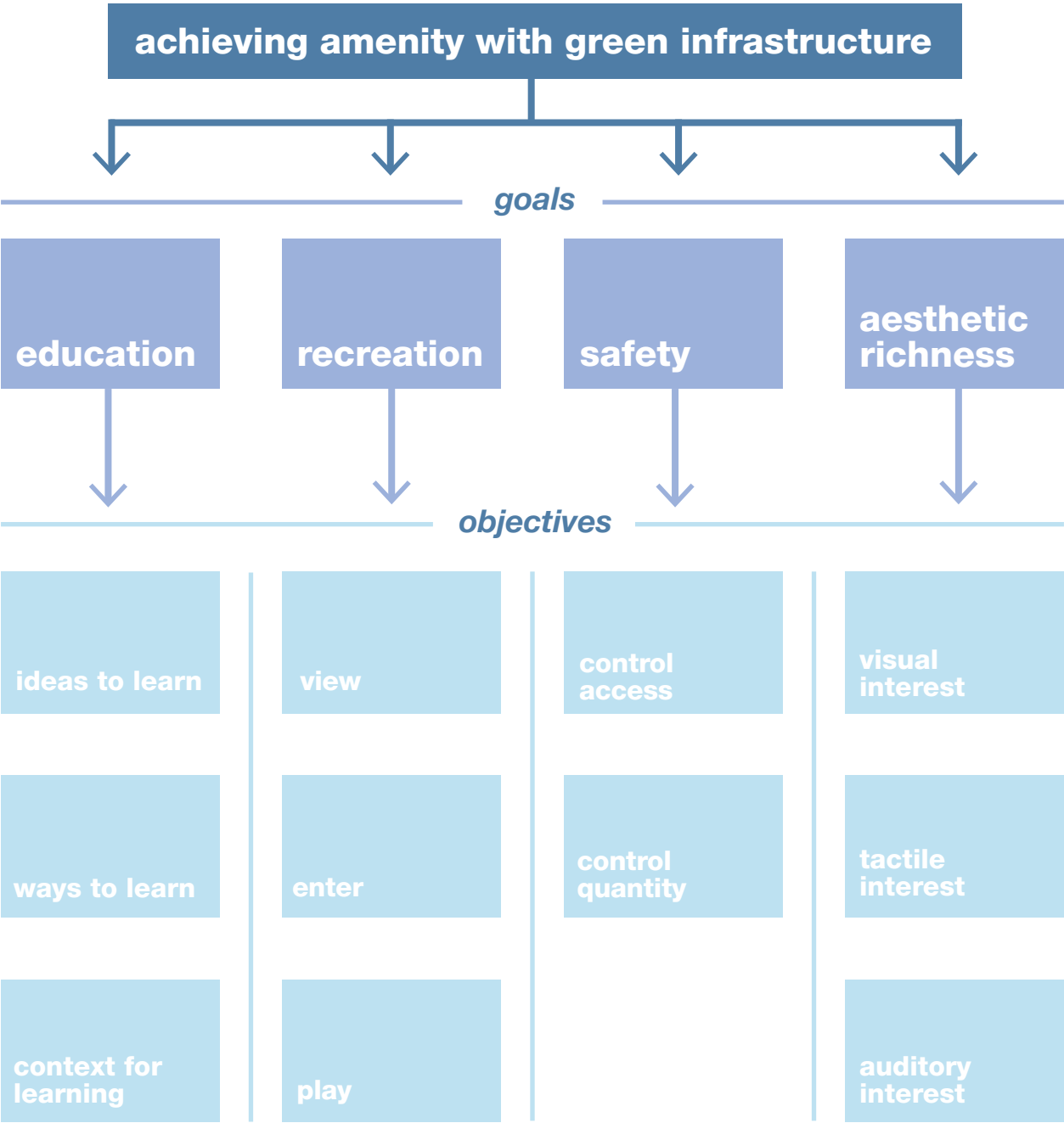


Figure 3.04 Ways To Achieve Amenity with Green Infrastructure (Tilley 2025).

education

ideas to learn	
hydrologic cycle	Make stormwater trails legible. Tell a compelling story. Use expressive hydrologic symbols.
historical water condition	Make stormwater trails legible. Integrate related site artifacts. Tell a compelling story. Use expressive symbols of historical conditions.
water treatment types	Make stormwater systems legible. Make stormwater systems playful or intriguing. Include a variety of systems.
riparian plant types	Provide a variety of visible plant types.
riparian wildlife	Use plants that provide wildlife food. Provide different water depths. Create shelter for wildlife.
ways to learn	
signage	Provide simple signage with clear graphics, minimal text, and color that attracts visitors.
programming	Design treatment systems to invite educational games or activites.
context for learning	
visibility	Create systems that are visible and legible. Create visual interest by varying appearances of stormwater system parts.
gathering	Create a areas to gather, or sit near systems.
interactivity	Create systems that are touchable. Create designs that encourage exploration.

Figure 3.05 Education Design Objectives and Guidelines. Adpated from Echols & Pennypacker (2015).



Figure 3.06 Educational Public Art (IRIS22 Productions & RDG Planning & Design 2010). Used with permission

recreation

view	
pass by	Provide paths in strategic locations that ensure encounters with systems. Connect on-site trails to off-site trails and destinations that provide encounters with systems.
pause	Create overlooks with views of systems. Create destination points related to systems.
rest	Provide seating using walls, benches, or tables and chairs with views of systems.
enter	
wayfinding	Provide clear points of entry into systems. Make entry points visually inviting or intriguing.
access	Make entry points easily accessible. Provide places to sit in systems.
play	
explore	Provide a variety of small and large places play or explore. Make areas that invite climbing and physical exploration while cautious of safety.
interact	Create stormwater systems that can be modified by the user (i.e. small movable rocks).

Figure 3.07 Recreation Design Objectives and Guidelines. Adpated from Echols & Pennypacker (2015).

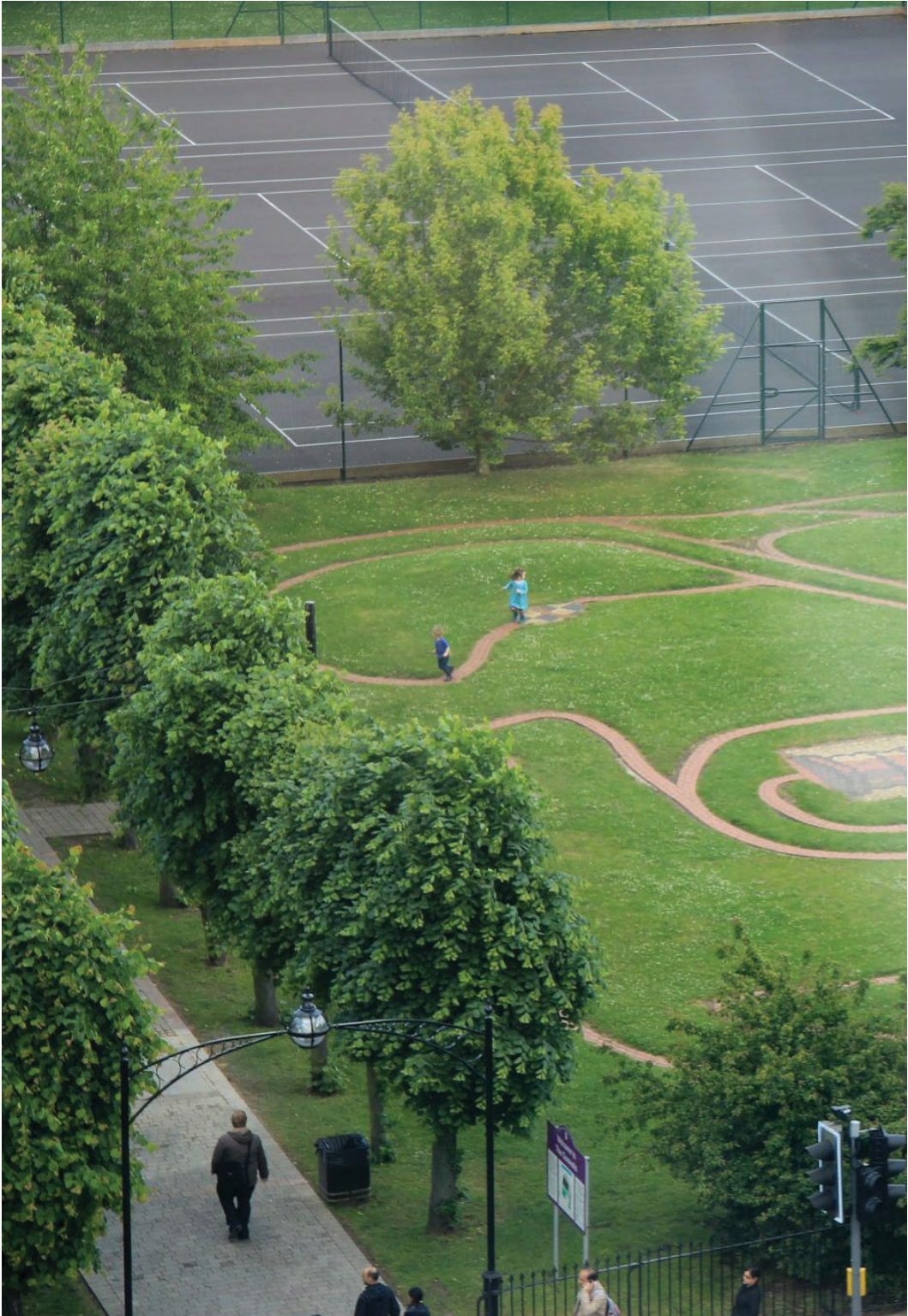


Figure 3.08 Landscape Design with Recreational Programming, Legible Entry, and Opportunities to Observe (Roe 2012). Used under Creative Commons.

safety

control access	
vertical barrier	Provide walls, screens, or railings that allow views but prevent access to systems. Provide upland, riparian, and wetland plant massing that allows views but prevents access.
horizontal barrier	Use bridges, boardwalks, or platforms to allow users to view systems from above.
water containers	Use water-themed aboveground water storage such as cisterns or rain barrels.
control quantity	
depth	Do not collect stormwater in large centralized storage facilities. Disperse stormwater into shallow storage using flow-splitters or tiered basins. Limit water depth by creating horizontal space for water to spread. Limit water depth by adding river stones to basins where people have access.
velocity	Do not collect stormwater in large centralized storage facilities. Disperse stormwater into shallow storage using flow-splitters or tiered basins. Create “water breaks” to slow speeds by abruptly changing flow direction. Slow water by creating small waterfalls.

Figure 3.09 Safety Design Objectives and Guidelines. Adpated from Echols & Pennypacker (2015).



Figure 3.10 Boardwalk with Railing to Promote Safe Circulation and Ecourage Closer Interactions with Nature (heat13her 2013). Used under Creative Commons.

aesthetic richness

visual interest	
point	Create basins as a focal point or key feature. Create visual emphasis on stormwater direction change using scuppers, basins, cisterns, etc.
line	Use downspouts, runnels, bioswales, etc. to draw attention to the line of rainwater trails.
plane	Stack horizontal and vertical planes to create visual interest of water flowing over surfaces and over edges.
volume	Create visual interest or themes with basins that hold plants and water (sunken, raised, orthogonal, curved, small, or large).
color/texture	Contrast natural elements (plants and rocks) with artificial elements (steel and concrete).
axis	Create stormwater trails using axial runnels, downspouts, bioswales, etc.
auditory interest	
volume	Create a variety of volumes by allowing water to fall from various heights onto different materials.
pitch	Create changes in pitch by allowing water to fall on different forms (flat blocks, drums, ponds).
rhythm	Create different rhythms by varying the amount and rate of water falling and flowing through systems.
tactile interest	
texture	Use a variety of water-related plants within reach. Use various water-related hardscapes (stones and driftwood) to provide interesting surfaces.
wetness	Allow people to touch stormwater in different forms such as flowing, falling, and splashing.

Figure 3.11 Aesthetic Richness Design Objectives and Guidelines. Adpated from Echols & Pennypacker (2015).



Figure 3.12 Aesthetically Rich Fountain with Textured Stone and Water Flowing into Pond (JR P 2012). Used under Creative Commons.

part 2

precedent study

Precedent studies were conducted to develop an understanding of suitable design solutions and grow an understanding of artistic ways green infrastructure has been implemented in projects on college campuses across the country. These projects were selected based on their context, requiring them to be located on a college campus, recognized within the book *Artful Rainwater Design* or by the American Society of Landscape Architects (ASLA) for design excellence, and utilize a treatment train of green infrastructure systems viewing it as an art.

The Southwest Recreation Center and Stephen Elper Hall precedents were highlighted in *Artful Rainwater Design*, and the G.B. Dealey Center for New Media and the Underwood Family Sonoran Laboratory are ASLA award-winning projects. These projects were evaluated based on the tools identified in *Artful Rainwater Design*, examining their amenity value through their incorporated educational aspects, recreation opportunities, safety, and aesthetic richness (Echols & Pennypacker 2015). Aside from evaluating the projects on these four themes, project location, context, year of completion, size, design team, stakeholders, budget, project awards, and water management features are also identified.

Precedents:

- Southwest Recreation Center at the University of Florida
- Stephen Elper Hall at Portland State University
- G.B. Dealey Center for New Media at the University of Texas Austin
- Underwood Family Sonoran Laboratory at The University of Arizona

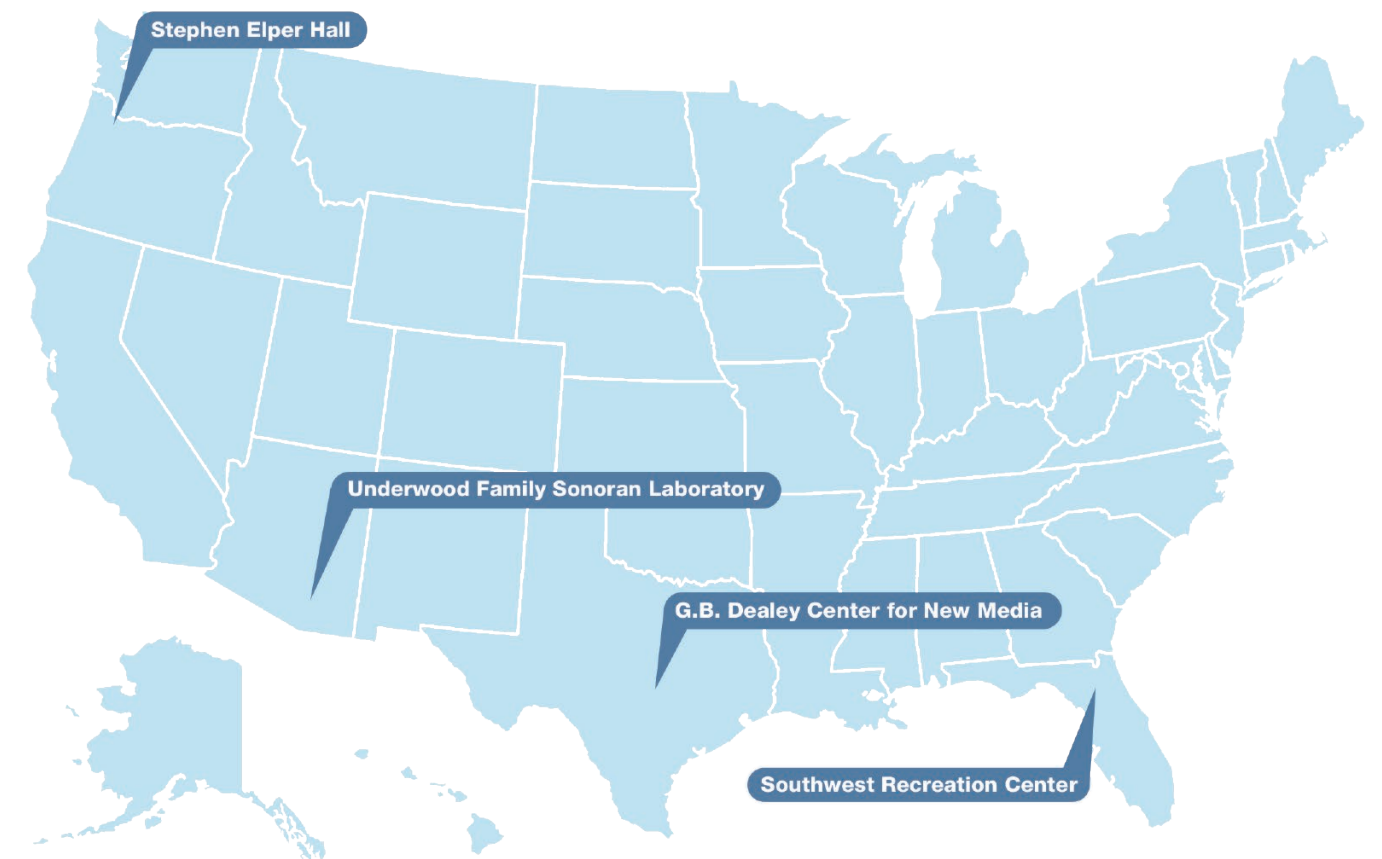


Figure 3.13 Map of Precedent Locations (Tilley 2025).

precedent 1

Southwest Recreation Center

University of Florida



Figure 3.14 Southwest Recreation Center Entrance
(IRIS22 Productions & RDG Planning & Design 2010). Used with permission

Project Description

Led by RDG Planning & Design, the Southwest Recreation Center redevelops the University of Florida's communal fitness space to enhance programming opportunities while meeting municipal stormwater regulations, ensuring that the design does not exceed preconstruction discharge rates, and treats water on site for quality and volume. The design incorporates downspouts that direct rainwater from the building's roof into capture bowls that, when overflowed, feed out into runnels that traverse the sidewalk surrounding the building into vegetated swales highlighted through colorful sculptures. Once reaching the swales, rainwater passes through a series of check dams and seven-tiered basins, where it is ultimately infiltrated or discharged into the municipal sewer system (Echols & Pennypacker 2015; Natural Resources Defense Council 2021).

Location

3150 Hull Road,
Gainesville Florida

Context

College Campus Recreation Center

Completed

August 2010

Size

52,000 square feet

Design Team

- RDG Planning and Design
- Walker Architects

Stakeholders

- University of Florida (UF)
- The College of Health and Human Performance
- UF Students and Faculty
- David Dahlquist (Sculpture Artist)

Budget

\$16,300,000 (Landscape + Building Expansion)

Project Awards

- 2012 NIRSA Outstanding Sports Facility Award
- 2011 Illuminating Engineering Society Regional Lighting Award
- 2011 Illuminating Engineering Society National Lighting Award of Merit
- 2011 LEED Gold Certification for New Construction

Water Management Features

- Downspouts
- Splash bowls
- Grate covered runnels
- Bioswales
- Rain gardens
- Check dams

Info Received From:
RDG Planning & Design n.d.
Natural Resources Defense Council 2021
University of Florida 2021
Echols & Pennypacker 2015

education



The Southwest Recreation Center features educational qualities by incorporating public art that helps create a legible rainwater system utilizing green infrastructure to convey the story of the hydrological processes on site. These sculptures, designed by David Dahlquist and titled “Thirst,” are inspired by the cellular structure of palmetto trees and are vibrantly colored to help draw visitors’ attention. By creating a connection with the palmettos, these sculptures educate people about the importance of prioritizing native planting and using landscaping to help water plants. To represent this concept clearly, these hollow sculptures contain a light post in their core that shines blue at night, representing the water drawn from the soil (Echols & Pennypacker 2015).

recreation



The designed systems surrounding the center are positioned to increase exposure to the public and create an intriguing element that draws people in. The sculptures are visible from the adjacent roadway and are close to the primary entrance. At the same time, the runnels, splash bowls, and bioswales are visible and a key part of the experience for those entering the center. By strategically placing these rainwater management and green infrastructure systems around the entrance, they encourage visitors to take the walking loop surrounding the building and become more involved with the landscape (Echols & Pennypacker 2015).



Figure 3.15 Rock-filled Runnel Feeding Into Vegetated Swale (IRIS22 Productions & RDG Planning & Design 2010). Used with permission



Figure 3.16 Steel Covered Runnels Spanning Sidewalk (IRIS22 Productions & RDG Planning & Design 2010). Used with permission

safety

This design lets users connect with the rainwater systems without compromising their safety. The runnels spanning the sidewalks in front of the buildings allow users to be part of the system, but their covered corten steel grates mitigate level changes and make the paths more manageable to walk across than exposed runnels. After the water passes through the runnel, it feeds into the bioswale, where larger plantings on the edges of the swale discourage users from entering (Echols & Pennypacker 2015).

aesthetic richness

Aesthetics are promoted through two outlets for this project: the vibrant six sculptures differing in color and the naturalized materials utilized to help guide the water through the sculptures. The intensity of the colors in the sculptures makes them an eye-catching feature, and the complexity of their pattern promotes intrigue. Similarly, the contrasting colors of the corten steel, the black river pebbles, and the light sandstone catch the attention of visitors. Yet, the repetition of the system across the site creates consistency and makes the landscape easy to understand (Echols & Pennypacker 2015).



Figure 3.17 Sculpture's Relationship with Stormwater Features
(IRIS22 Productions & RDG Planning & Design 2010). Used with permission

precedent 2

Stephen Elper Hall

Portland State University



Figure 3.18 View of Green Infrastructure Connections at Stephen Elper Hall (Echols 2004). Used with permission.

Project Description

Located on the campus of Portland State University and designed by Atlas Landscape Architecture and Mithun, this project created an alley space between two residence halls that addresses problems with combined sewer overflows (CSOs) by reducing runoff and capturing rainwater for reuse. The designed system directs rainwater from the roof of the residence halls into the alley via downspouts that feed into pebble-filled splash boxes. As the base of these boxes, water is discharged through scuppers that feed into runnels, guiding water into sunken flow-through planters. Beneath the surface of these gardens, a pipe directs water into a large underground cistern. Suppose the cistern fills and the flow-through planter is complete. In that case, water passes down the slope through a series of additional sunken planters that, in the case of heavy storm events, eventually send water into the storm sewer (Echols & Pennypacker 2015).

Location

1136 SW Montgomery Street,
Portland, Oregon

Context

Alley Between Two Residence Halls

Completed

August 2003

Size

20,000 square feet (courtyard only)

Design Team

- Mithun
- Atlas Landscape Architecture
- Interface Engineering
- KPFF Consulting Engineers

Stakeholders

- Portland State University (PSU)
- City of Portland
- PSU Students and Faculty

Budget

\$10,000,000 (Landscape + Building Renovation)

Project Awards

- 2006 American Society of Landscape Architects Merit Award
- 2005 City of Portland BEST Award for stormwater Management
- 2005 LEED Silver Certification, U.S. Green Building Council
- 2004 Builders & Contractors Pacific Northwest Chapter Excellence in Construction Award

Water Management Features

- Downspouts
- Splash boxes
- Runnels with permeable paving
- Sunken planters
- Cistern

Info Received From:

Echols & Pennypacker 2015

Mithun n.d.

Kwok, Alison, Britni Jessup, and Nicholas Rajkovich 2009

education



The design of the space conveys that rain is a valuable resource through designed planters that feed into each other upon filling up to maximize this resource. The sunken planters and granite unit pavers work to catch the users' attention and convey this message visually. Supplementing these design moves, a small sign with text and a diagram describing the function of the space is placed within the alley. Signage inside the first-floor restroom of the building informs the students that the toilets operate on harvested rainwater, spreading the message further (Echols & Pennypacker 2015).

recreation



The alley promotes recreation through built-in benches adjacent to the sunken planters that allow users to relax and view the plantings. Additionally, protected seating areas encourage visitors to enjoy the space during rain events and observe the path the rainwater takes (Echols & Pennypacker 2015).



Figure 3.19 View of Sheltered Seating with Anti-Skateboarding Guards (Echols 2004). Used with permission.



Figure 3.20 Sunken Planters are Connected via Stone Inlaid Runnels (Echols 2004). Used with permission.

safety



The sunken planters on the alley's edges, a potential hazard, are addressed in the design with concrete curbs surrounding them to discourage people from entering the planters and provide a secondary function, such as informal seating. Anti-skateboarding guards are installed along the concrete curbs and adjacent concrete block seating to prevent people from skateboarding on and falling into the planters (Echols & Pennypacker 2015).

aesthetic richness



Playing off of the existing forms, the design of the alley embraces a rectilinear geometry to complement its surroundings. The repetition of runnels to sunken planters along the treatment chain provides a sense of uniformity while incorporating granite blocks in the runnels adds a color-contrasting detail. The minor changes in color throughout the alley give just enough detail to create interest while allowing the deep greens of the plants to be readily seen (Echols & Pennypacker 2015).



Figure 3.21 Aerial View of Stephen Elper Alleyway (Echols 2004). Used with permission.

precedent 3

G.B. Dealey Center for New Media

University of Texas Austin



Figure 3.22 G.B. Dealey Plaza Aerial
(Barbe & Ten Eyck Landscape Architects n.d.). Used with permission

Project Description

Redeveloping a former parking lot, the plaza at the G.B. Dealey Center for New Media on the campus of UT Austin provides a high-functioning landscape that compliments the LEED Gold-certified building. Designed by Ten Eyck Landscape Architects, this project focuses on harvesting rainwater by guiding water from the building's roof and collecting air conditioning condensate into cisterns that sterilize the water through ultraviolet light. Rainwater collected from the roof first feeds into a recirculating bio-filtration fountain in the landscape that collects the first flush contaminants. At maximum capacity, a valve directs additional water to cisterns where it is stored for irrigation. During intense storm events when the cisterns reach their capacity, water backtracks to the biofiltration fountain and overflows into a bioswale along the street. The plaza also features permeable paving areas that allows water that falls directly on-site (excluding the roof) to filter directly into the ground ("The University of Texas at Austin G. B. Dealey Center for New Media" n.d.; "Belo Center for New Media" n.d.).

Location

300 W Dean Keaton Street
Austin, Texas

Context

University Courtyard

Completed

June 2012

Size

1.5 acres

Design Team

- Ten Eyck Landscape Architects
- The Lawrence Group
- Hines Irrigation
- Jose I. Guerra, Inc.

Stakeholders

- University of Texas Austin (UTA)
- Moody College of Communication
- UTA Students and Faculty

Budget

\$1,600,000 (Landscape)

Project Awards

- 2013 Texas ASLA Honor Award
- 2013 LEED Gold Certification, U.S. Green Building Council
- 2013 Austin Chapter American Institute of Architects Merit Award
- 2010 American Society of Landscape Architects Honor Award

Water Management Features

- Bio-filtration fountain
- Cisterns
- Bioswales
- Grate covered runnels
- Permeable pavement

Info Received From:
University of Texas Moody College of Communication 2013
Ten Eyck Landscape Architects n.d.
United States Green Building Council 2013
Landscape Architecture Foundation n.d.

education



The prominent fountain feature adjacent to the plaza space helps draw user attention to the site's relationship with water. Looking out across the courtyard, users can begin to make connections between how water traverses the site by noticing the terraced runnel systems. Supplementing the LEED Gold-certified adjacent building, users can make the connection that the landscape works in tandem with the building and employs sustainable tactics.

recreation



This courtyard was designed with recreation at the forefront alongside water management, making this a space that could be utilized as an outdoor classroom or for gatherings or performances. The design employs two different social spaces adjacent to each other. The open lawn is perfect for casual gatherings and performance opportunities, while the formal plaza can be used as an outdoor classroom. Aside from these two spaces, the terraced features and steps provide informal seating opportunities.



Figure 3.23 Steel Covered Runnels
(Barbe & Ten Eyck Landscape Architects n.d.). Used with permission

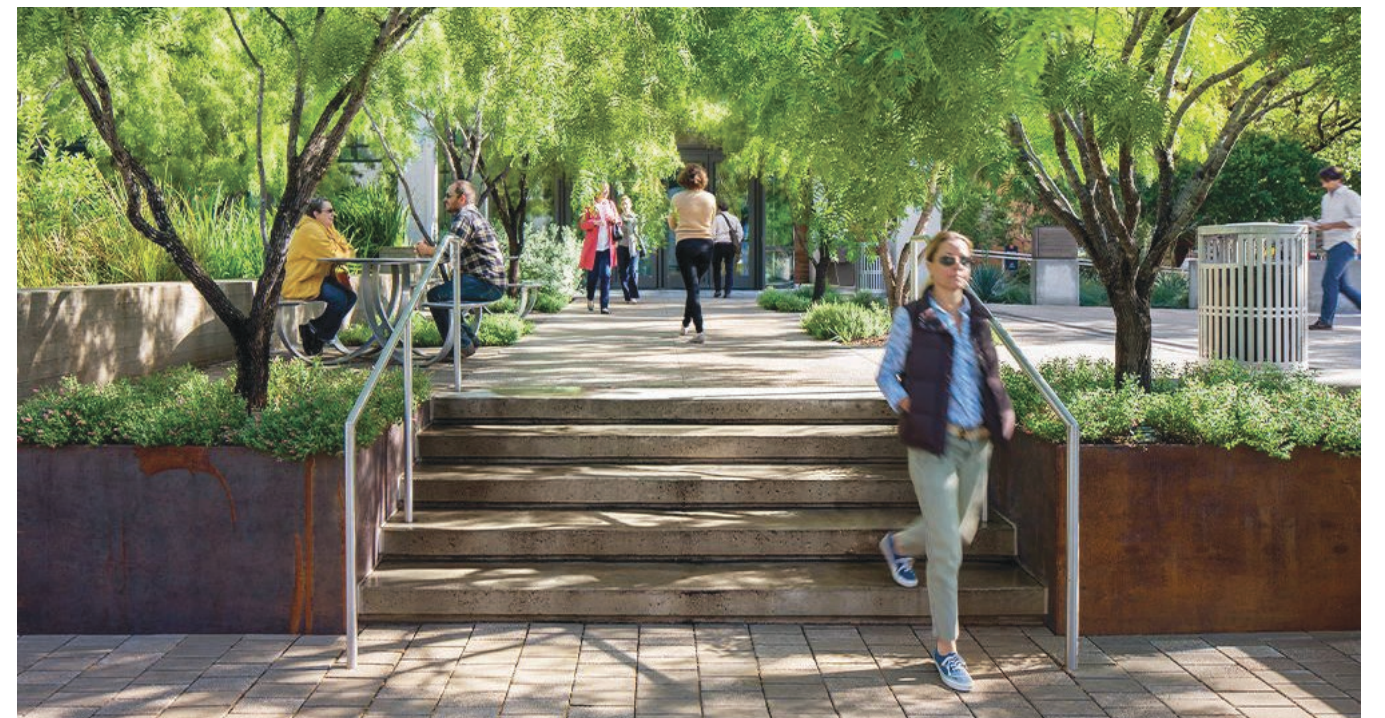


Figure 3.24 Corten Steel Features + Vegetation Coverage
(Timmerman & Ten Eyck Landscape Architects n.d.). Used with permission

safety

To promote accessibility, the site's perimeter includes a ramp that users can use as an alternative to the stairs, promoting a safe and convenient path for everyone. Additionally, the in-grade runnels are covered with corten steel grates that lay flush with the concrete to prevent tripping hazards. Half walls and curbs discourage users from entering the systems for the tiered sections of the runnels, leading to the bioswale at the lowest point and the fountain.

aesthetic richness

The design for the courtyard utilizes orthogonal geometry to create a harmonious connection with the adjacent building and maximize the amount of programmable space. While complimenting its context, the space stands out visually from others on campus, incorporating a site-specific plant palette and materials. The multicolored unit pavers and rusting corten steel are notable elements that provide visual delight, offering eye-catching color with raw materials. For plant material, the strong presence of live oaks helps make the space feel more human-scale, provide comfort in the heat, and cast interesting shadows on the ground.



Figure 3.25 Biofiltration Fountain Aerial View
(Barbe & Ten Eyck Landscape Architects n.d.). Used with permission

precedent 4

Underwood Family Sonoran Laboratory *University of Arizona*



Figure 3.26 Underwood Family Plaza Plan View with Permanent Pond
(Timmerman & Ten Eyck Landscape Architects n.d.). Used with permission

Project Description

Adjacent to the College of Architecture and Landscape Architecture at the University of Arizona, the Underwood Family Sonoran Laboratory entry plaza designed by Ten Eyck Landscape Architecture is a self-sustaining landscape thanks to its G.I. systems. It collects water from the building's roof, air conditioning condensate, and gray water from drinking fountains in a cistern to reuse for irrigation. When the cistern reaches maximum capacity, the excess water is directed out into the landscape through a downspout that feeds into a permanently present pond. When that pond overflows, the water enters a series of five micro-basins planted with a desert riparian mix. The last micro-basin in the series serves an additional use, functioning as an outdoor classroom and gathering space outside of storm events ("The University of Arizona Underwood Family Sonoran Laboratory" n.d.; "Underwood Family Sonoran Landscape Laboratory" n.d.).

Location

1040 N Olive Road,
Tucson, Arizona

Context

University Courtyard

Completed

2007

Size

1.2 acres

Design Team

- Ten Eyck Landscape Architects
- Jones Studio
- Evans, Kuhn & Associates
- Kunka Engineering
- Wass Gerke and Associates
- Carl Kominsky Landscape Architecture, Inc.

Stakeholders

- University of Arizona (U. of Arizona)
- The Robert and Richard Underwood Family
- College of Architecture and Landscape Architecture
- U. of Arizona Students and Faculty

Budget

\$1,050,000 (Landscape)

Project Awards

- 2010 American Society of Landscape Architects Honor Award
- 2009 Arizona ASLA President's Award
- 2009 Arizona ASLA Award of Excellence

Water Management Features

- Downspouts
- Bioretention basins
- Wetland pond
- Cisterns
- Permeable decomposed granite

Info Received From:

University of Texas Moody College of Communication 2013

Ten Eyck Landscape Architects n.d.

United States Green Building Council 2013

Landscape Architecture Foundation n.d.

education

The Underwood Family Sonoran Laboratory was designed as a demonstration landscape that can be monitored by the College of Architecture and Landscape Architecture for research and is rooted in educational elements. Informational signage on-site educates users on the history of the space and its reliance on the adjacent building to supply water, the guiding design principles, and the five demonstrated landscapes in the courtyard. Looking across the landscape, casual visitors can notice these different biomes defined by corten steel dividers and learn to recognize the plants in other contexts. During storm events, another feature visitors will notice is that the sunken outdoor classroom can double as a retention basin. For those interested in learning more about the project, the university has digital resources providing more in-depth information, with a web page discussing the quantitative landscape performance benefits and an attached educational guided tour through the space.

recreation

The courtyard features two primary recreational places with scattered informal seating across the site. On the west side, a plaza space with tables and benches functions as spill-out space for the College of Architecture and Landscape Architecture Building and serves as a spot where students can gather in small groups and study or take breaks between classes. Adjacent to the plaza on the east side, the sunken plaza space includes block bench seating on the perimeter with an open center, making it perfect for larger gatherings and as an outdoor classroom space.



Figure 3.27 Steel Screening Elements
(Timmerman & Ten Eyck Landscape Architects n.d.). Used with permission



Figure 3.28 Sunken Outdoor Classroom
(Timmerman & Ten Eyck Landscape Architects n.d.). Used with permission

safety

The Underwood Family Sonoran Laboratory courtyard design provides users with a perfect opportunity to get close to the designed water management systems while discouraging them from entering the systems. Curbs, low-rise walls, corten steel shields, and railings create clear circulation paths and prevent visitors from entering certain areas. Plantings strengthen this further around the wetland pond, allowing visibility while functioning as a barrier.

aesthetic richness

Utilizing a rectilinear form, the design of the landscape translates the design of the adjacent building's facade into the landscape through form and material usage. The most notable aesthetic element of the site is the high presence of rusting corten steel that compliments the green vegetation and delicate branching patterns of native mesquite trees. Another intriguing element of the site is the open-air walkways of the connected lab. These walkways feature gridded screening elements, making them feel separate yet part of the courtyard, creating an intriguing element that draws in the eye of those sitting outside.

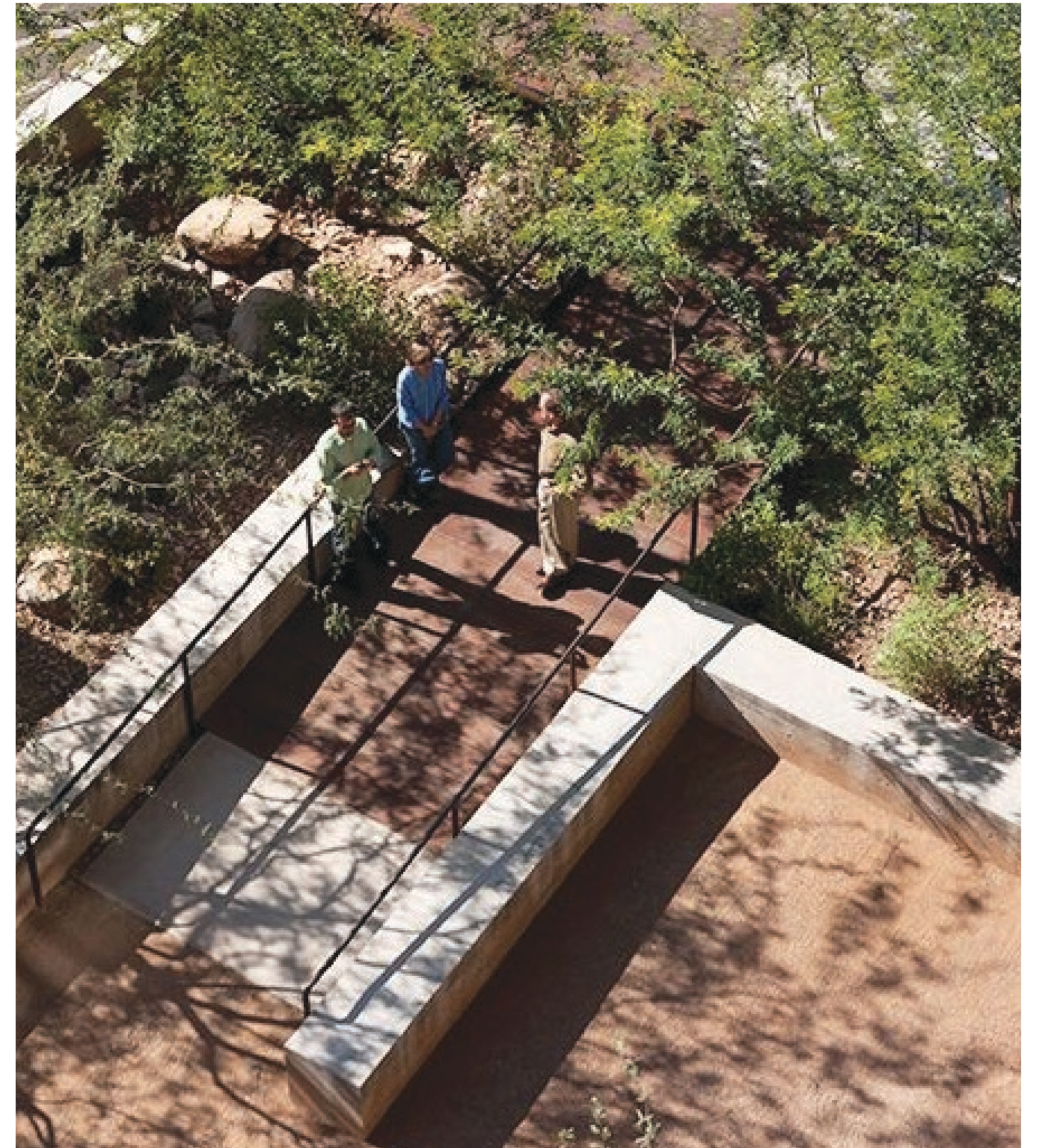


Figure 3.29 Built + Natural Material Relationship
(Timmerman & Ten Eyck Landscape Architects n.d.). Used with permission

	education	recreation
Southwest Recreation Center at the University of Florida	Promotes education through varying materials and including public art with vibrant colors to draw attention to the stormwater treatment system. The public art is inspired by the native vegetation.	Elements are located to draw users into the space and encourage them to take the walking path.
Stephen Elper Hall at Portland State University	Features educational signage in the alley and inside the adjacent building. Draws the users attention to stormwater systems through varying materials color and locating seating near systems.	Promotes leisure activity with built-in benches that exposed and covered for user's to enjoy at any time.
G.B. Dealey Center for New Media at the University of Texas Austin	Utilizes materials to drawn user's attention to the rainwater systems at play and is designed to compliment the connected LEED Gold-certified building.	Includes an outdoor classroom, plaza with tables and benches, and an open lawn space. Terraced elements and seating walls also offer additional resting opportunities.
Underwood Family Sonoran Laboratory at The University of Arizona	Includes educational signage, an online web page with information about the project, a guided video tour, and undergoes monitoring by students and faculty for research purposes.	The outdoor classroom and plaza allow the space to be used for educational gatherings and to be used leisurely by students and faculty.

Figure 3.30 Comparison of Precedent Projects Amenity Aspects (Education, Recreation, Safety, and Aesthetic Richness)(Tilley 2025).

safety	aesthetic richness
Encourages users to get close with systems but larger planting along the edge of swales to discourage users from entering. Covered runnels across the sidewalk promote accessibility.	Aesthetics are promoted through six sculptures with varying vibrant colors. Natural materials enhance visuals by using contrast with light sandstone, black river pebbles, and corten steel.
Uses curbs, block seating, and anti-skateboarding guards to discourage users from entering the sunken planters and avoid accidents.	Utilizes an orthogonal geometry and features varying materials to add interest through color and texture but replicates treatment systems for legibility.
Includes a ramp with the supporting railing and covered runnels for accessibility. Low-rise and seating walls discourage users from entering planted areas.	Features an orthogonal geometry and adds interest through a site specific plant palette, over-story trees, and rusting corten steel.
Includes a ramp with the supporting railing for accessibility. Informal barriers are created with curbs, steel dividers, block benches, seating walls, and planting.	Features an orthogonal geometry and adds interest through patterned screening elements, rusting corten steel, vibrant plantings, and a pond that uses harvested water.

green infrastructure systems

	bioswale	rain garden	detention basin	permeable pavement	water harvesting	tree plantings
Southwest Recreation Center at the University of Florida						
Stephen Elper Hall at Portland State University						
G.B. Dealey Center for New Media at the University of Texas Austin						
Underwood Family Sonoran Laboratory at The University of Arizona						

Figure 3.31 Comparison of Precedent Projects Green Infrastructure Systems and Supporting Features (Tilley 2025).

supporting features

	runnels	downspouts	check dams	splash boxes
Southwest Recreation Center at the University of Florida				
Stephen Elper Hall at Portland State University				
G.B. Dealey Center for New Media at the University of Texas Austin				
Underwood Family Sonoran Laboratory at The University of Arizona				

precedent findings

Cross-comparing the four precedent projects, prominent design considerations relating to the four goals that create amenities were identified. These design considerations were selected based on their strong presence across the four projects. For educational value, these projects showcased strategies that include implementing educational signage, public art with an educational narrative, and engraved landscaped elements that portray a narrative. Associated with recreation, the assessed projects all provided a variety of seating opportunities both in their typology and microclimates and located green infrastructure elements near gathering and walking areas to increase their exposure. The projects also provided open space that users can manipulate and use for pop-up-style events. As for safety, all projects expressed the importance of avoiding tripping hazards when designing runnels with an observed commonality of creating implied barriers with low-rise elements and strategic plantings. Lastly, all the selected projects portrayed aesthetic richness and appeared to prioritize it heavily in their designs. The projects exhibited repetition and orthogonal landscape designs, subtle contrasts between built and natural elements, emphasized incorporating human scale elements to make the landscape feel more comfortable to users and created vertical elements (including vegetation) to develop a sense of privacy.

education

- include engaging informational signage
- incorporate public art with informative narratives
- engraved landscape elements to portray narratives

recreation

- provide a variety of seating types in various microclimates
- establish open space for users to utilize
- locate green infrastructure near paths to draw in users

safety

- create implied barriers with low-rise elements
- place larger plantings on the edges of systems
- avoid tripping hazards and provide accessible routes

aesthetic richness

- repeat systems and use grids for easy navigation
- create contrast between plant and built materials
- use human-scale trees with unique branching patterns
- add screening elements for privacy and fun shadows

Figure 3.32 Core Design Takeaways from Precedent Projects in relation to Designing for Amenity (Tilley 2025).

design framework

Compiling the literature analyses and findings from precedent studies, design frameworks were created for the various amenity aspects (education, recreation, safety, and aesthetic richness). These frameworks intertwine adding artistic flares to green infrastructure systems with essential safety and other practical design considerations of therapeutic gardens. These frameworks are not checklists for everything that needs to be incorporated into the design but highlight the different options and showcase various design opportunities. These frameworks will be referenced throughout the design process and utilized with the findings from the following site analysis section to generate the projective designs.

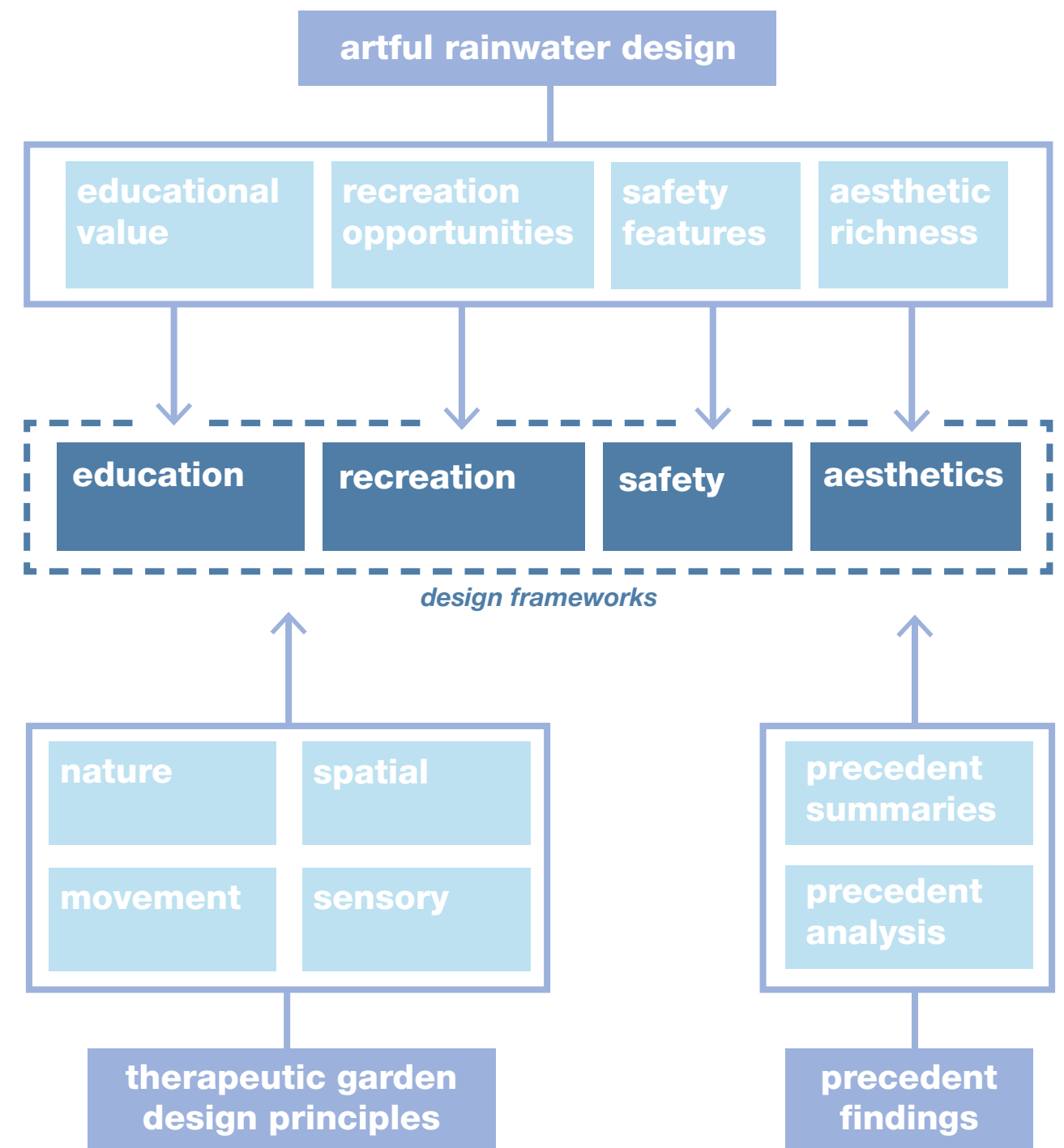


Figure 3.33 Breakdown of How Methods Influenced Design Frameworks (Tilley 2025).

comparative framework - education

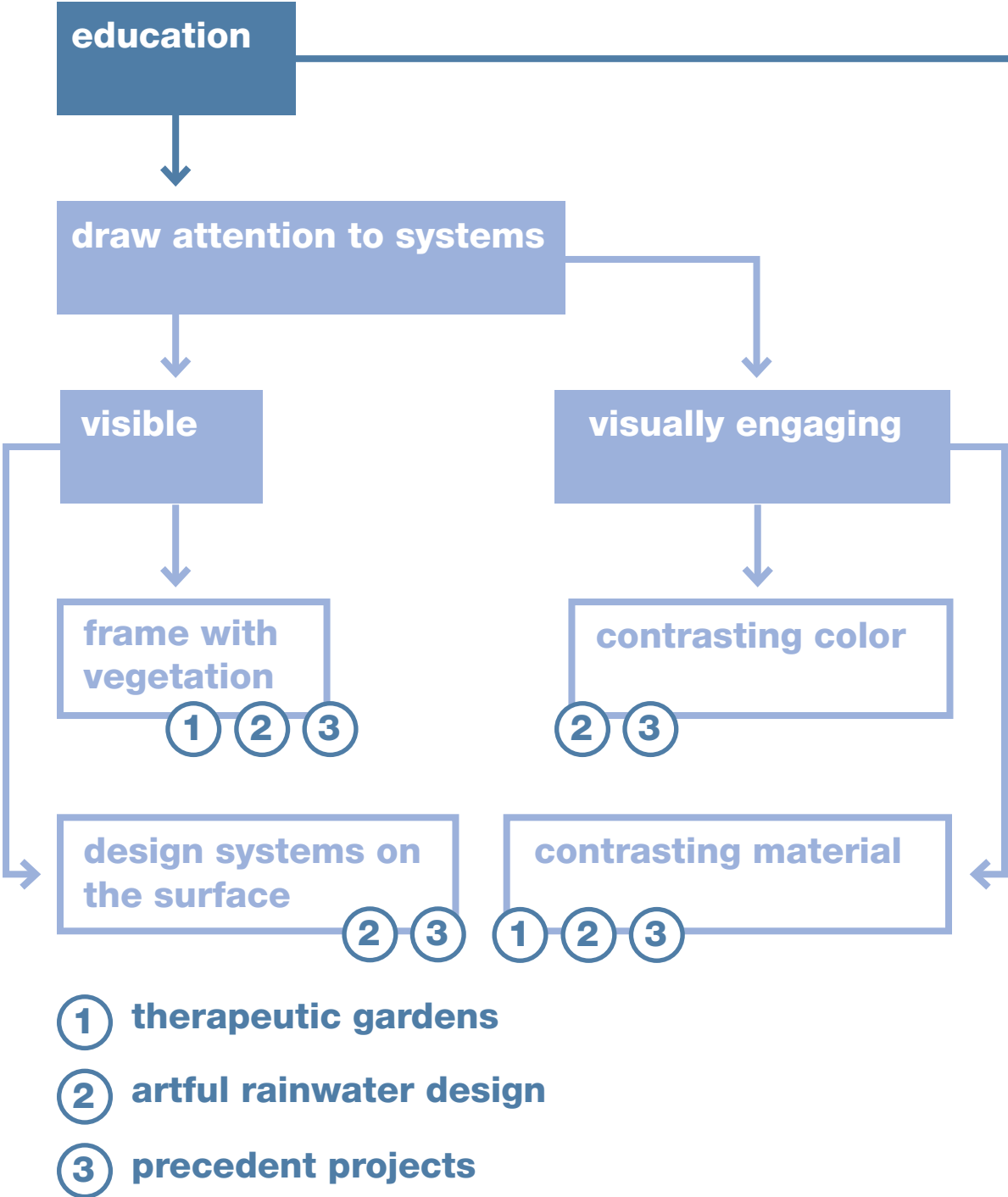
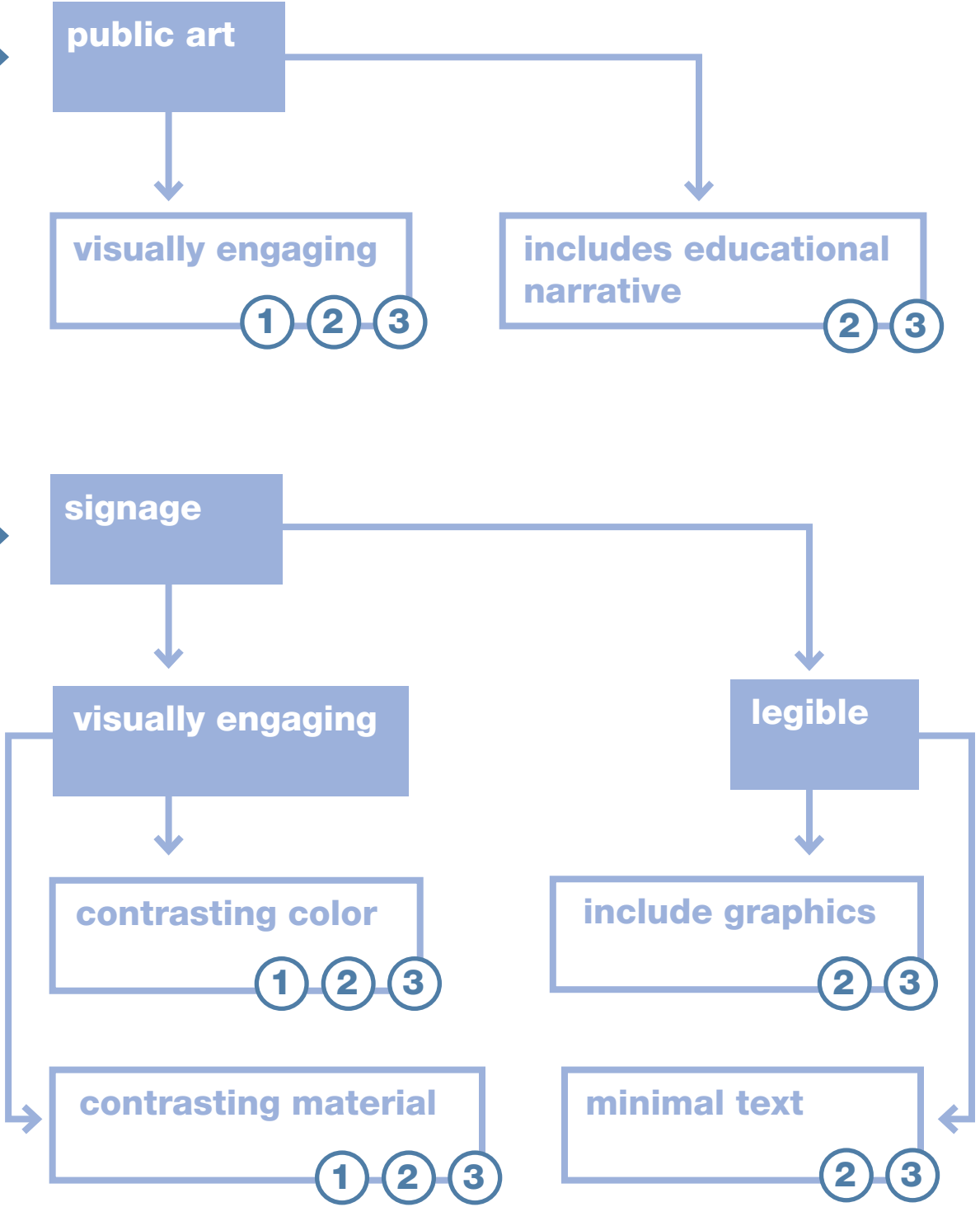
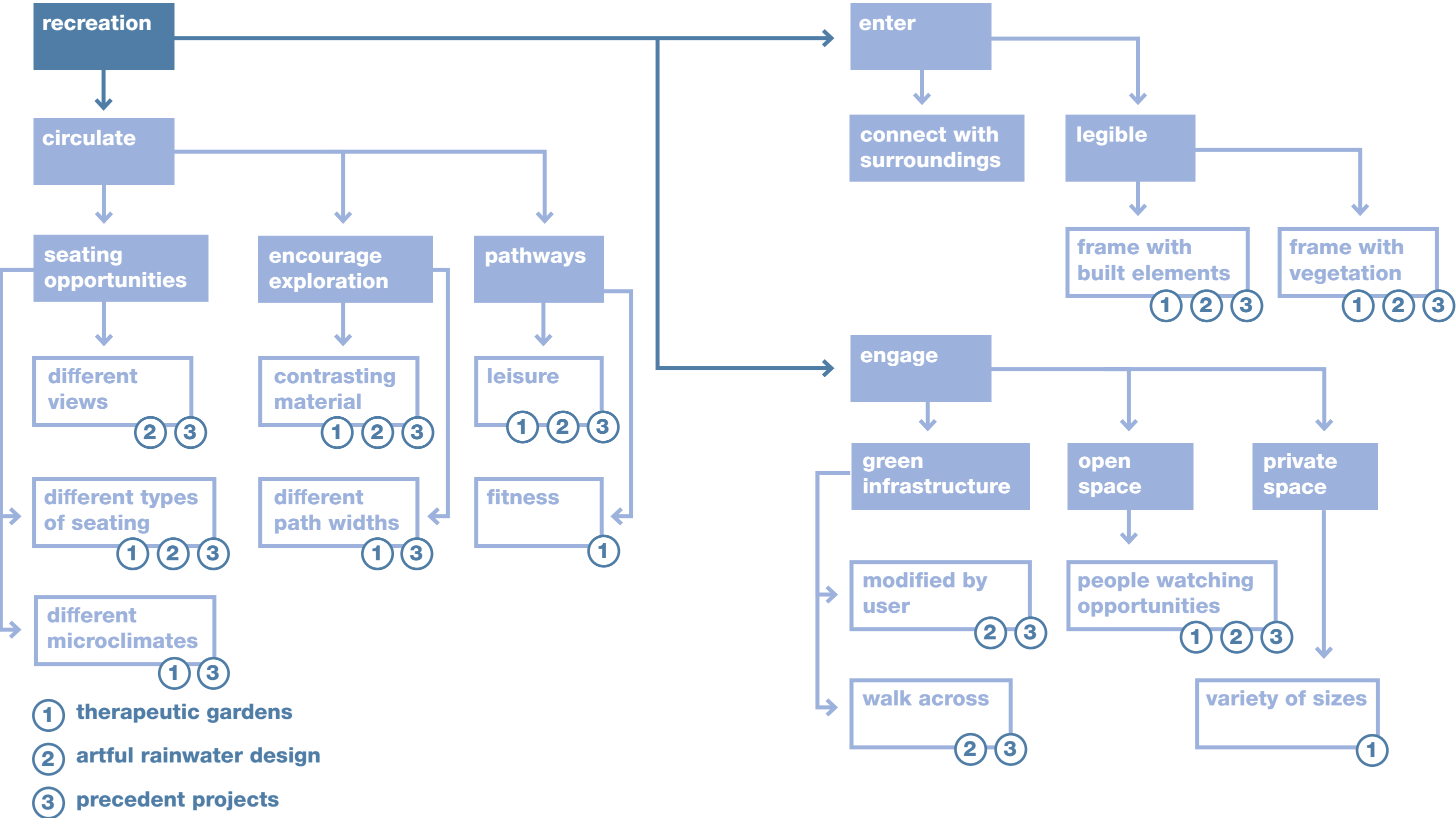


Figure 3.34 Comparative Framework for Incorporating Education Based on Literature Findings and Precedent Studies (Tilley 2025).



comparative framework - recreation



comparative framework - safety

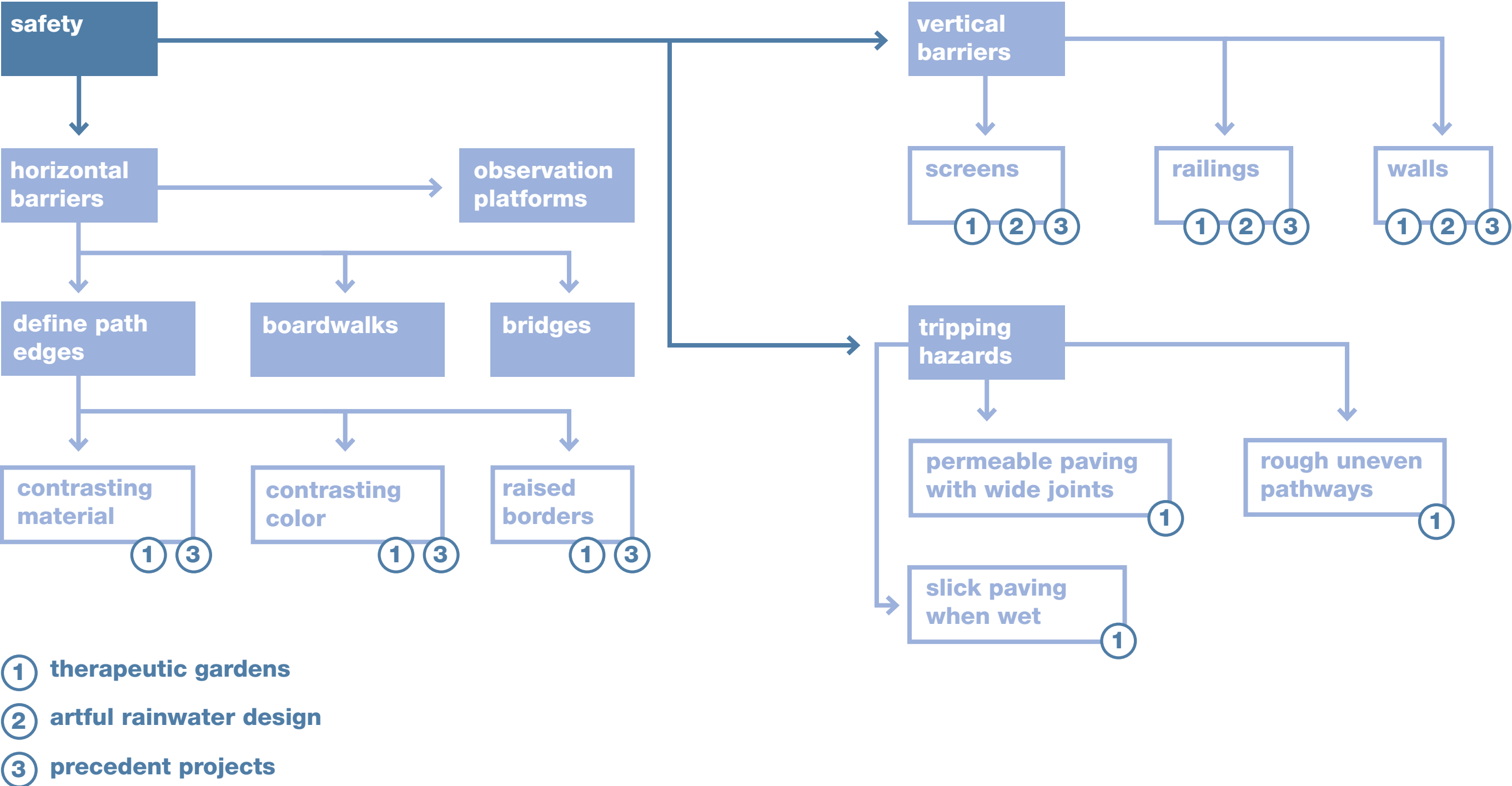


Figure 3.36 Comparative Framework for Incorporating Safety Based on Literature Findings and Precedent Studies (Tilley 2025).

comparative framework - aesthetics

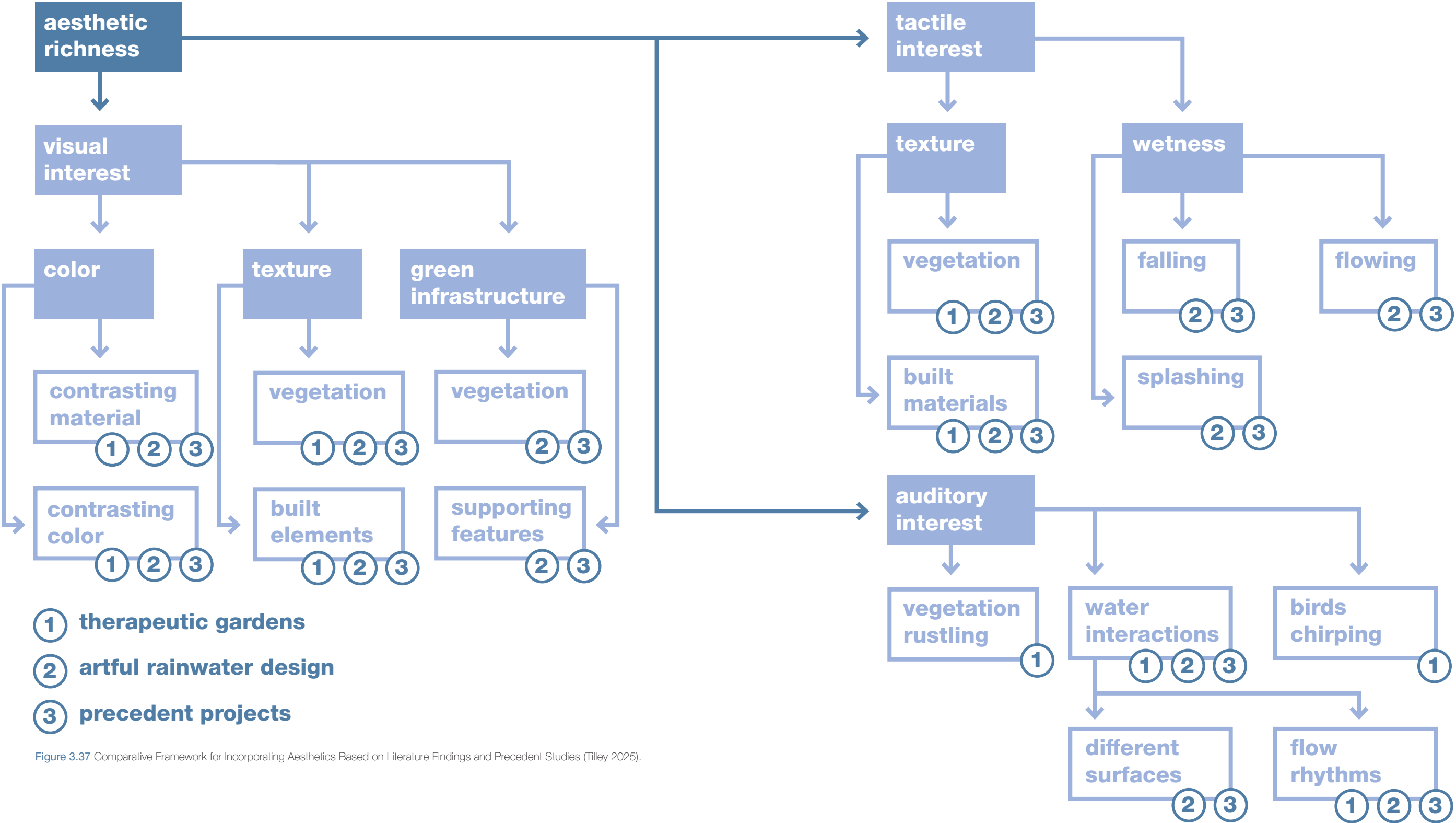


Figure 3.37 Comparative Framework for Incorporating Aesthetics Based on Literature Findings and Precedent Studies (Tilley 2025).

part 3

site analysis

Kansas State University in Manhattan, Kansas, is located in the northeast portion of Kansas within Riley County. The campus rests in the heart of the town, surrounded by residential homes and apartment complexes primarily occupied by college students. The two selected site locations lay within two distinctly different areas of campus and cater to varied groups, with the Peters Recreation Center near the Jardine Community and the International Student Center adjacent to the Derby Community. The overlying connection between the two sites is their relationship with the Campus Creek waterway, with the Peters Recreation Center site located at the top of the stream addressing the stream's initial intake and the International Student Center situated towards the end of the stream's path with a strong visual connection with the waterway.

The following site analysis analyzes the campus' watershed and hydrology, existing green infrastructure locations, and climate at the campus scale before assessing the sites individually. Specific to each site location, topography, soils, hydrology, vegetation, circulation, user analysis, and building programming are assessed. An opportunities diagram is drafted from the individual site assessments to represent effective design strategies based on the area's existing conditions.

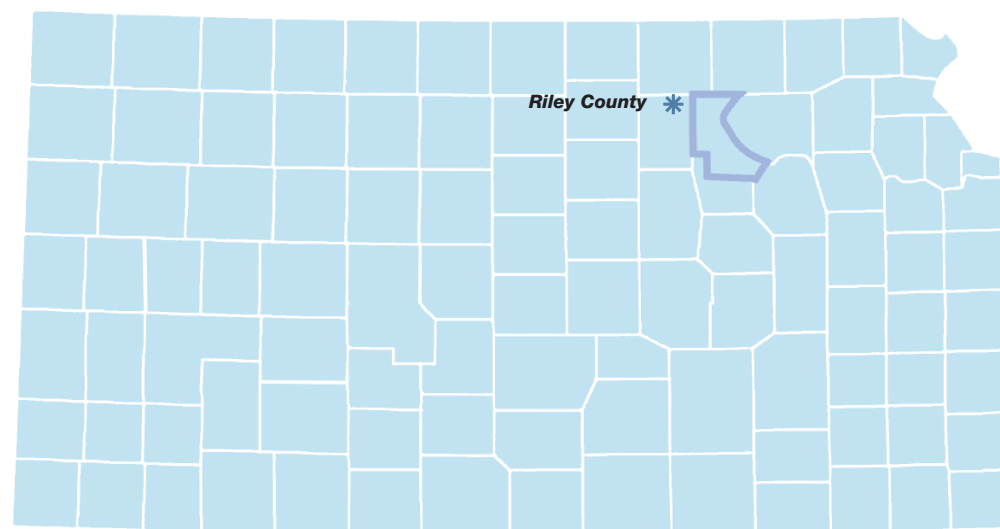


Figure 3.38 Riley County Location within Kansas (Tilley 2025).

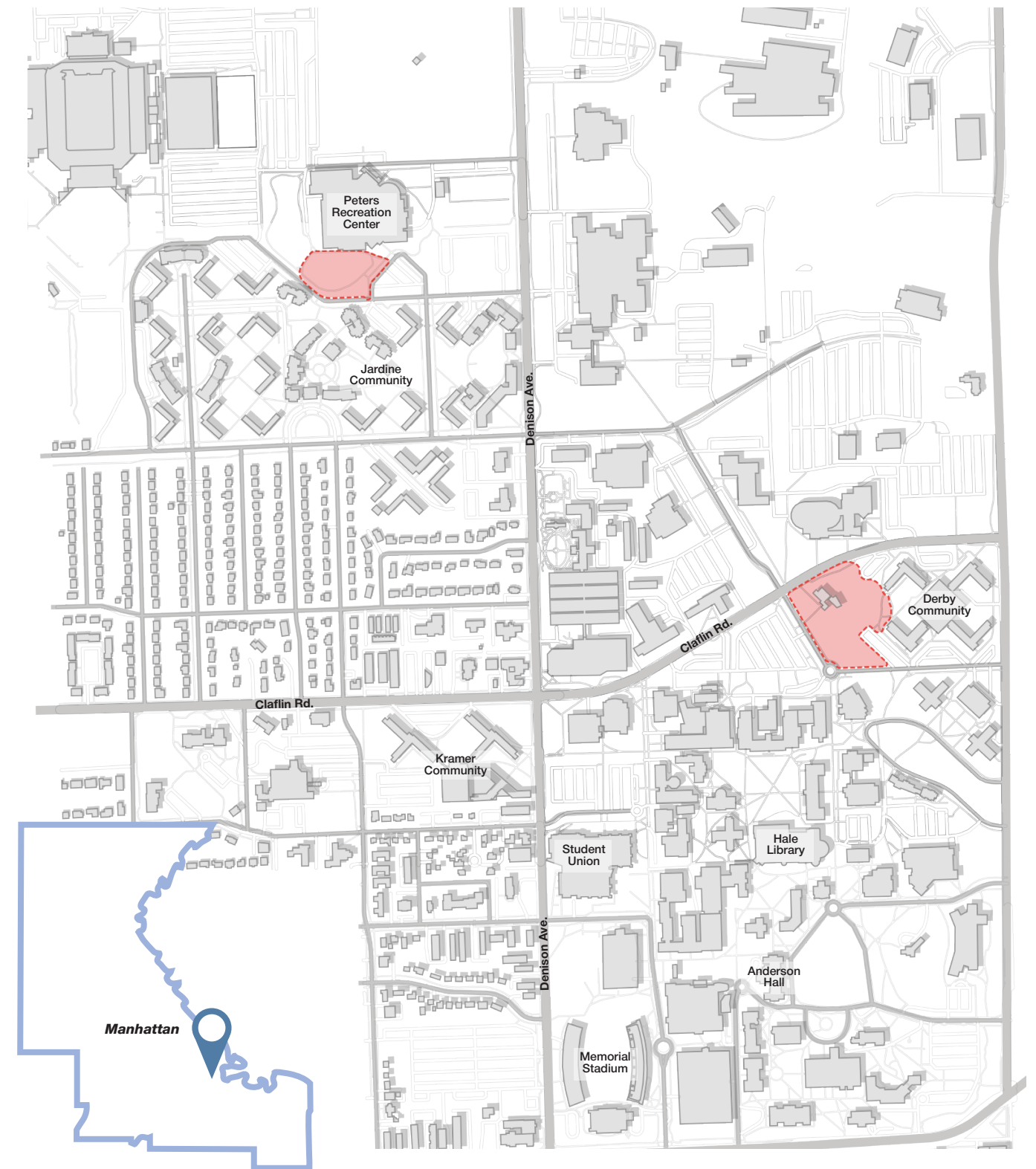


Figure 3.39 Manhattan Location within Riley County + Site Locations on K-State Campus (Tilley 2025).

campus watershed

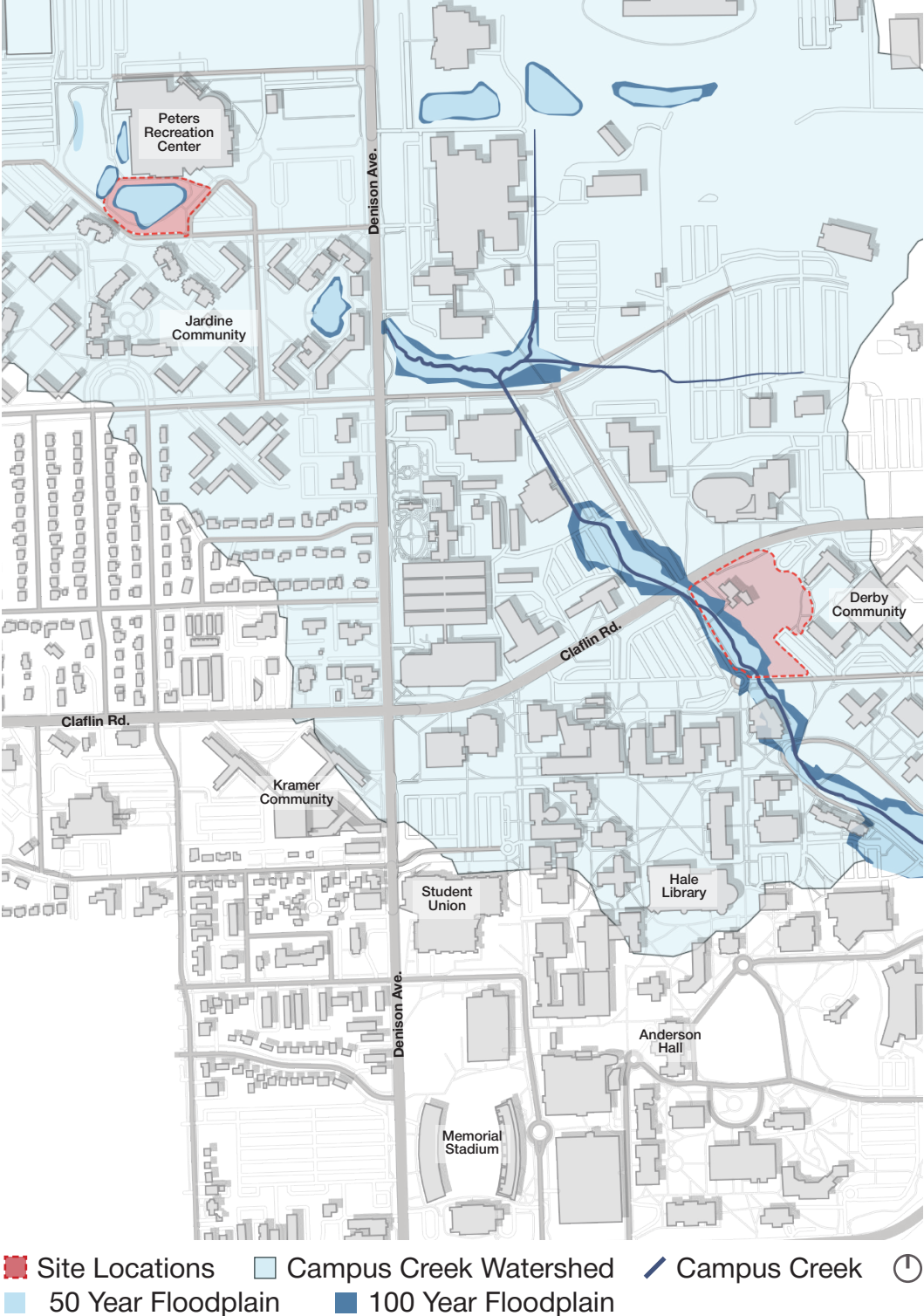


Figure 3.40 Campus Watershed and Floodplain Map. Data from Riley County GIS Database (Tilley 2025).

campus green infrastructure



Figure 3.41 Campus Green Infrastructure Systems Map. Data from Riley County GIS Database (Tilley 2025).

campus climate

Manhattan’s climate is categorized as humid continental, meaning it experiences all four seasons with dramatic temperature changes. The city experiences hot, humid summers and cold, dry winters. In the summer, temperatures often range between the low 90s and high 60s, dropping between the mid-40s and low 20s in the winter. The average yearly mean temperature in the city is 55 degrees Fahrenheit (“Climate | Manhattan, KS” 2025).

For precipitation and snowfall, Manhattan receives approximately 35 inches of rainfall annually and 18 inches of snow (“Climate | Manhattan, KS” 2025). The city commonly experiences flood events resting at the junction of the Kansas and Big Blue Rivers. Both selected sites lie within the Campus Creek watershed, with the Peters Recreation site at the top and the International Student Center near the bottom. By creating a more naturalized corridor, the design of these sites can help reduce flooding and serve as an educational and recreational amenity.

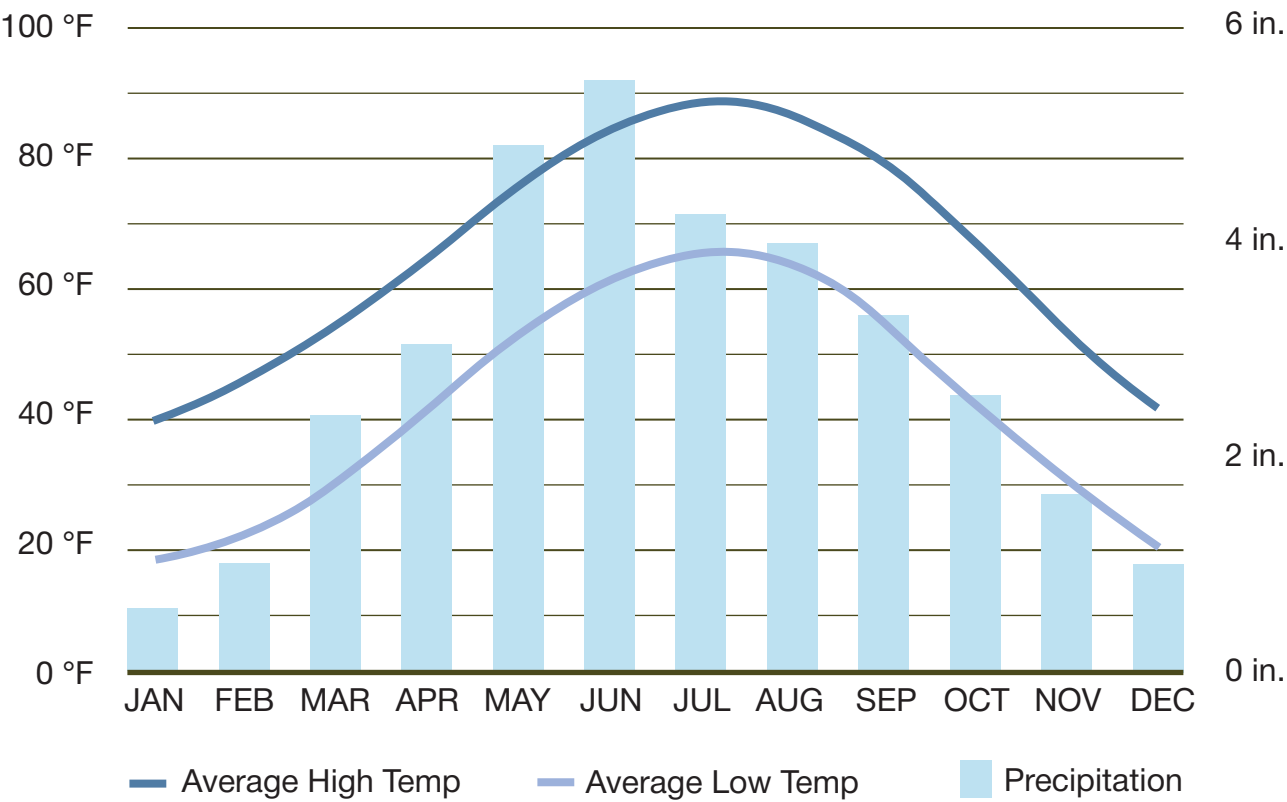


Figure 3.42 Manhattan Annual Climate and Precipitation Chart. Data from NOAA (Tilley 2025).

month	av. temps (hi/lo)	av. precip	snowfall
january	40/18 °F	0.80"	5.1"
february	46/22 °F	1.00"	4.9"
march	57/32 °F	2.30"	2.4"
april	68/43 °F	3.10"	0.3"
may	77/53 °F	5.30"	0.0"
june	87/63 °F	5.50"	0.0"
july	92/68 °F	4.20"	0.0"
august	90/66 °F	4.00"	0.0"
september	83/57 °F	3.40"	0.0"
october	70/44 °F	2.60"	0.0"
november	55/32 °F	1.80"	1.1"
december	44/22 °F	1.10"	3.8"

Figure 3.43 Manhattan Average Temperature, Precipitation, and Snowfall By Month. Data from NOAA (Tilley 2025).

international student center
topography



Figure 3.44 International Student Center Site Adjacencies. Adapted from Google Earth (Tilley 2025).



Figure 3.45 ISC Hillshade Map
Adapted from Riley County GIS Database (Tilley 2025).

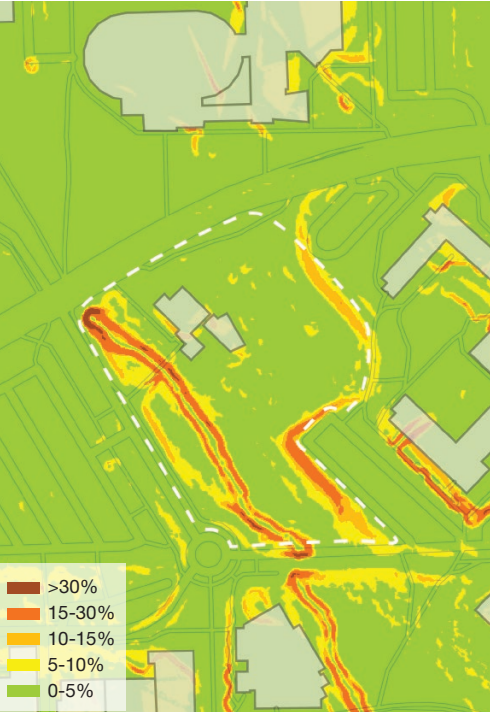


Figure 3.46 ISC Slope Map
Adapted from Riley County GIS Database (Tilley 2025).



Figure 3.47 ISC Contour Map
Adapted from Riley County GIS Database (Tilley 2025).

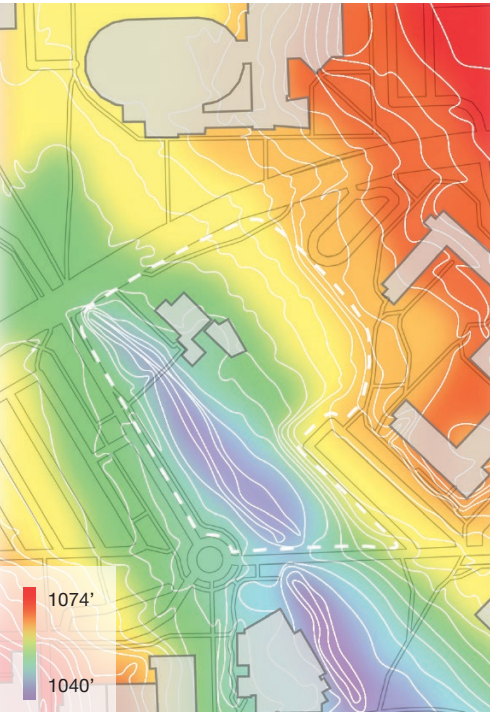
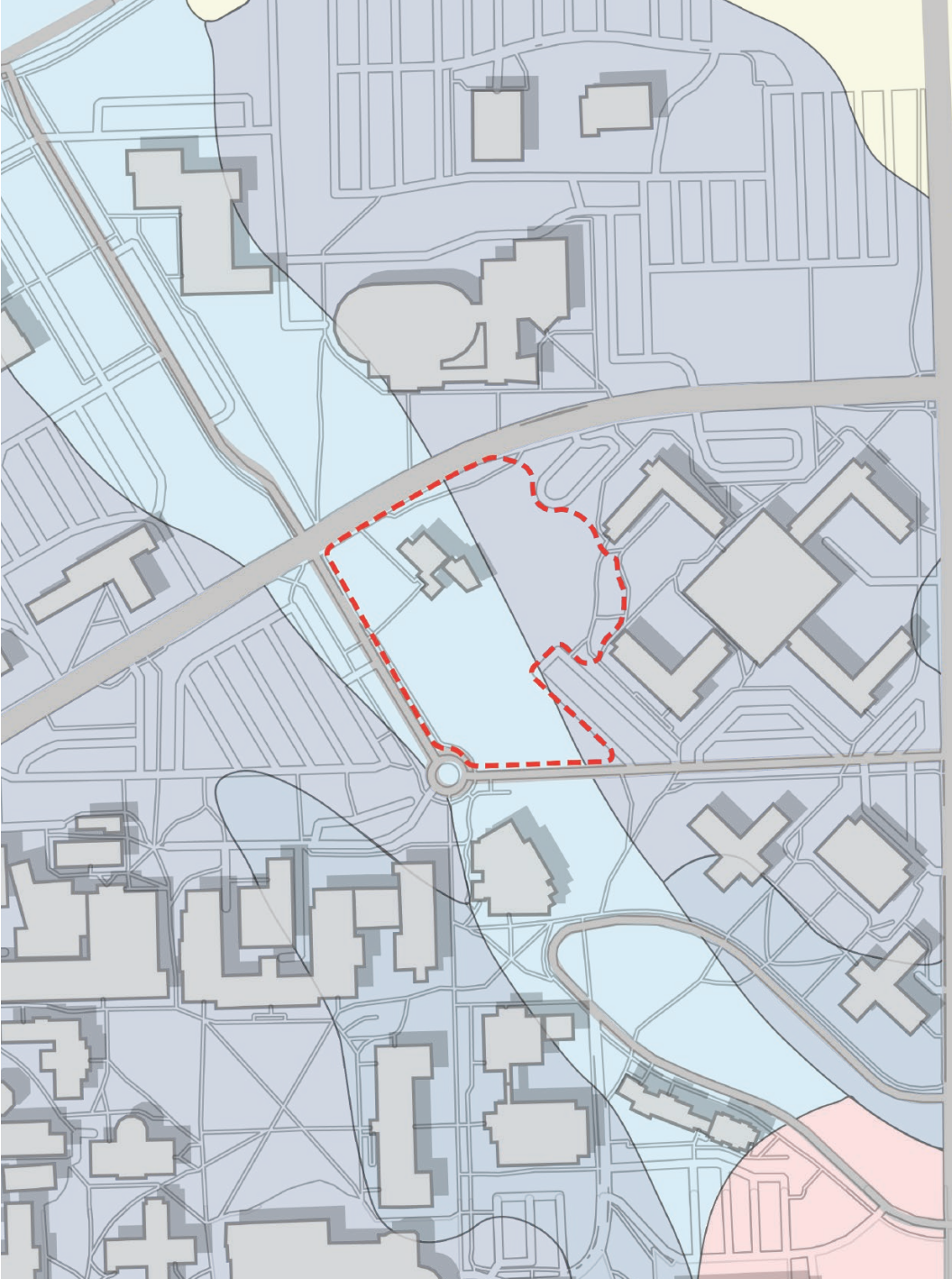


Figure 3.48 ISC Elevation Map
Adapted from Riley County GIS Database (Tilley 2025).

site inventory - soils

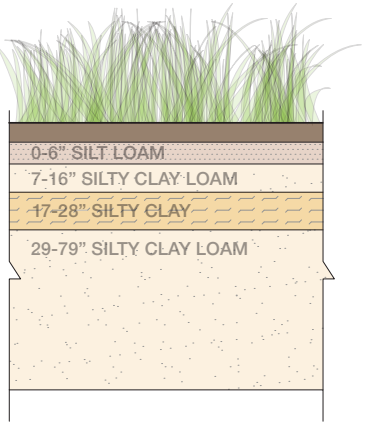


Site Location 3919 Smolan Silt Loam
3920 Smolan Silt Loam 4018 Chase Silty Clay Loam
4050 Ivan & Kennebec Silt Loams 4783 Tully Silty Clay Loam

Figure 3.49 International Student Center Soils Map. Adapted from USDA WSS Database (Tilley 2025).



4050
Ivan & Kennebec Silt Loams
Drainage Class: Well Drained
Runoff Class: Low
Slopes: 1-3% (Occasionally Flooded)
Parent Material: Silty Alluvium
Hydrologic Soil Group C



3919
Smolan Silt Loam
Drainage Class: Moderately Well Drained
Runoff Class: Medium
Slopes: 1-3%
Parent Material: Peoria Loess
Hydrologic Soil Group C



3920
Smolan Silt Loam (South of ISC Site)
Drainage Class: Moderately Well Drained
Runoff Class: Medium
Slopes: 3-7%
Parent Material: Peoria Loess
Hydrologic Soil Group C

Figure 3.50 International Student Center Soil Sections. Adapted from USDA WSS Database (Freelove & Tilley 2025).

site inventory - hydrology

Located in the Campus Creek watershed, the International Student Center site is moderately sloped with over a 15-foot grade difference from the site’s northeast corner to the Campus Creek drainage way along the western edge. The steep slopes that create the channel for campus creek help allow the site to withstand a 50 and 100-year flood event without water reaching the International Student Center.

In Figure 3.52, it can be noted that there are four inlets within the rain garden adjacent to the Taiwan Wing. Several stormwater pipes on the site surround the buildings that have been capped and are no longer in use. Additionally, a stormpipe runs adjacent to Claflin Road, helping direct water from the Derby Community West.

As seen in Figure 3.53, the existing topography on the site does not guide water around the International Student Center but rather towards it. Ultimately, all the water from rain events feeds into Campus Creek, making this site an optimal location to implement water filtration tactics.

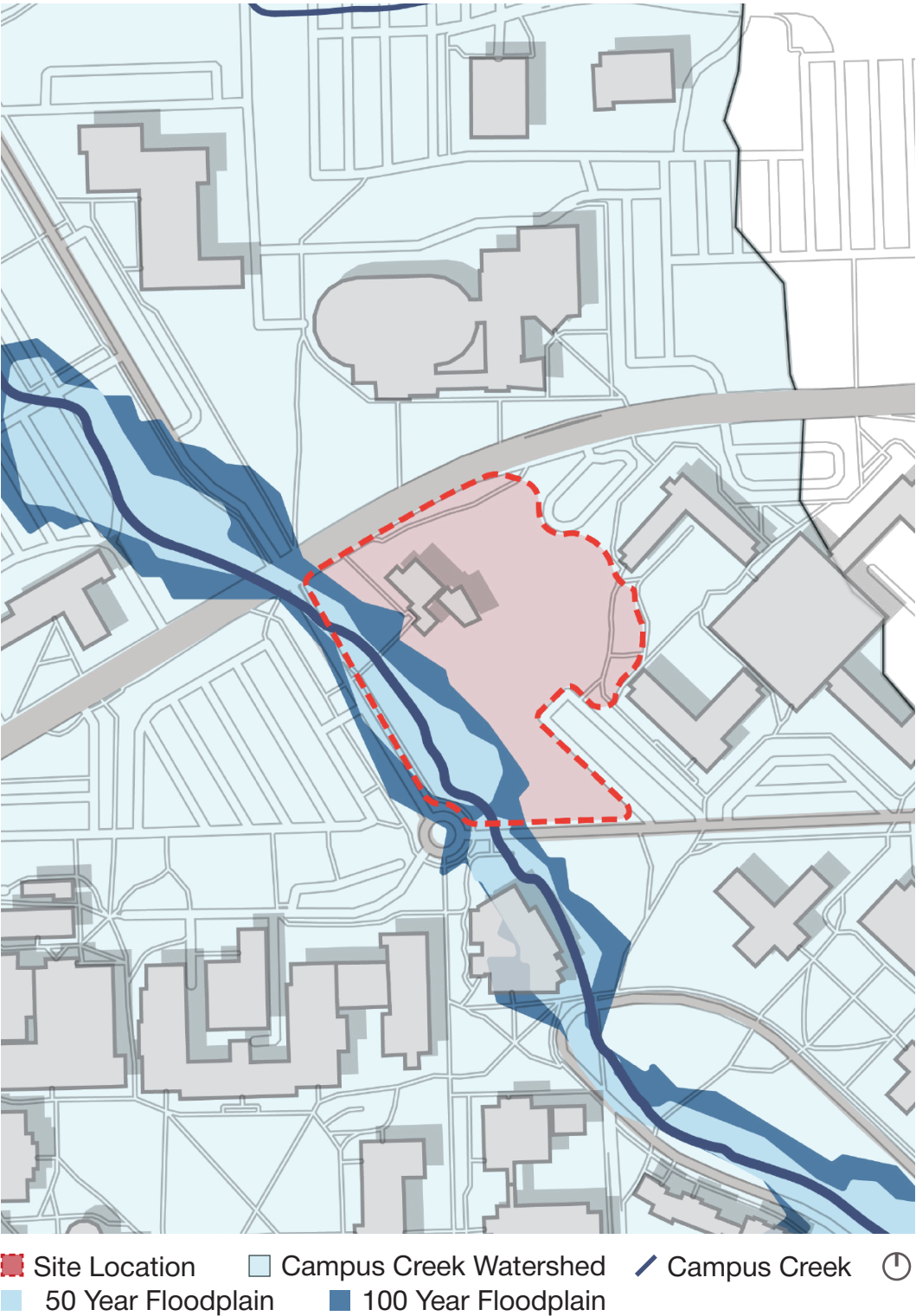


Figure 3.51 International Student Center Flood Map. Adapted from Riley County GIS Database (Tilley 2025).

site inventory - hydrology

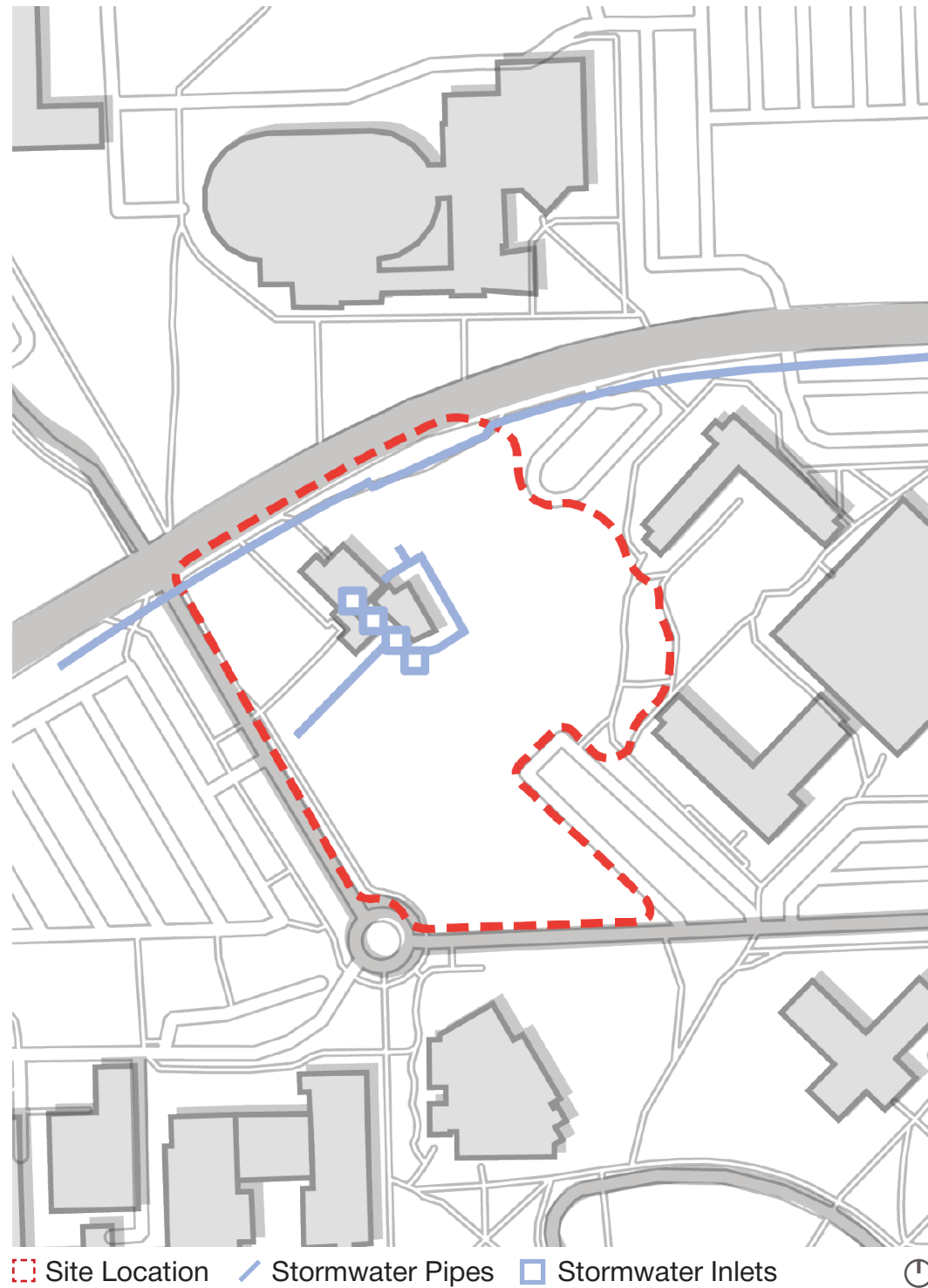


Figure 3.52 International Student Center Stormwater Pipe Map. Adapted from K-State Utilities Map (Tilley 2025).

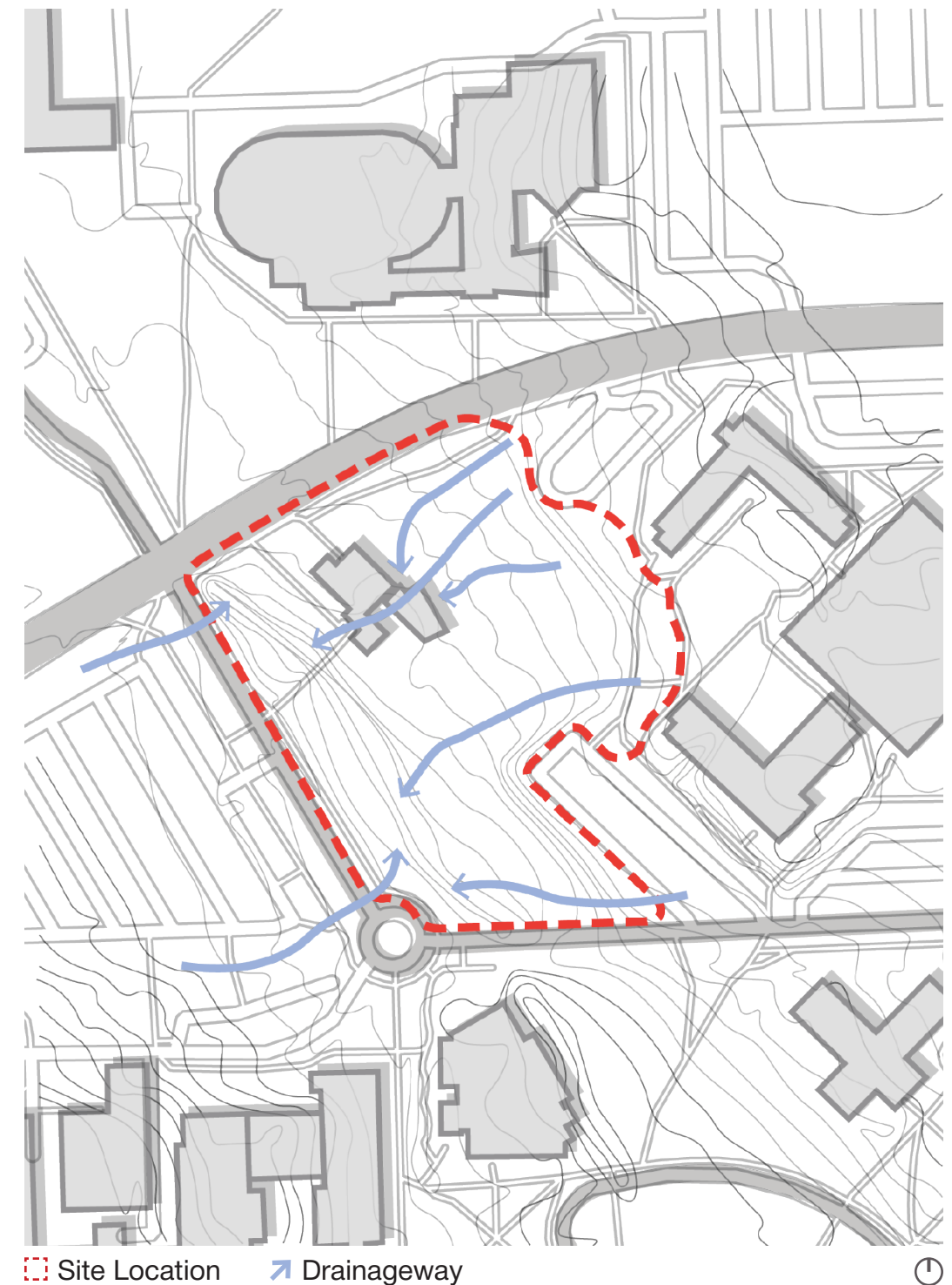


Figure 3.53 International Student Center Drainage Map. Adapted from Riley County GIS Database (Tilley 2025).

site inventory - vegetation

The vegetation coverage within the selected site falls under the following three categories: manicured lawn, managed prairie, and drainage way/naturalized vegetation. The manicured lawn area consists of regularly mowed turf grass maintained by campus facilities workers. The managed prairie area includes the Taiwan Wing rain garden, which is occasionally cut back but is mainly unmaintained due to a lack of availability from campus maintenance crews. The rain garden contains a combination of moist rain gardens, dry fringe (shady to full sun), woodland, ornamental perennials, and woody plants. The drainage and naturalized vegetation can be located along the banks of Campus Creek. This area's much denser and taller vegetation creates separation from visitors and the waterway. In redeveloping the site, the projective design should establish a lower maintenance landscape to relieve stress on campus workers and enhance infiltration on-site.



Figure 3.54 International Student Center Vegetation Map (Tilley 2025).

site inventory - circulation

The International Student Center lies just north of the heart of campus, where most classes occur. It rests between the Leadership Studies Building, the Derby Community, and the Global Center for Grain and Food Innovation, currently under construction. Existing pathways provide access to the center from Mid-Campus Drive to the west and Claflin Road to the north, with sidewalks running along the roads. However, entry from the east and south is not provided, and there are no paved paths. Furthermore, the existing paths reinforce the grid structure of the center's buildings by utilizing legible and efficient straight paths that do not encourage exploration of the greenspace surrounding the center. The entry experience when taking the path off Mid-Campus Drive is a unique site element. When approaching the center, users cross a bridge that spans Campus Creek, allowing views of Campus Creek from above. In looking to redevelop the site, welcoming entry experiences should be designed from all sides, and circulation throughout the site should be promoted.

Referencing the user analysis in Figure 3.56, this area on campus primarily functions as a pass-by space with little foot traffic on the site. The primary functions and activities previously hosted at the International Student Center have been relocated to the Jardine Community, where most international students live. Because of this, employees with offices in the International Student Center are the only frequent visitors. The redesign of this space should play off of its adjacencies and offer opportunities for outdoor learning and passive recreation for students living in the Derby Community.

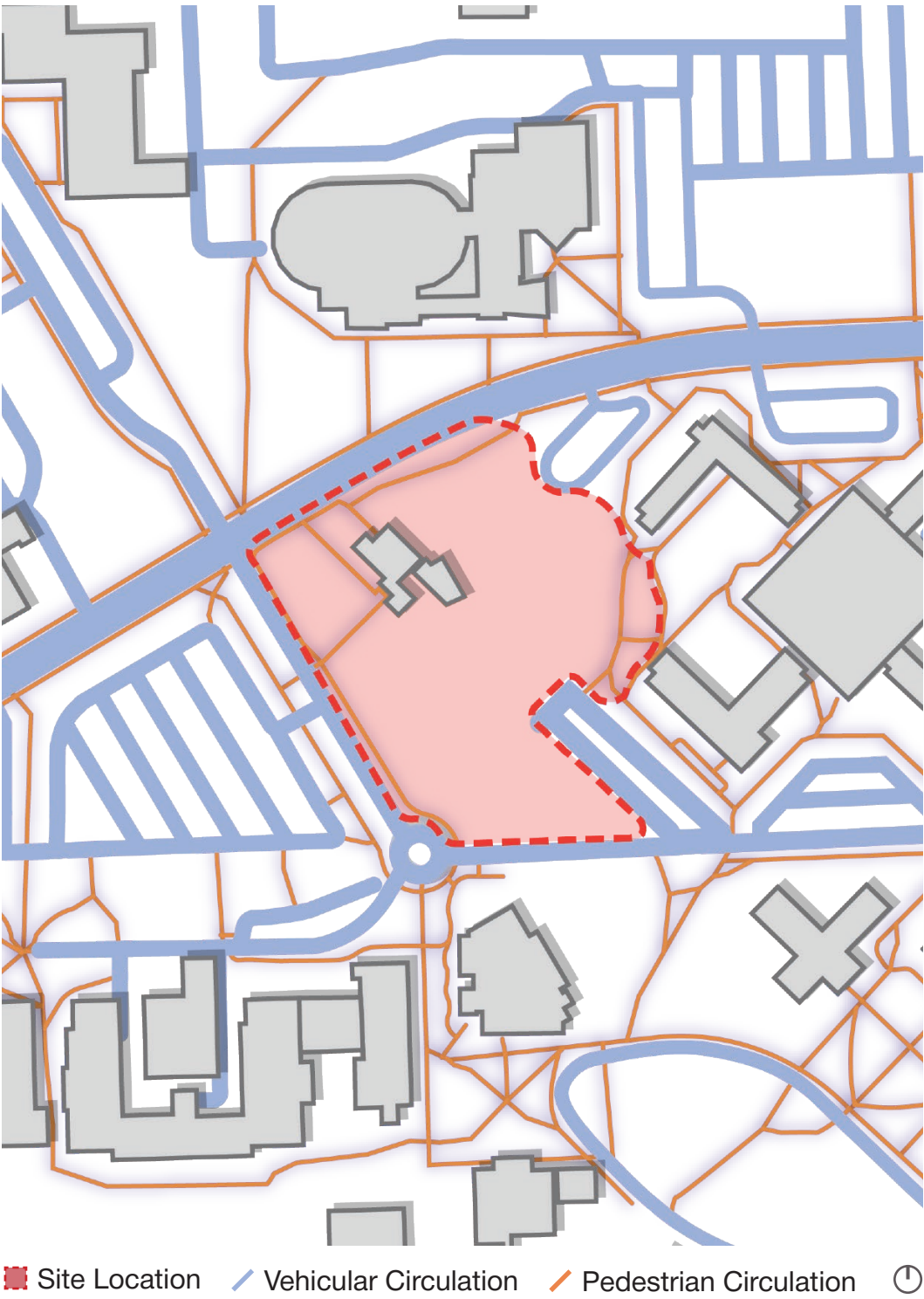


Figure 3.55 International Student Center Circulation Map (Tilley 2025).

site inventory - user analysis



off campus students parking

The adjacent parking lot on the opposite side of Mid-Campus Dr. is one of the primary parking lots used by students from off campus. Most students leave the lot and head south, where most campus classes are hosted.



students heading to derby

The parking lot located north of Claflin Rd. is designated for students living in the Derby Community, with students frequently walking between the two to drive off campus or return to the dorms.



derby residents to class

Located on the northern end of campus, students living in the Derby Community head south to the heart of campus to attend their classes.



isc employees

For employees working in the International Student Center, limited off-street parking is available off Claflin Rd. to the north, and the large lot is shared with off-campus students to the west.

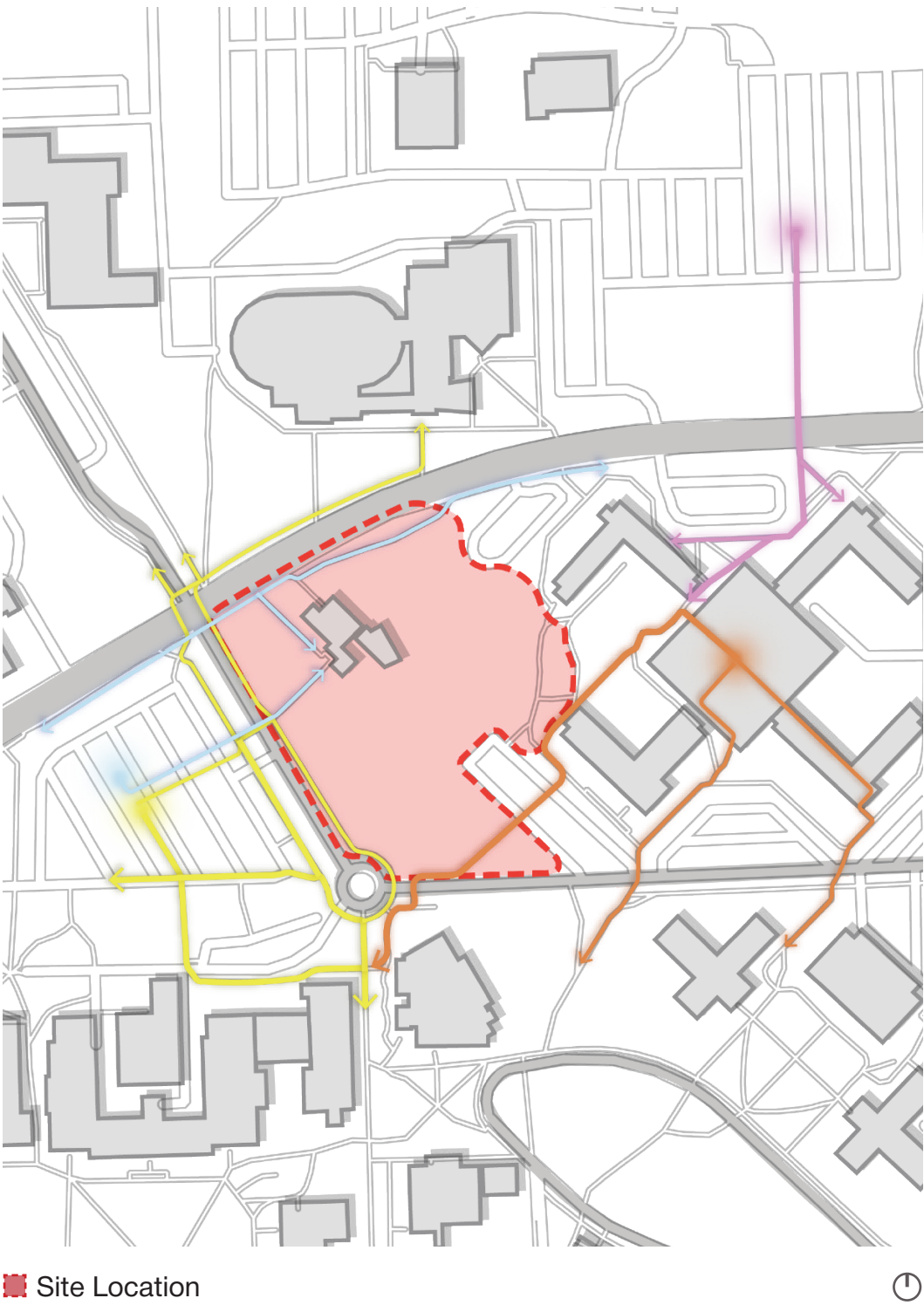


Figure 3.56 International Student Center User Engagement Map (Tilley 2025).

international student center programming

The International Student Center is made up of the Taiwan wing, the Korean wing, and the main building. The main building houses meeting rooms, a lobby space, and offices. This building is the primary building where events and gatherings are hosted. The Taiwan wing contains the center's student services, a few office cubicles, and a staff kitchen area. The Korean wing is the only building at the center with a bathroom, requiring those in the other wings to travel across the courtyard to use the restroom. Aside from a restroom, the building contains the office of International Student and Scholar Services Director Stacey Bailey.

Given the building's recent demolition plans, it is necessary to note the center's rich history and significance on campus. The center was initially constructed in 1977 through a funding donation from Edward J. King Jr., founder of King Radio Corporation ("International Student Center." n.d.). Upon initial construction, the center only contained the main building and Korean wing. It wasn't until 1999 that the Taiwan wing was constructed, forming the three buildings we see standing on the site today ("International Student Center." n.d.). Similarly to the 1977 construction, private donations made the Taiwan wing's construction in 1999 entirely possible ("International Student Center." n.d.). Architecturally, the International Student Center showcases a stone exterior that aligns with the aesthetics of most buildings on campus but stands out by pulling inspiration from Asian architecture with wooden truss roofs and wood shingles, concrete pillars that form a centralized courtyard, and moon-shaped cutouts. Over the past decades, the center has hosted numerous events and played a key role in promoting cultural awareness on K-State's campus.

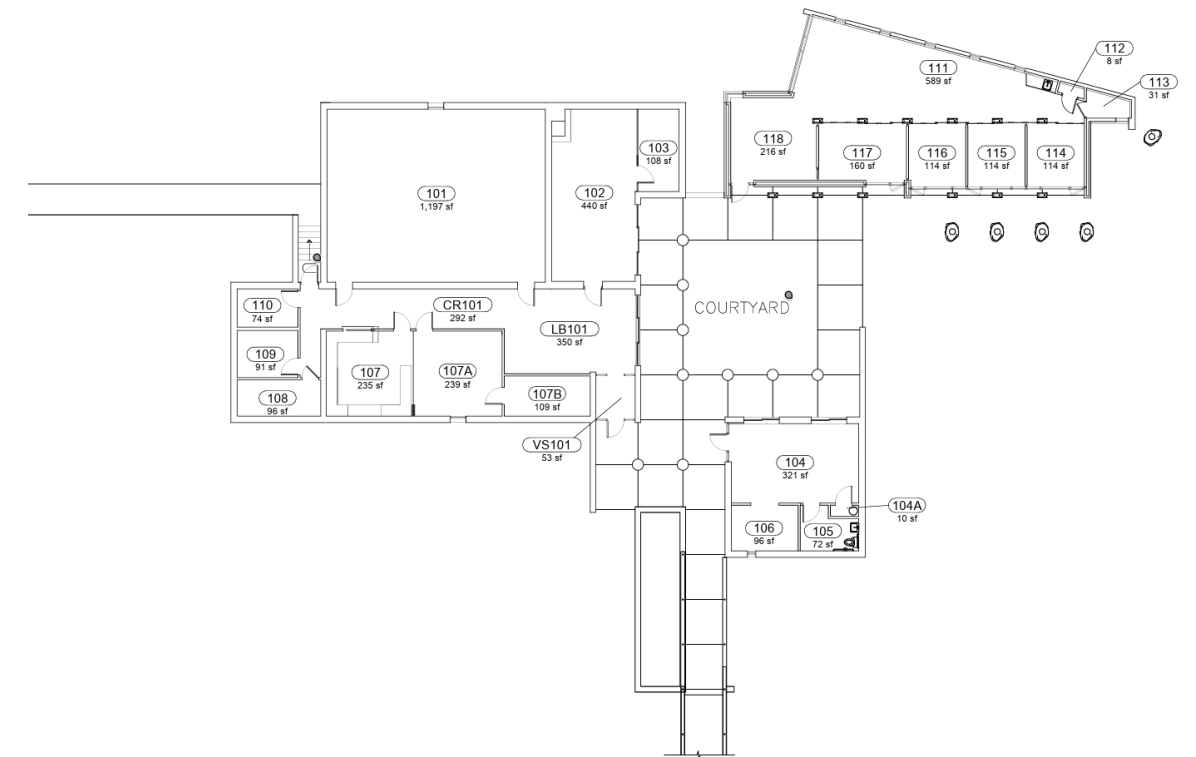
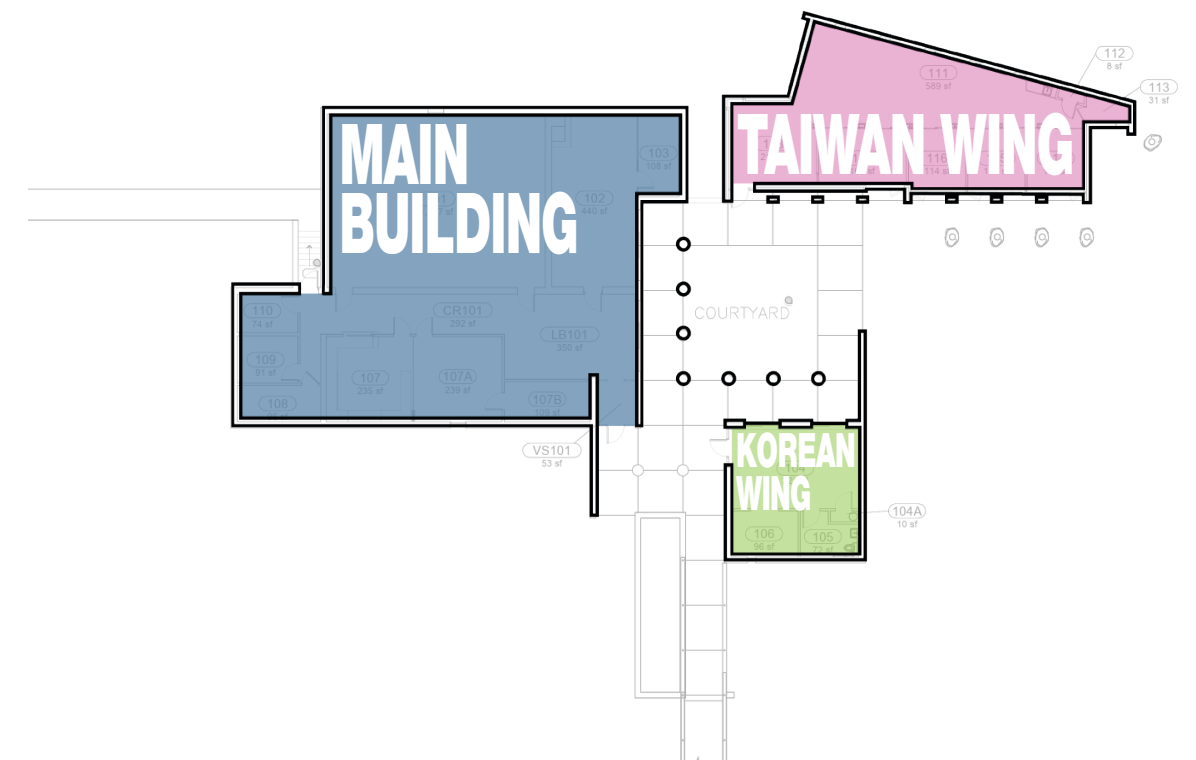


Figure 3.57 International Student Center Floor Plan Map (Kansas State University 2019).

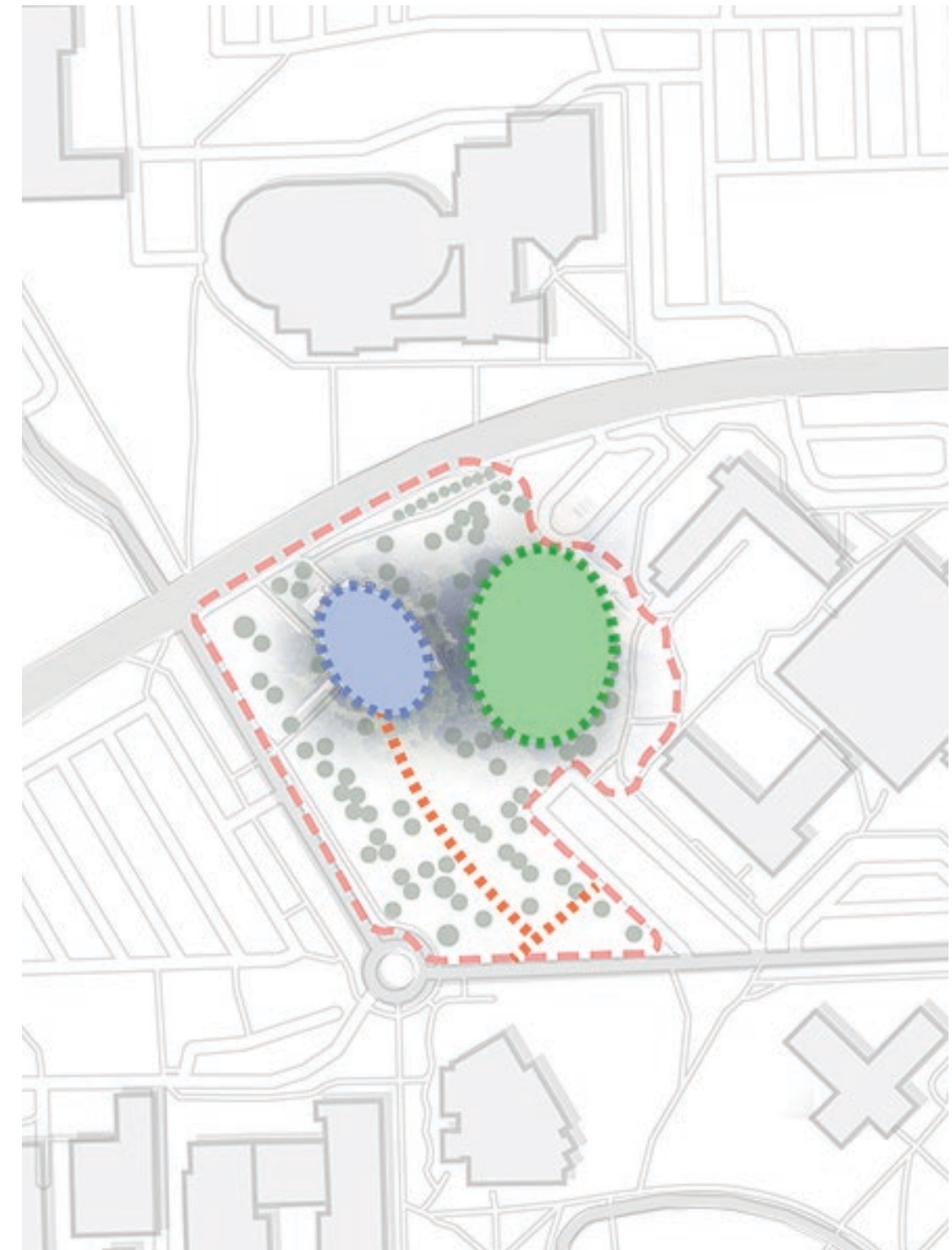


■ Meeting Rooms + Offices ■ Offices ■ Student Services + Offices ⓘ

Figure 3.58 International Student Center Programming Map (Tilley 2025).

design opportunities

Based on the site analysis and inventory findings, key opportunities were highlighted to help generate design concepts for the International Student Center redevelopment. Firstly, circulation on and across the site is severely lacking and must be improved to create an inviting outdoor space. Pathways along the east and south sides should be incorporated to help make these connections and transform desired paths created by students into properly paved paths. Secondly, provided the rich history and architecturally unique features part of the International Student Center, adaptive reuse techniques should be considered to pay homage to the site's past and continue to give this space along Campus Creek a unique sense of character. Lastly, the site's proximity to the Derby Community makes it an optimal location to function as a spill-out space. Currently, there is a lack of open and safe green spaces immediately surrounding the housing complex, with the only available space being located adjacent to Claflin Avenue and North Manhattan Road. Transforming the site's eastern edge into an open lawn would encourage students to get outside and provide a safer green space to recreate, not one adjacent to a roadway.



■ Adaptively Reuse Components of the International Student Center ⓘ
■ Outdoor Greenspace — Potential Path Connection

Figure 3.59 International Student Center Design Opportunities Map (Tilley 2025).

peters rec center topography



Figure 3.60 Peters Recreation Center Site Adjacencies. Adapted from Google Earth (Tilley 2025).



Figure 3.61 Rec Hillshade Map
Adapted from Riley County GIS Database (Tilley 2025).

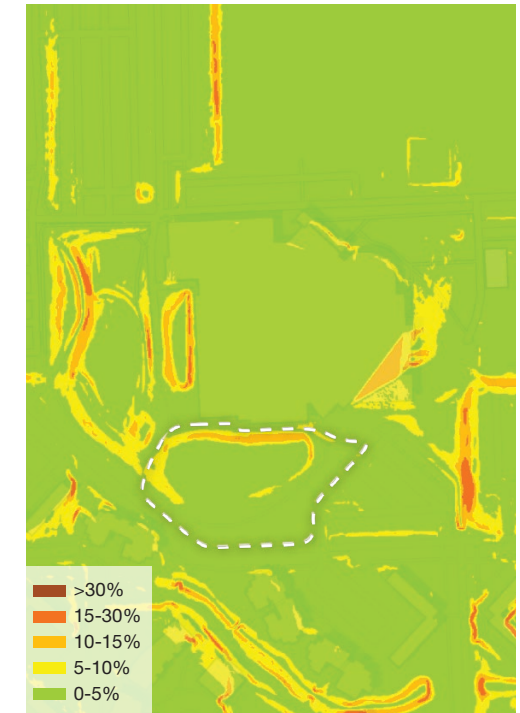


Figure 3.62 Rec Slope Map
Adapted from Riley County GIS Database (Tilley 2025).



Figure 3.63 Rec Contour Map
Adapted from Riley County GIS Database (Tilley 2025).

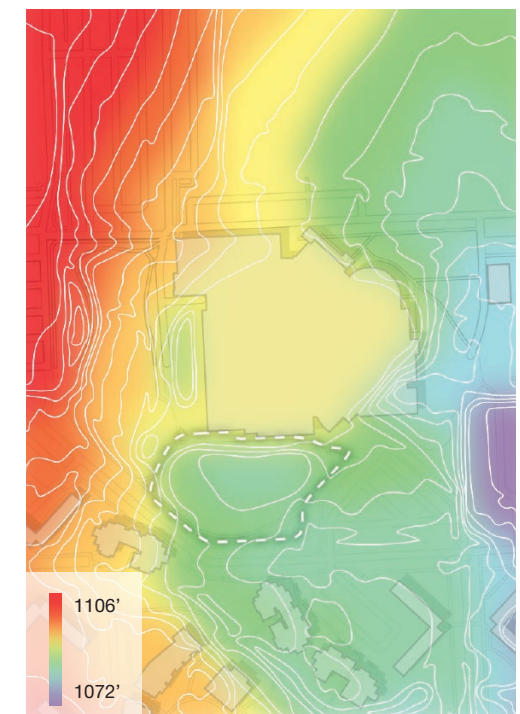
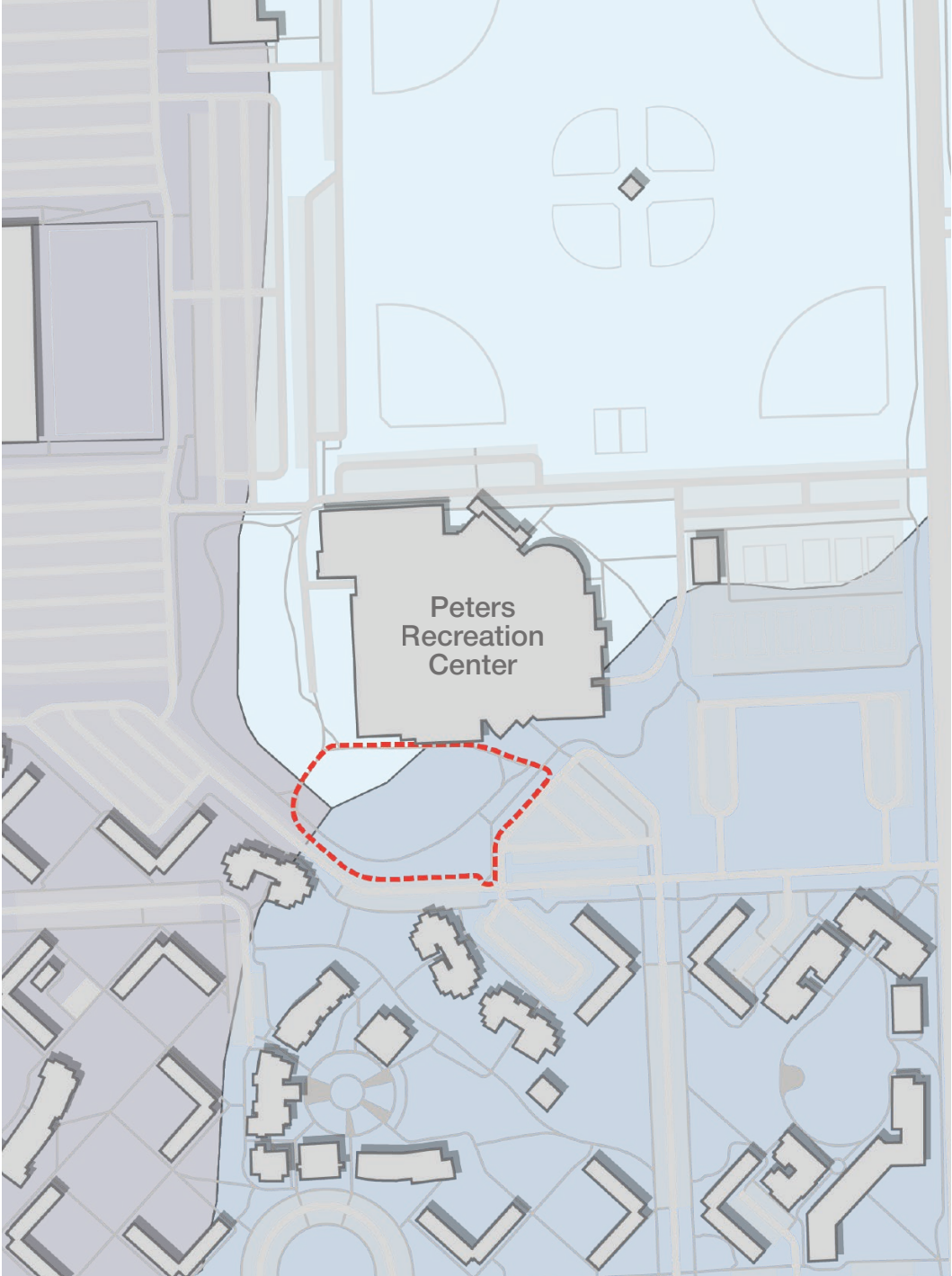
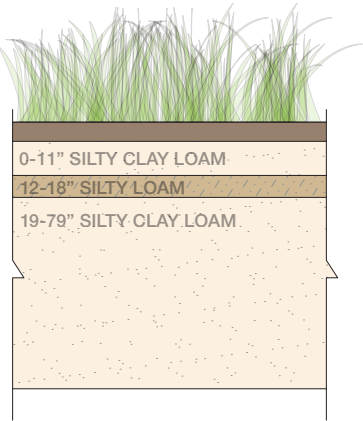


Figure 3.64 Rec Elevation Map
Adapted from Riley County GIS Database (Tilley 2025).

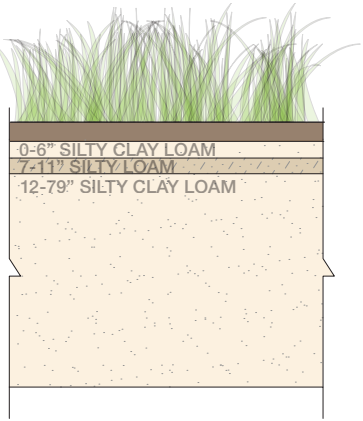
site inventory - soils



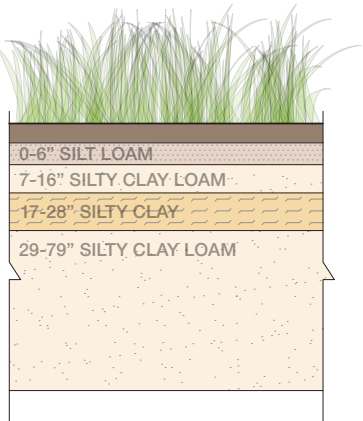
Site Location 3919 Smolan Silt Loam 7681 Wymore Silty Clay Loam 7682 Wymore Silty Clay Loam



7681
Wymore Silty Clay Loam
Drainage Class: Moderately Well Drained
Runoff Class: Medium
Slopes: 1-3%
Parent Material: Noncalcareous Loess
Hydrologic Soil Group D



7682
Wymore Silty Clay Loam
Drainage Class: Moderately Well Drained
Runoff Class: Medium
Slopes: 1-3% (Eroded)
Parent Material: Noncalcareous Loess
Hydrologic Soil Group D



3919
Smolan Silt Loam
Drainage Class: Moderately Well Drained
Runoff Class: Medium
Slopes: 1-3%
Parent Material: Peoria Loess
Hydrologic Soil Group C

site inventory - hydrology

Resting at the top of the watershed, the Peters Recreation Center site is also located within the Campus Creek watershed. This site experiences significantly less grade change than the International Student Center site, with only a four to six-foot shift in elevation from the surrounding path's high point to the low point at the bottom of the basin on the eastern edge. The site's current function is to act as a retention basin during storm events, so the site is expected to flood in the event of a 50- and 100-year flood.

Aside from the water falling around the tops of the slopes surrounding the basin, most of the stormwater that feeds into the site comes from the northwest. Referring to Figure 3.68 and Figure 3.69, water from this corner stems from two locations. To the north, a discharge point feeds into the site containing water directed off the west side of the building through downspouts that flow down a swale before entering the site. Secondly, water from the parking lot feeds into the landscape west of the site at high speeds, flowing through a rock-filled channel with eroding banks before entering the basin. In extreme floods, water leaves the site from the eastern end through a pipe that directs water onto Kerr Dr. When redeveloping the site, the hydrological flow should be adjusted to increase infiltration, filtration of pollutants, and redirect water from flowing out of the site onto the street.

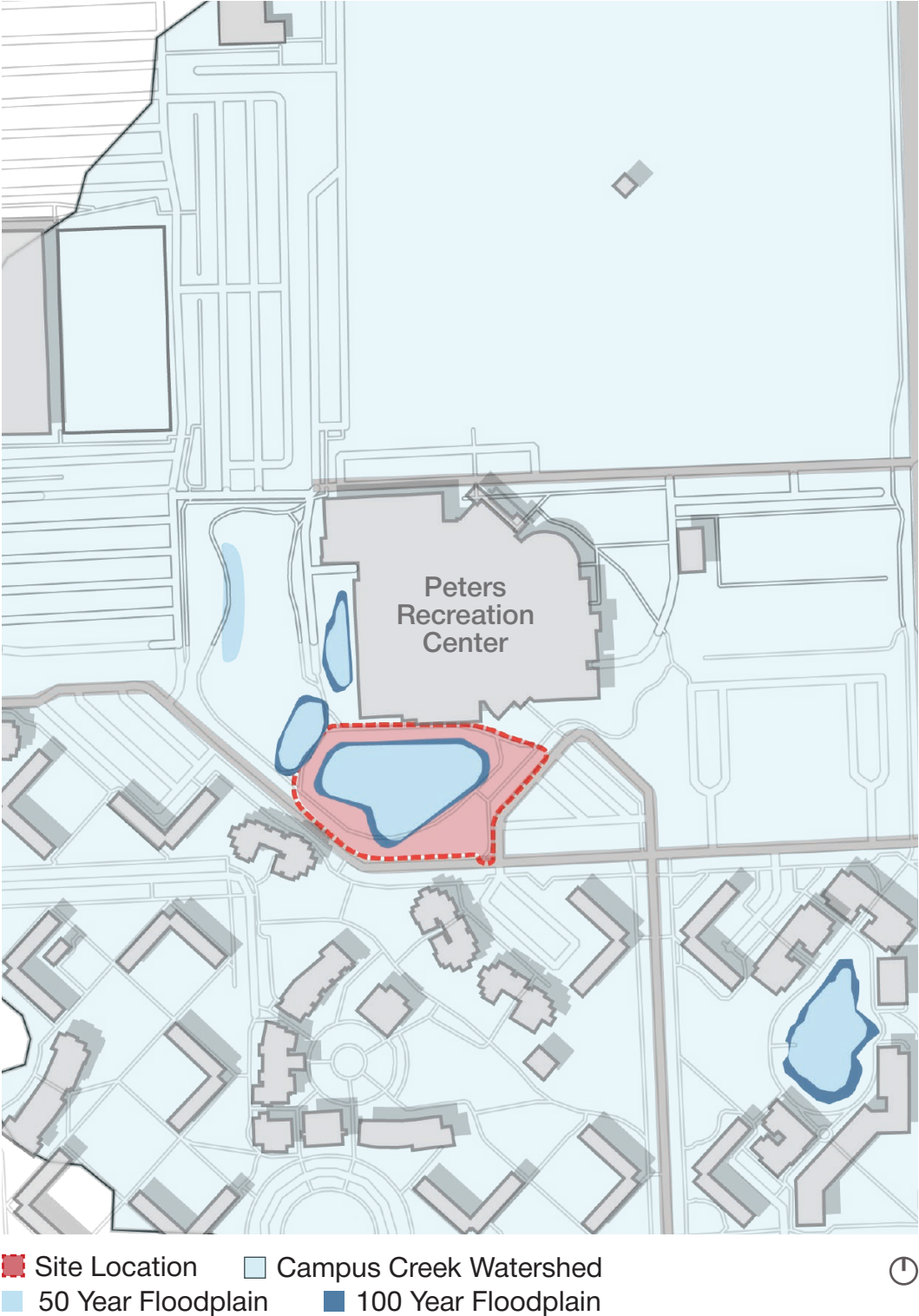
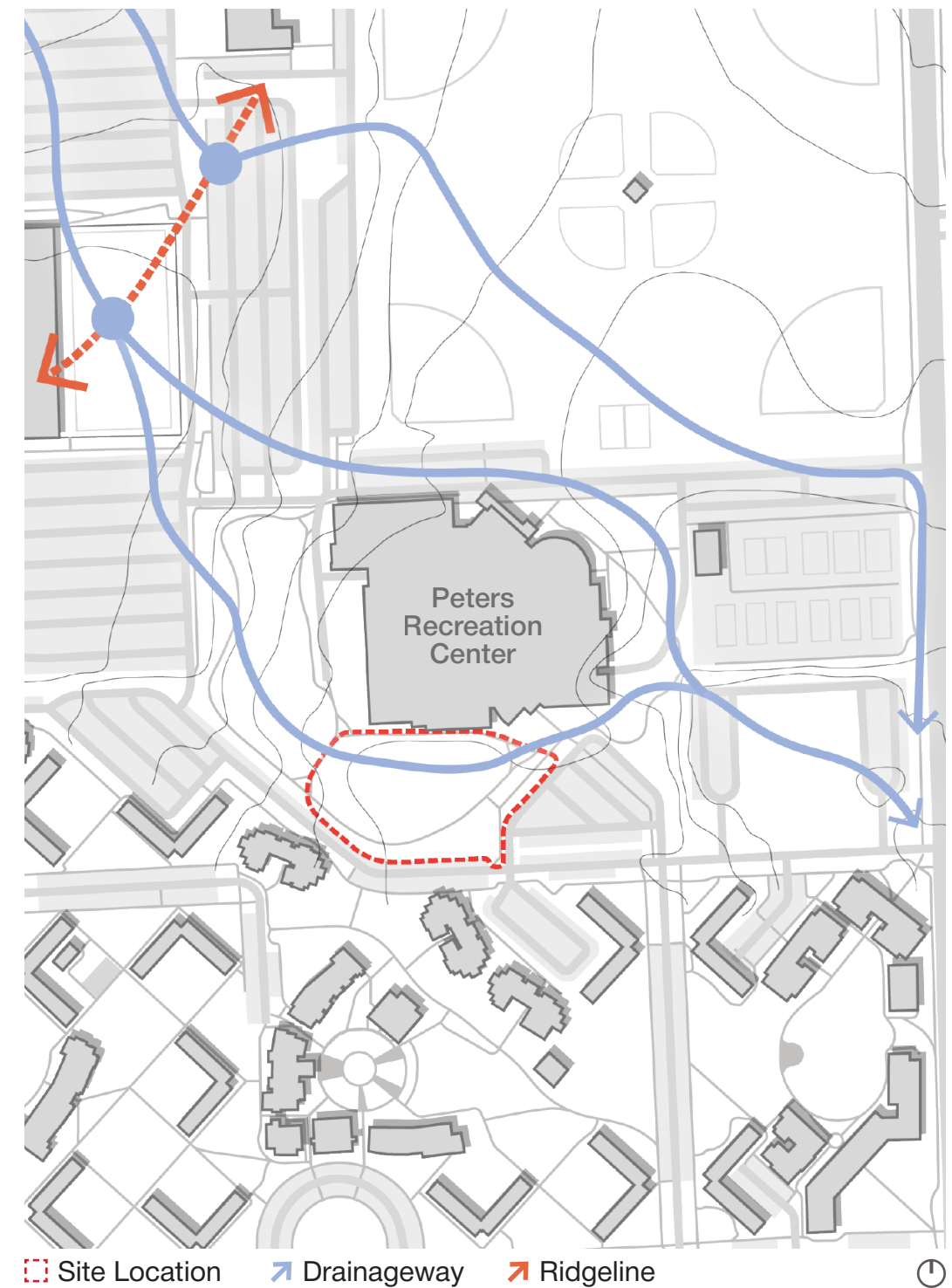
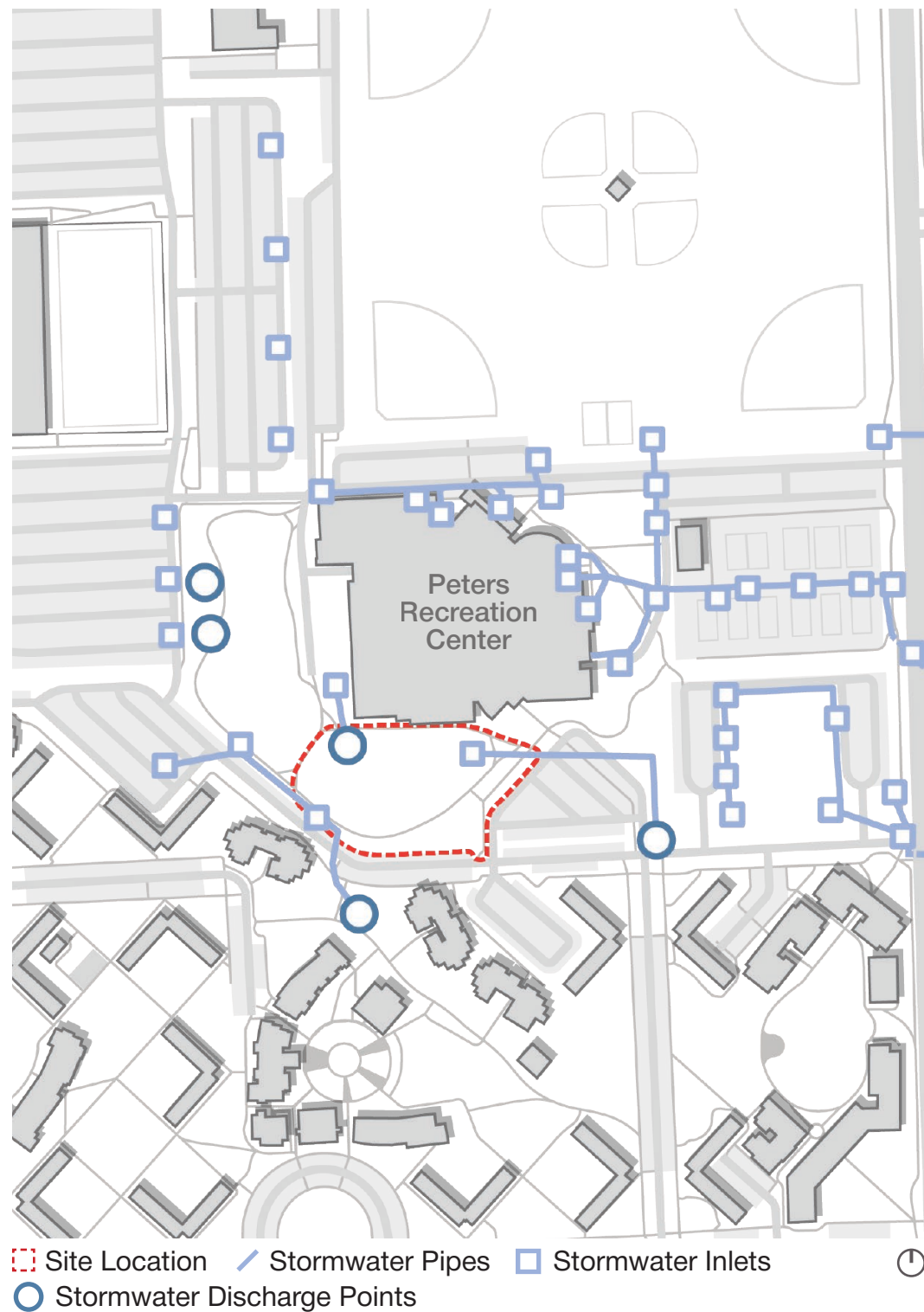


Figure 3.67 Peters Recreation Center Flood Map. Adapted from Riley County GIS Database (Tilley 2025).

site inventory - hydrology



site inventory - vegetation

The entirety of the site is covered in manicured lawn or turf grass that maintenance can mow and maintain easily. There are scattered trees and shrubs along the border of the basin; however, they are not mature trees and produce little shade across the site. Looking west, the adjacent landscape that directs water into the space features drainage way/naturalized vegetation growing in the rock channels and along the borders. This area contains a high presence of ragweed, increasing the workload of maintenance workers trying to upkeep the space. As a result, it is not cleared out regularly. Most mature trees surrounding Peters Recreation Center can be found in this western area, creating a miniature grove with a strong presence of green ash. Transforming the selected site into an inviting gathering space and incorporating a variety of vegetation coverage are musts. Rain garden mixes and prairie grasses should be included to provide options that promote infiltration and require minimal maintenance. Furthermore, trees should be planted further into the site to help provide shelter and comfort and increase the basin's infiltration.

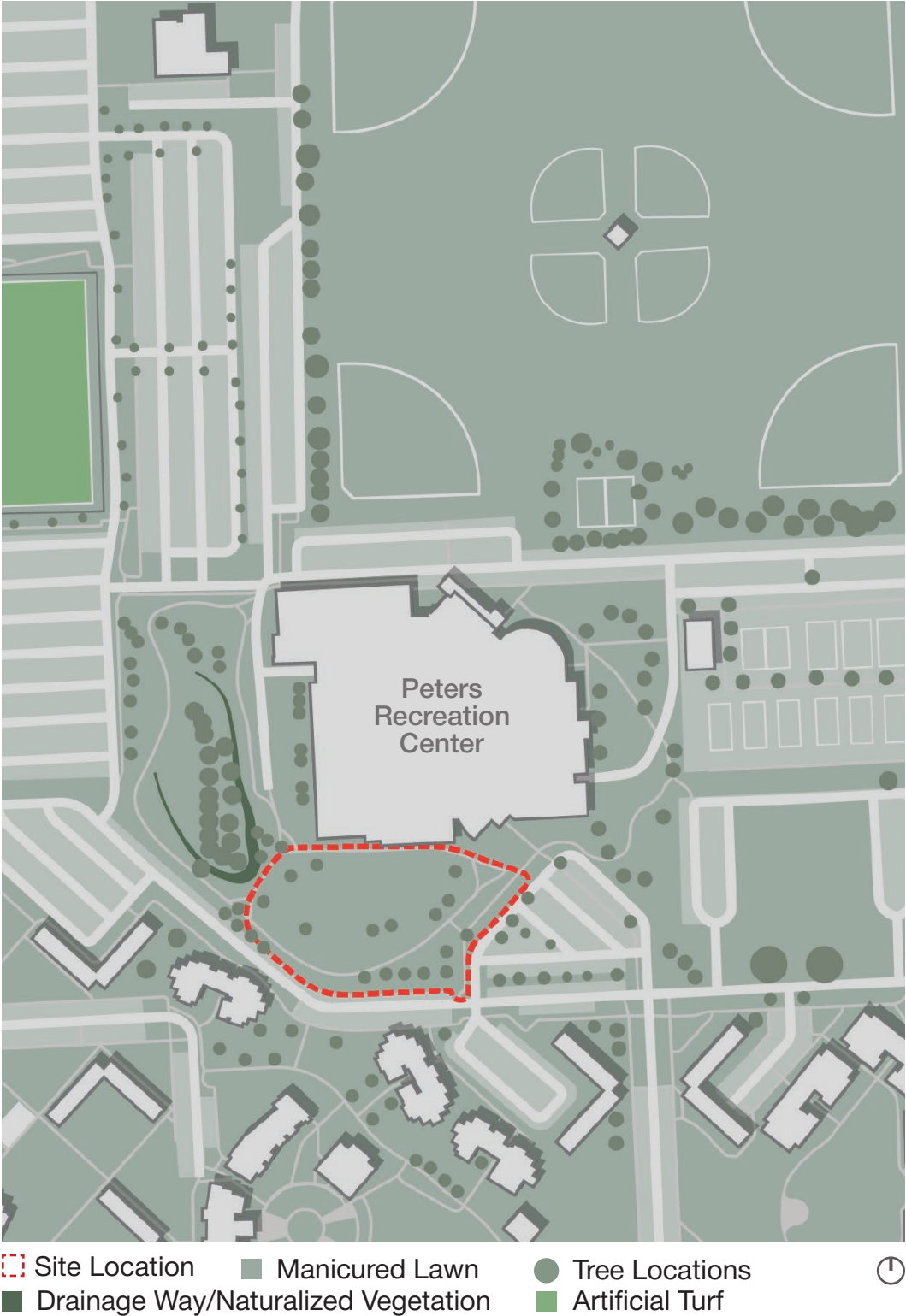


Figure 3.70 Peters Recreation Center Vegetation Map (Tilley 2025).

site inventory - circulation

The Peters Recreation Center site is situated on the far north end of campus and is disconnected from students' daily circulation routes to get to classes. It lies north of the Jardine Community, west of the College of Veterinary Medicine, and east of the Bill Snyder Family Stadium. The existing sidewalk network prioritizes access to the site and recreation center from the southern end with a strong connection to the Jardine Community and stretching to the Kramer and Derby Communities. Within the site, circulation is promoted through crushed limestone paths but lacks accessibility with no paved pathways. These trails do not encourage users to fully engage with the space, with connections from the parking lot to the recreation center's entrance and around the basin's perimeter.

In looking at the user analysis in Figure 3.72, the site is visited mainly by maintenance crews mowing the turf grass. With no outdoor programming in the site or area west of the recreation center, the site is a pass-by space for those heading inside the recreation center rather than a place people want to spend time in. The redesign of this space should play off the circulation patterns coming from the south and create an enjoyable entry experience into the site, establish circulation that brings you into the space, and include programming elements. Additionally, it should enhance its connection with the Jardine Community to increase its ability to function as a casual meeting space rather than only being used by those visiting the recreation center.

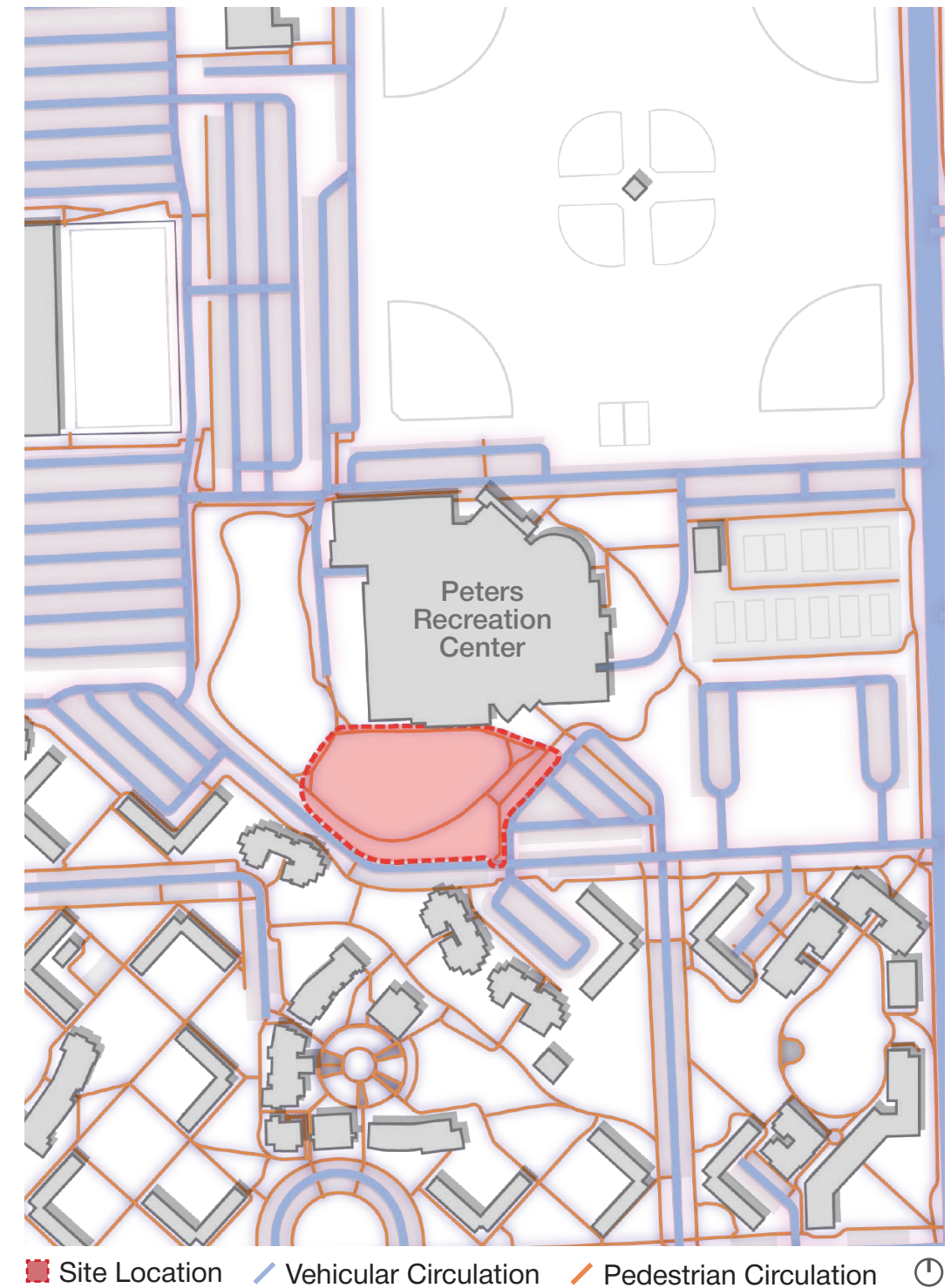


Figure 3.71 Peters Recreation Center Circulation Map (Tilley 2025).

site inventory - user analysis



students heading to the rec

Students visiting the Rec primarily travel by car parking in the south, north, or old Edwards Hall parking lots. Those living on campus or nearby may walk with of the most foot traffic coming from the south.



grounds employee

Grounds employees work diligently to maintain the plantings surrounding the stadiums and sports fields north of the Rec. They park as close as possible to the areas they're working on and drive over the sports fields to spread fertilizer or mow the lawn.



student athlete

Student athletes living in the Jardine Community are in close proximity to the stadiums and arenas. They leave their apartments and use the sidewalks to head northwest to get to practice.



vet med student

Veterinary Medicine students commuting from off campus often use the old Edwards Hall lot as overflow parking given its close proximity to the college.

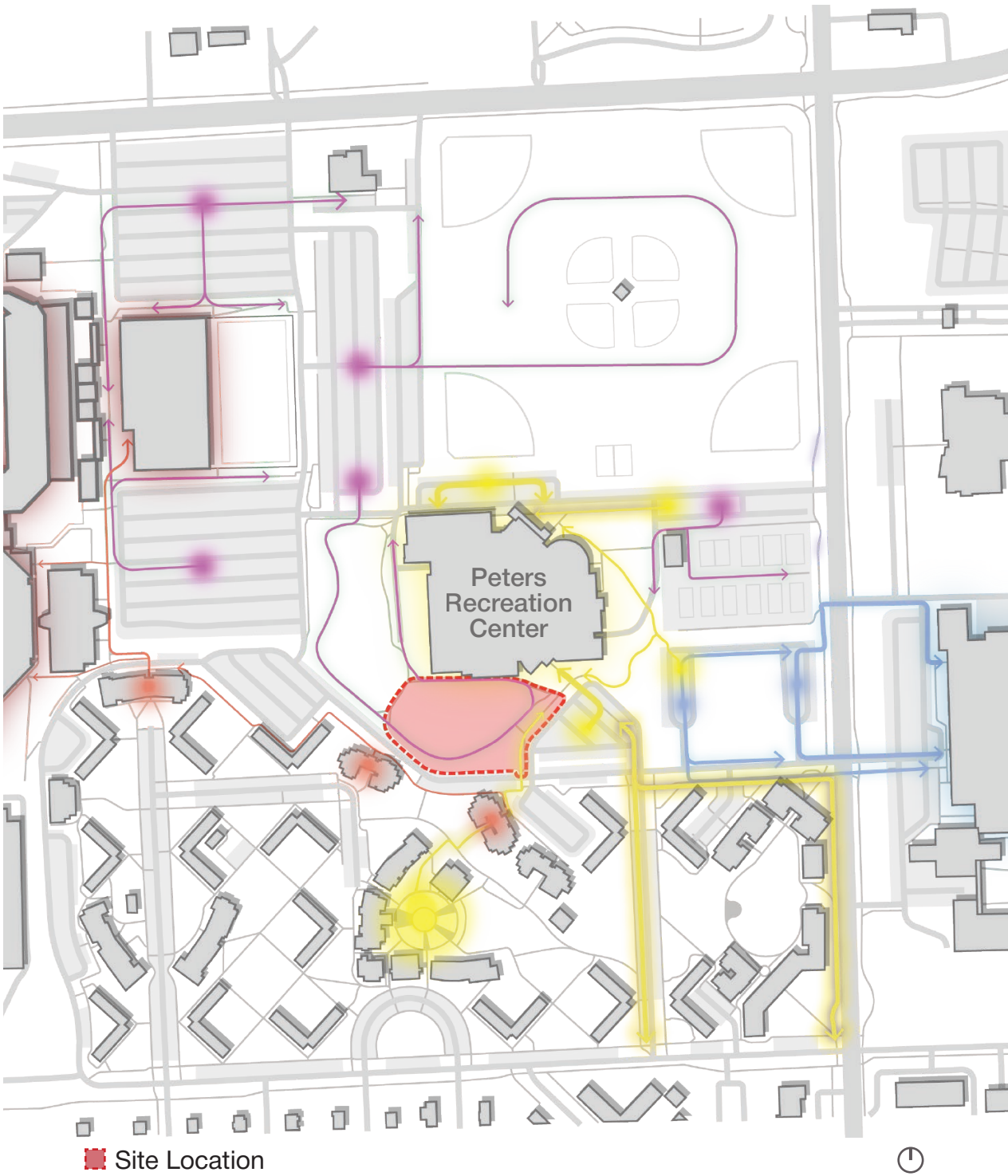


Figure 3.72 Peters Recreation Center User Engagement Map (Tilley 2025).

recreation center programming first floor

The Peters Recreation Center has three levels open to students: the first and second floors and a basement. On the first and second floors, the locations of equipment and the presence of windows encourage views out into the surrounding outdoor space. On the first floor are three gymnasiums, with basketball offered on the north and south courts and pickleball and badminton on the eastern court. Surrounding the courts on the southern end of the building is an open floor space with weightlifting equipment, a climbing wall, and a lounge/cafe/teria space for students to purchase concessions. These spaces all have direct views out into the southern greenspace with a strong connection between the selected site and the open floor space with weightlifting equipment. Classroom spaces on the far west and east edges are also available to visitors with frequently hosted classes like cycling, dance cardio, and yoga. The primary entrance into the recreation center is also located on the south side, with a check-in kiosk between the climbing wall cafeteria space. Along the northern end is a secondary weightlifting space to the east with an amenity lounge featuring foosball tables adjacent to it. Between the weights equipment and gymnasium is the secondary entrance to the recreation center with a larger check-in area that doubles as an equipment checkout booth.

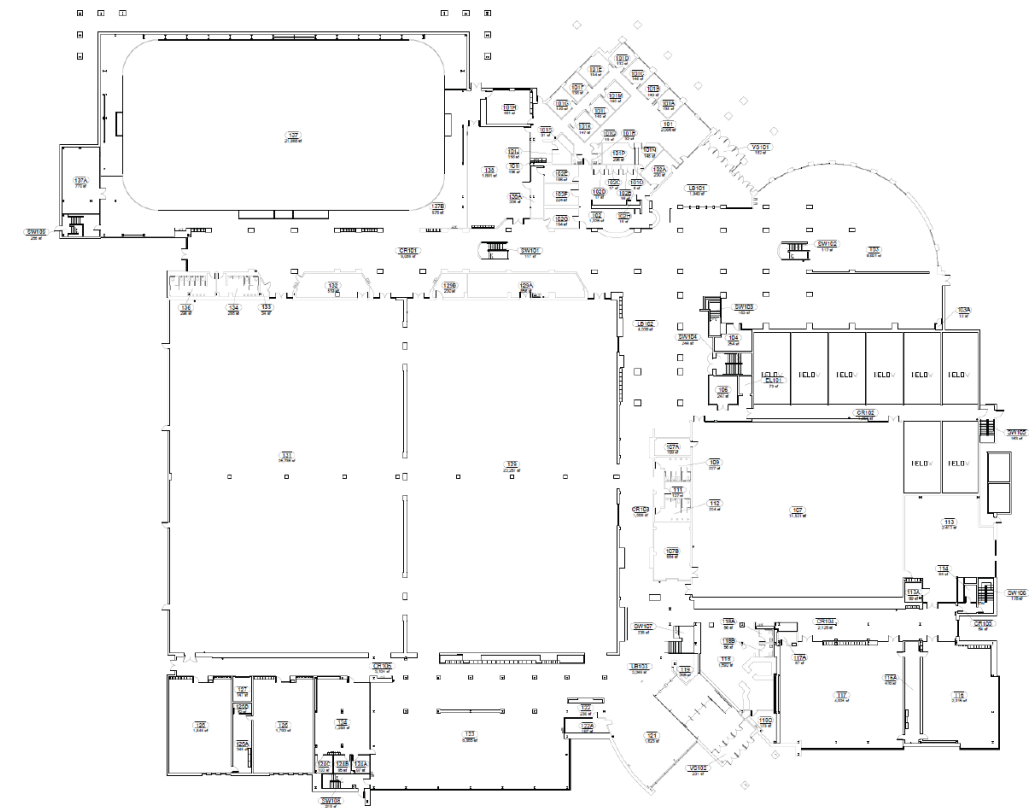


Figure 3.73 Peters Recreation Center First Floor Plan Map (Kansas State University 2019).

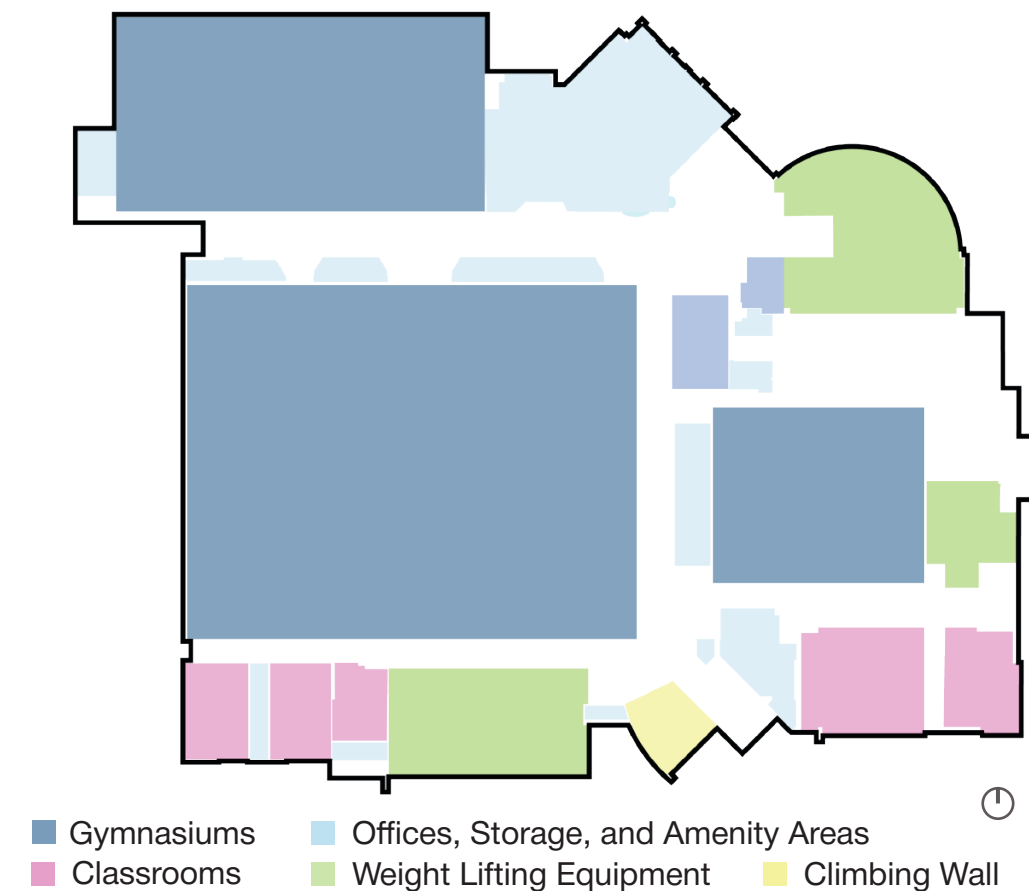


Figure 3.74 Peters Recreation Center First Floor Programming Map (Tilley 2025).

recreation center programming second floor

The recreation center's second floor programming is primarily catered to endurance training. On the southern end, near the primary entrance, there is a landing with cardio equipment that overlooks the open floor space with weightlifting equipment on the first floor and offers elevated views of the selected site just outside the recreation center on the southern end. This space features treadmills, ellipticals, stationary bikes, and StairMaster machines for visitors. Adjacent to the space, the climbing wall continues to the second floor, separated from the cardio equipment landing. The eastern and northern gymnasiums on the second floor offer elevated walking loops overlooking the space below. Between these walking loops, there are smaller spaces dedicated to strength training, with a series of performance rooms spanning the hallway that leads to the eastern edge of the building. Other spaces at this level are stairwells, small amenity areas with seating, and office or storage areas.

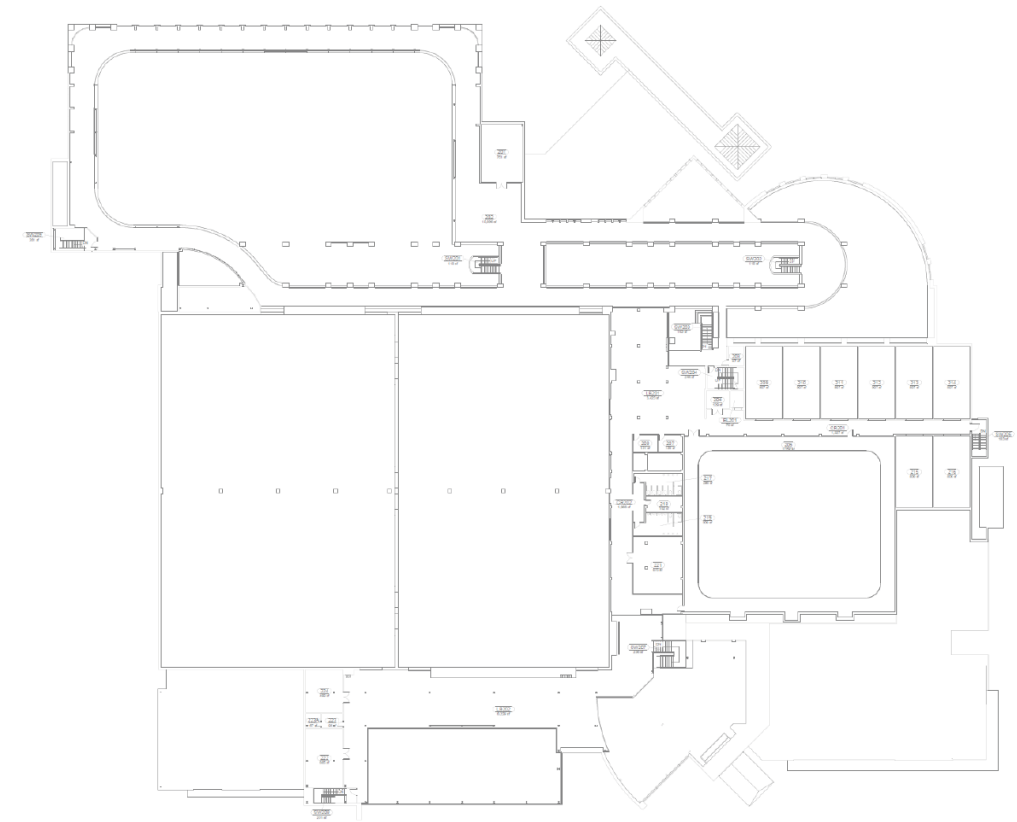
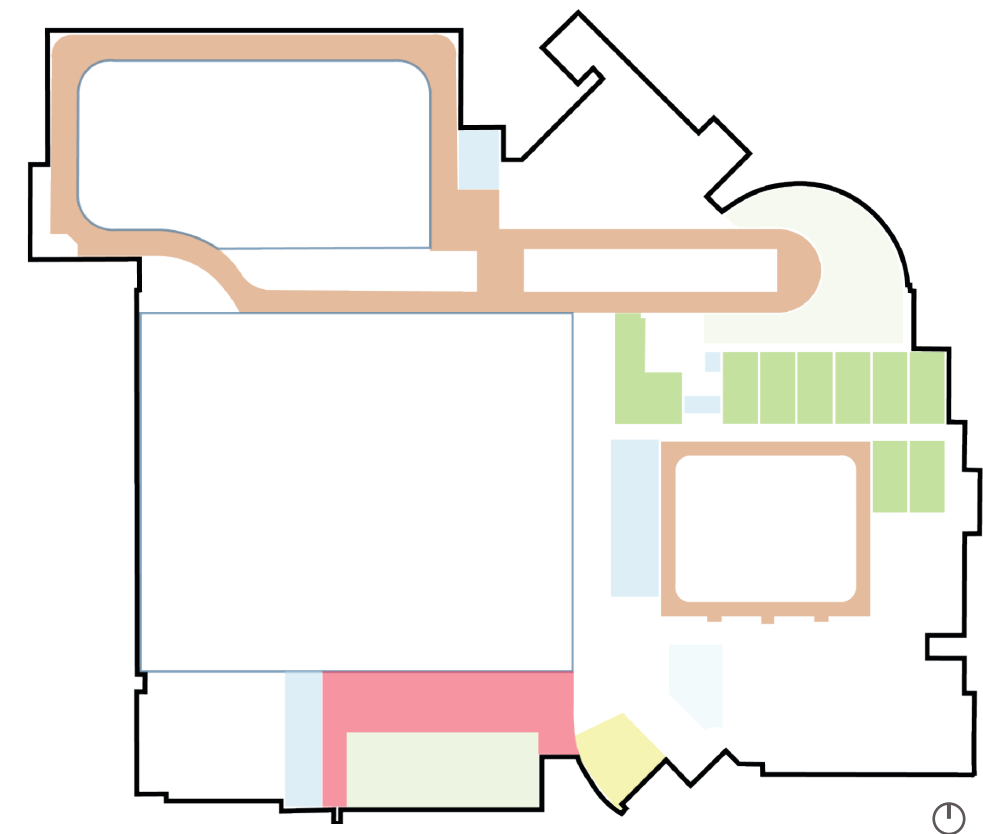


Figure 3.75 Peters Recreation Center Second Floor Plan Map (Kansas State University 2019).



■ Walking Loops
 ■ Cardio Exercise Equipment
 ■ Climbing Wall
■ Offices, Storage, and Amenity Areas
■ Weight Lifting Equipment

Figure 3.76 Peters Recreation Center Second Floor Programming Map (Tilley 2025).

design opportunities

Design opportunities based on the site analysis above are highlighted in Figure 3.77. The site offers circulation around the perimeter but does not provide access through the space. Enhancing how users traverse the site, a connection can be made with the existing sidewalk along the southeast edge. In assessing the existing topography of the site, the northeast area, where the current low point is, should continue to act as detention, overflowing into the existing storm pipes during extreme events. However, this site area also provides the most substantial opportunity for interior-exterior relationships, as the large glass facade of the building and the interior programming direct views into the space. This area should overlap detention with an outdoor classroom space where workout classes like yoga and dance can be brought outside. The visibility of this space also makes it an optimal location for green infrastructure interventions, and implementing tactics that direct water from the building's roof out into the landscape should be considered. Lastly, the interior-exterior visibility lessens further west on the site, with fewer windows and more stone making up the building's facade. This opens up this area for more private gatherings and provides visitors with experiential variety across the site.

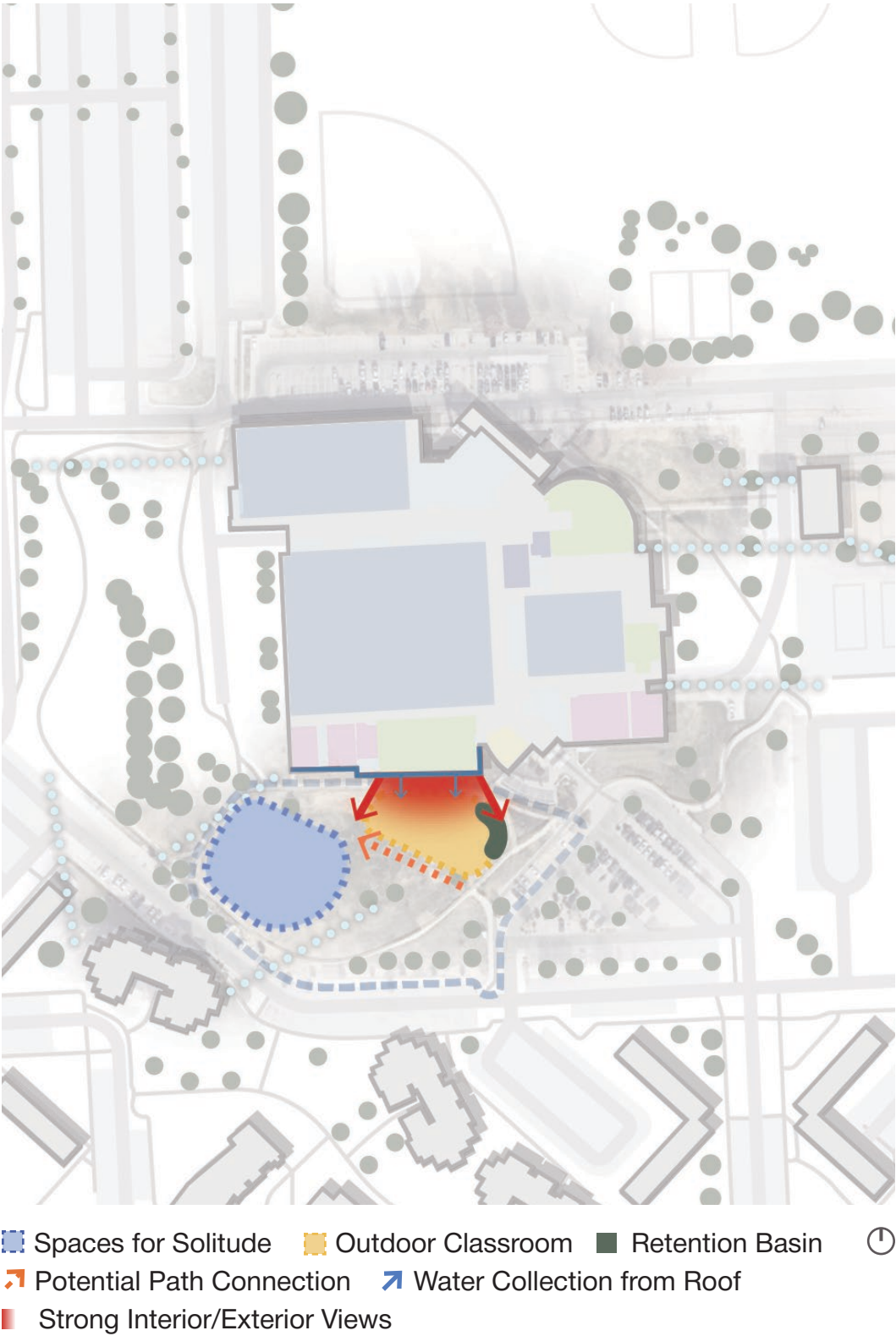


Figure 3.77 Peters Recreation Center Design Opportunities Map (Tilley 2025).



chapter 4

projective design

introduction

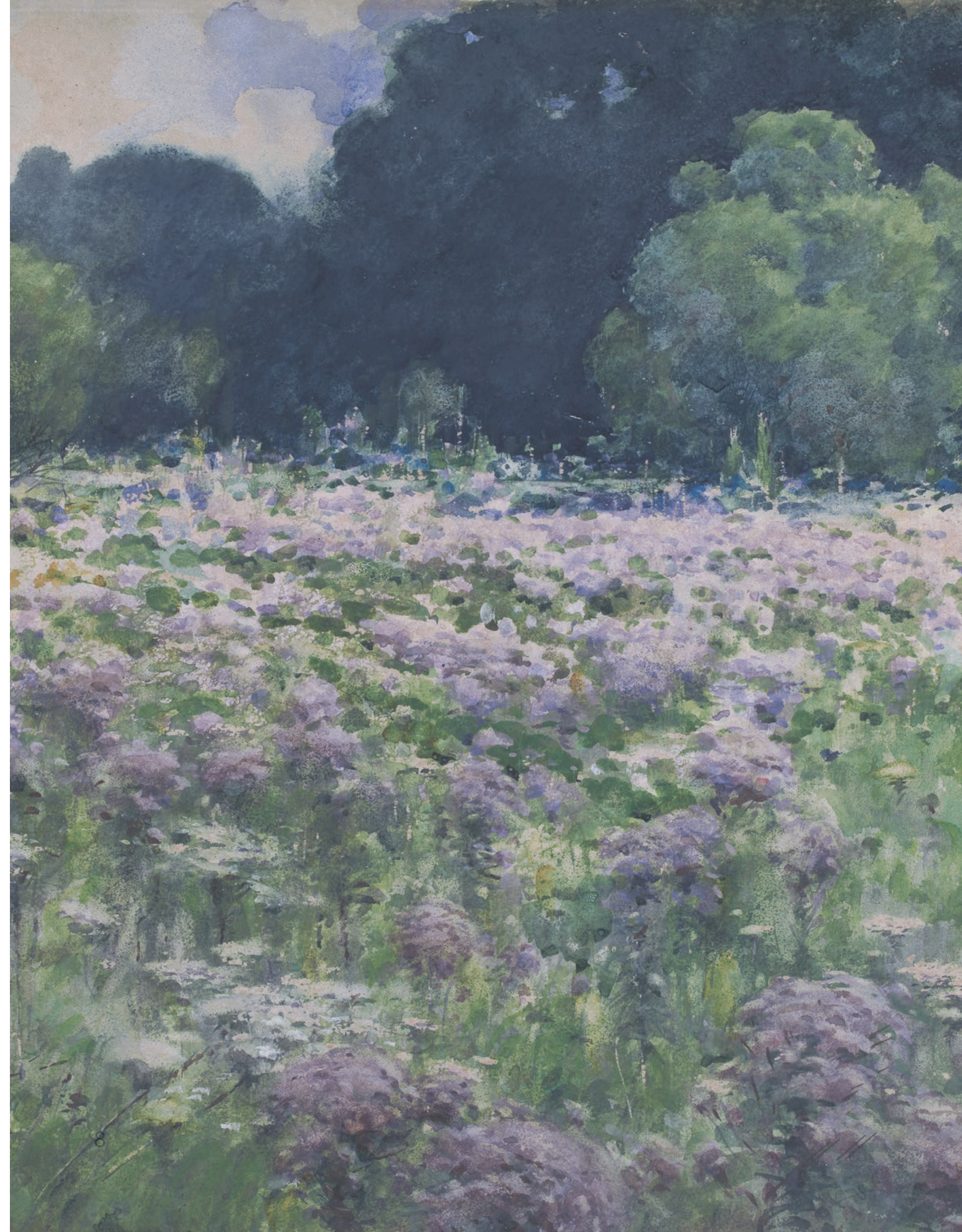
This chapter presents the projective designs for the Peters Recreation and International Student Center sites generated from the findings in the methods chapter. Each design includes explanatory diagrams, a series of illustrative graphics, and charts showcasing how the design incorporated elements of the design framework drafted in the methods chapter.

The design for the International Student Center was submitted as a request for proposal (RFP) through a competition hosted by the Student Governing Association (SGA) to receive a \$250,000 grant to help fund the project. The projective design was shortlisted, and made the final four.

In addition, the projective design for the Peters Recreation site was completed in partial fulfillment of a master plan for the area submitted to the national EPA (Environmental Protection Agency) RainWorks Competition and completed in collaboration with Lukas Freelove and Natalie Kerner.

Chapter 4 Page Break Aerial Shot of the University of Washington (University of Washington n.d.). Used Under Creative Commons.

Figure 4.01 Field of Joe Pie Weeds | Pride of the Meadow (Holmes n.d.). Used under Creative Commons.



project 1

k-state multicultural therapeutic garden

The K-State Multicultural Therapeutic Gardens projective design stands out from the projective design for the Peters Recreation Center and other outdoor spaces on campus by focusing on adaptive reuse and making this central to the design process. The conceptual design aerial (seen in Figures 4.02 & 4.03) transforms the former site with three buildings and limited circulation to an outdoor space containing multiple gathering opportunities, a trail system drawing users into the site. It promotes opportunities for educational growth with signage on green infrastructure systems and international countries.

The site's design concept is broken into two components: the interior and exterior gardens. The interior gardens include the spaces where the former International Student Center used to stand, the small grass courtyard, and parts of the former rain garden. This area is more formal and pulls inspiration from geometric therapeutic gardens to align with the rigid geometry of the previous design. The central node allows users to view and interact with green infrastructure, gather in large or small groups, and take visually aesthetic plantings with eye-catching pops of color.

Surrounding the interior gardens, the exterior gardens provide a gradient into a wilder landscape containing prairie plantings and the mature trees existing on the site previously. This space serves a dual purpose, containing key pathways for students to come and go from their classes. Programming opportunities in this space are more informal, with an area where students can hammock, an open lawn for active or passive recreation, and sculptural art elements scattered along the trail for delight and intrigue.

Figure 4.02 K-State Multicultural Therapeutic Garden Blue Transition Aerial (Tilley 2025).

Figure 4.03 K-State Multicultural Therapeutic Garden Projective Design Overview Aerial (Tilley 2025).





Labyrinth

Study Nooks

Gathering Plaza

Flag Walk

Outdoor Classroom

Rain Garden

ISC History Exhibit

existing & new programming

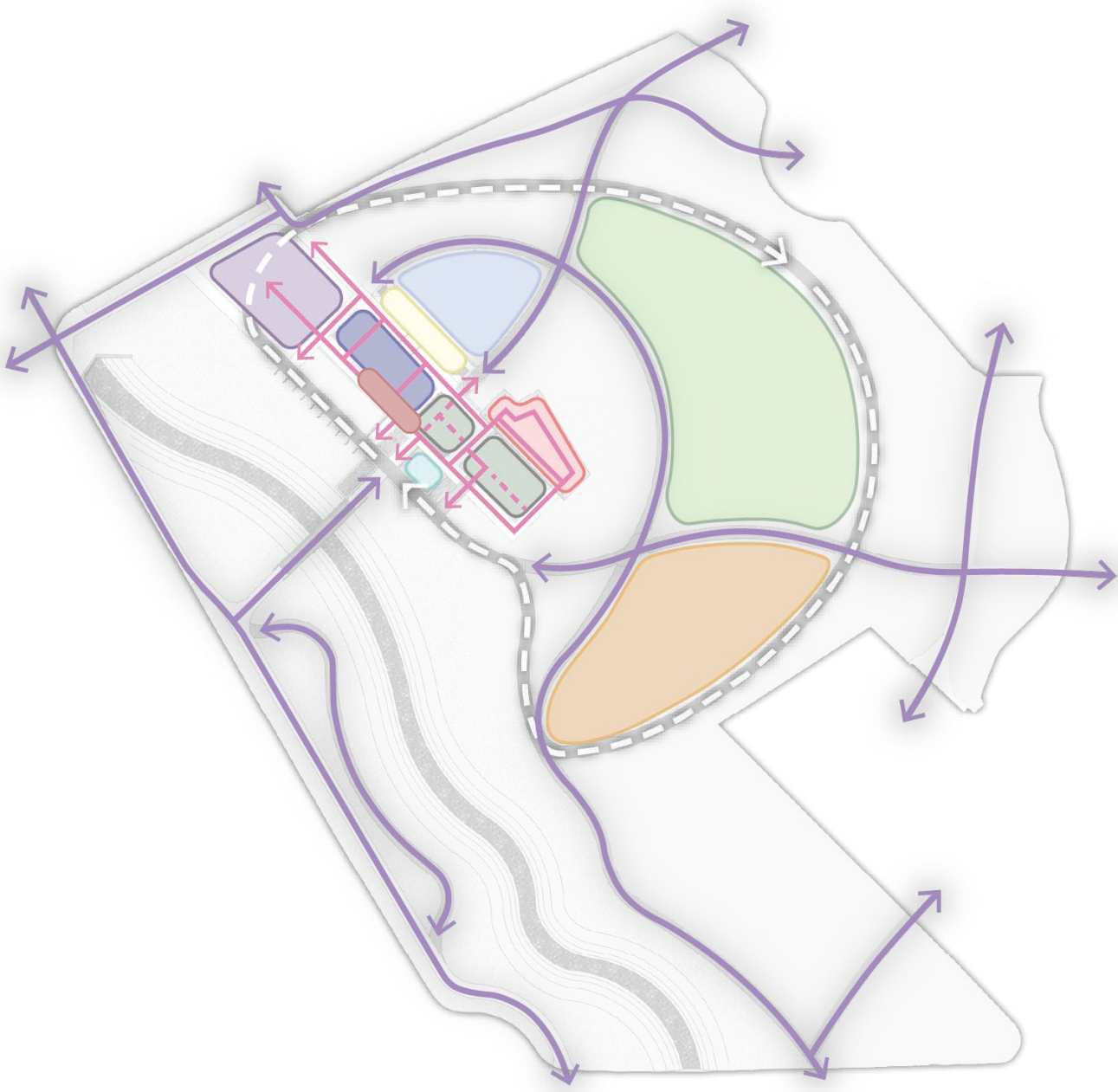
The existing programming within the International Student Center (ISC) includes the services provided in the center and sidewalks surrounding the site's perimeter. The proposed design expands the programming, turning the former center into a lively outdoor garden and gathering space with an expanded sidewalk system, gathering plaza, walking loop, native plant gardens, outdoor study spaces, educational signage and exhibits, a labyrinth, and an outdoor classroom.

Utilizing elements of the previous structures, the gathering plaza rests and replaces the main wing of the ISC, the outdoor educational exhibit on the ISC and the culture of international countries replaces the Korean Wing, and the Taiwan Wing is transformed into an outdoor classroom space that the adjacent buildings can utilize.

existing



proposed



programming & circulation

- | | | |
|----------------|----------------|--------------------------|
| Study Nooks | Zen Garden | Labyrinth |
| Flag Walk | Meadow | Outdoor Classroom |
| Plaza | Activity Lawn | Hammocking Grove |
| Interior Paths | Exterior Paths | Walking Loop (0.2 Miles) |

process

The design process for the redevelopment of the International Student Center was iterative, with various design alternatives. Early design concepts proposed ideas that involved preserving the Taiwan Wing and Korean Wing, and some preserving both buildings before resulting in the final concept that does not include any of the existing buildings. Through discussions with facilities and campus planning staff, it became apparent that there was no reality in which any buildings were preserved entirely. In response, the refined concepts that resulted in the final design utilize adaptive reuse techniques to protect unique and iconic elements that define the site rather than the structures as a whole. The International Student Center’s distinguishable features are its slanted limestone walls, angled roofs, concrete pillars defining the courtyard space, and geometric orientation utilizing an eight-foot grid. All the features listed above can be recognized within the final design that transforms the center into a therapeutic garden.

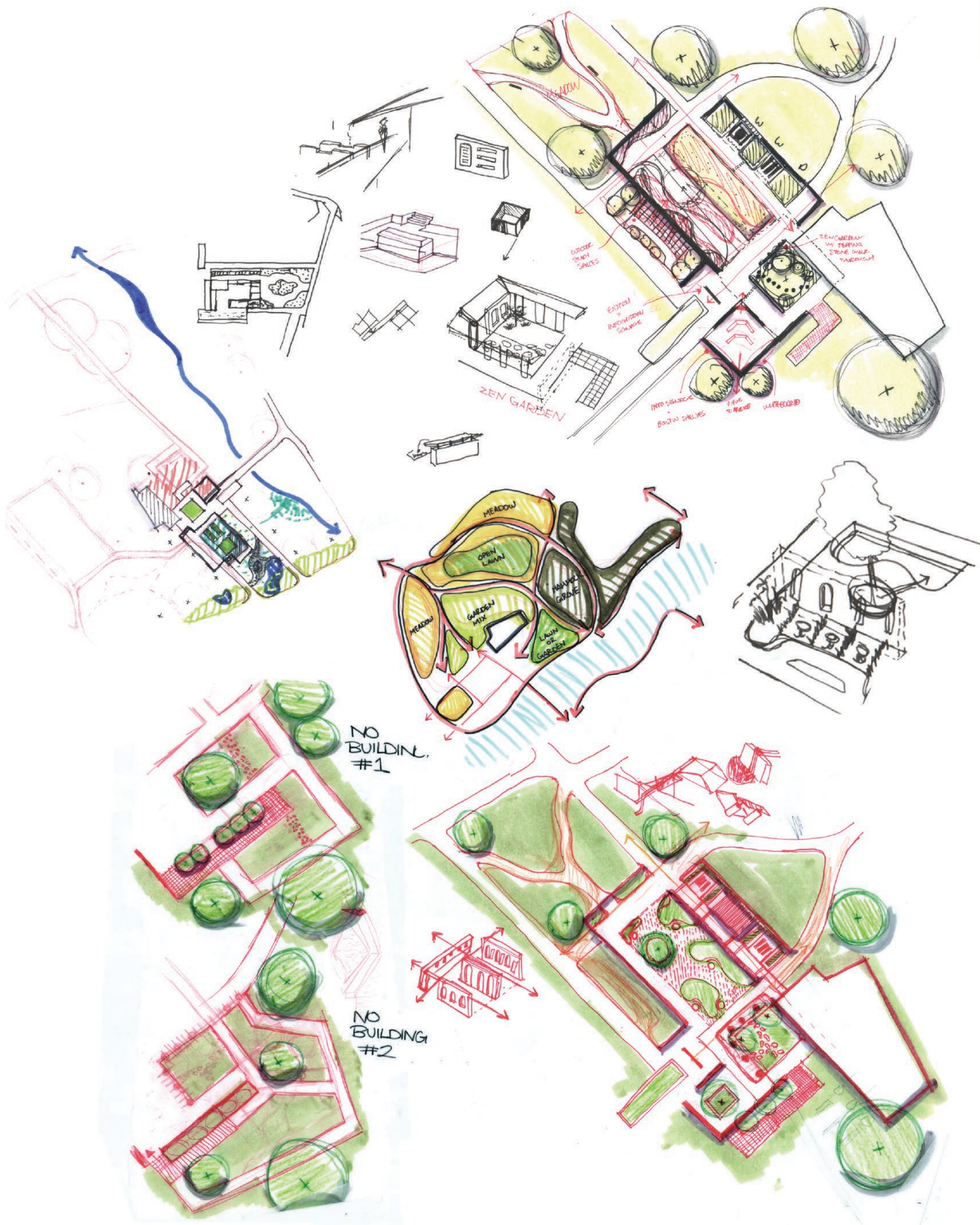


Figure 4.05 K-State Multicultural Therapeutic Garden Process Sketch Collage (Tilley 2025).

existing conditions



Figure 4.06 International Student Center Plan View. Adapted from Google Earth (Tilley 2025).

proposed conditions



Figure 4.07 K-State Multicultural Therapeutic Garden Plan View (Tilley 2025).



artistic green infrastructure

- Sunken Planters with Runnels
- Downspouts Feeding Rain Garden

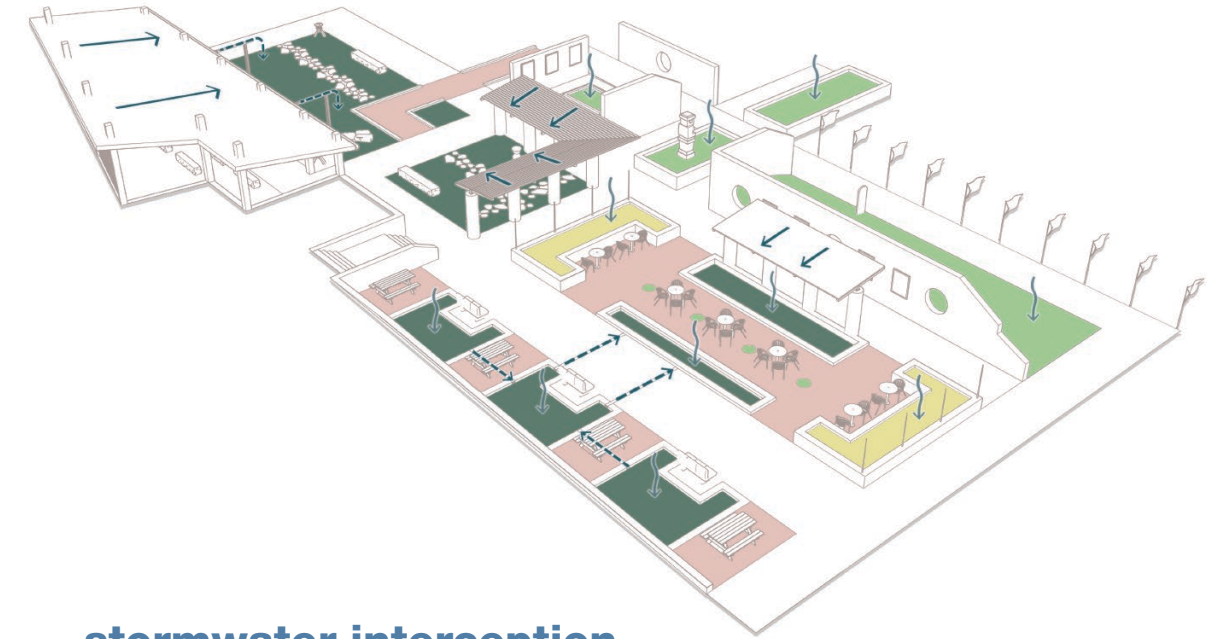
Figure 4.08 ISC Artistic Green Infrastructure Additions (Tilley 2025).



ecological education

- Informative Signage

Figure 4.09 ISC Ecological Education Additions (Tilley 2025).



stormwater interception

- Flow-Through Planters
- Rain Gardens
- Permeable Pavement
- Prairie Plant Mix
- Rainwater Trails
- Designed Rainwater Connections

Figure 4.12 K-State Multicultural Therapeutic Garden Stormwater Management (Tilley 2025).



green infrastructure

- Permeable Pavement
- Rain Gardens
- Tree Plantings

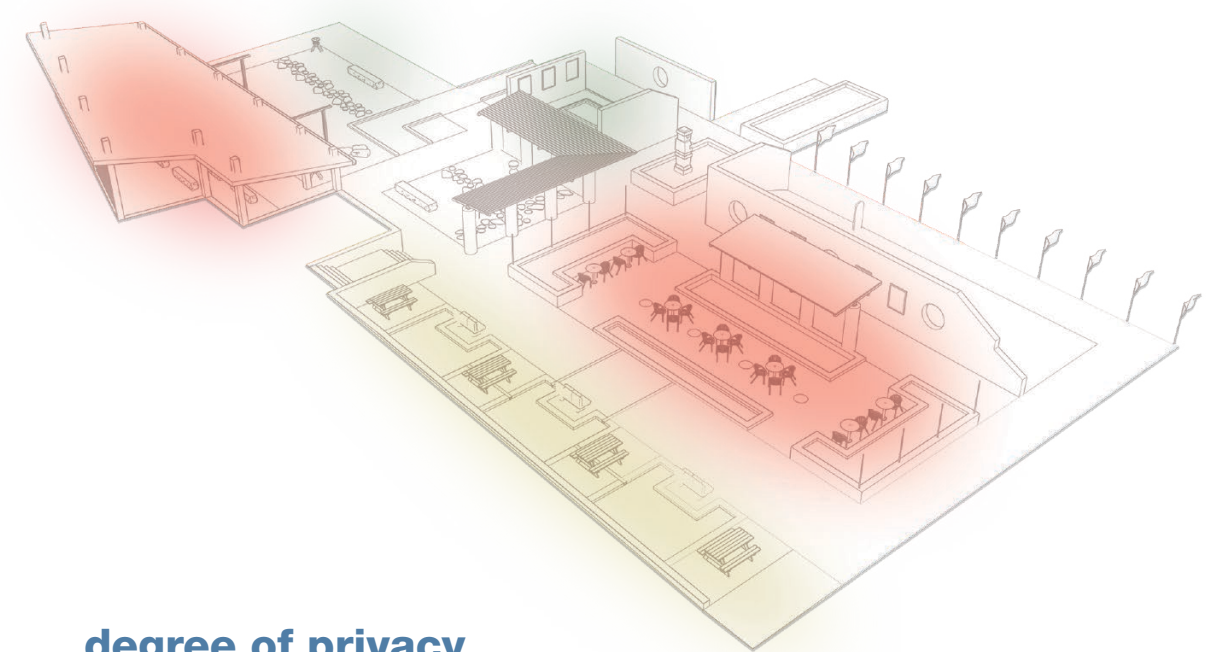
Figure 4.10 ISC Green Infrastructure Additions (Tilley 2025).



placemaking

- Adaptively Reused Architecture
- Public Art

Figure 4.11 ISC Placemaking Additions (Tilley 2025).



degree of privacy

- Public
- Private

Figure 4.13 K-State Multicultural Therapeutic Gardens Privacy Zones (Tilley 2025).

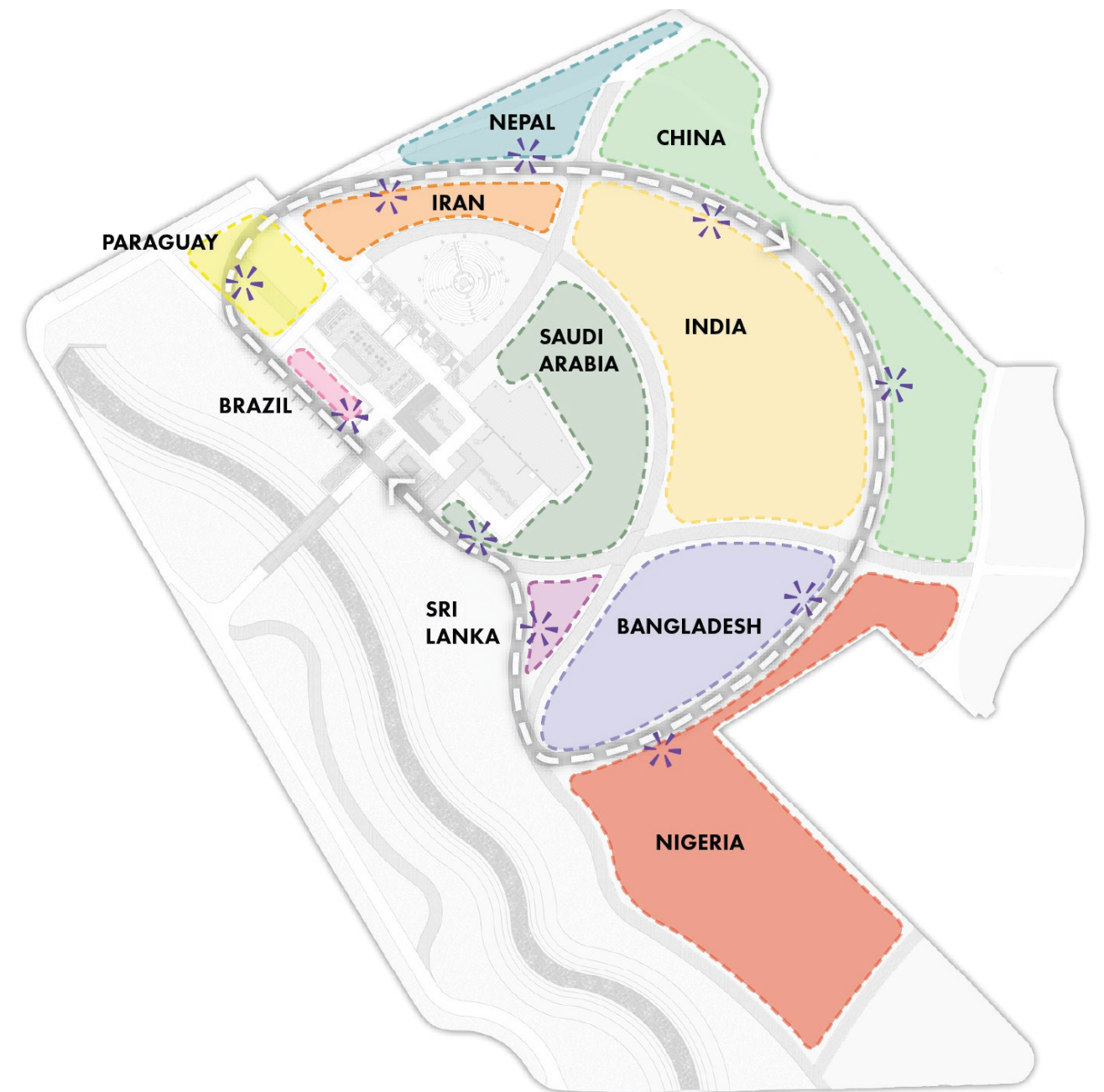
international representation

An assessment of the international student enrollment at K-State was analyzed to ensure that the redesign honors the International Student Center and continues to represent international students on campus. Translating the Fall 2024 enrollment findings into the landscape design, the site was divided into 10 different planting zones, highlighting countries with strong enrollments on campus and representing three key continents (South America, Asia, and Africa). These zones are all supplemented with educational signage that discusses the relationship of the planting selections to the country.

- India - 126 Students
- China - 100 Students
- Iran - 50 Students
- Nepal - 47 Students
- Nigeria - 46 Students
- Bangladesh - 45 Students
- Brazil - 40 Students
- Paraguay - 38 Students
- Saudi Arabia - 29 Students
- Sri Lanka - 29 Students



Figure 4.14 K-State International Student Enrollment Statistics for Fall 2024. Adapted from Kansas State University (Tilley 2025).



planting zones

- ✱ Educational Signage About Plant Selection
- 📏 Walking Loop (0.2 Miles)

Figure 4.15 K-State Multicultural Therapeutic Gardens Planting Zones (Tilley 2025).

education

Educational elements are incorporated into the design through various forms of signage, educational public art, and an outdoor touch screen. Where the Korean Wing used to stand, a history exhibit dedicated to the International Student Center conveys the site's past of being built between the 1970s and 1990s through the help of private donations and designs drafted by William Eidson, a noteworthy architect in Manhattan and a 1951 graduate of the Architecture program at the then-Kansas State College (Fein and Grogan 2022). Between the outdoor classroom (former Taiwan Wing) and the rain garden, educational signage on the designed artistic green infrastructure systems explains the process of how the angle of the roof helps collect water during storm events that get channeled into downspouts that feed the rain garden and how the rain garden helps retain water during storm events. Along the designed walking loop, signage and public art on the ten most enrolled international countries at K-State are showcased, with signage elaborating on the utilized plant palette and how it relates to the country, as well as sculptural elements that showcase art styles of the country and features an animal of cultural importance. The signage utilizes a lavender color that helps draw users' attention and aligns with campus branding. Lastly, to highlight all the international countries at K-State, a digital display screen in the outdoor classroom provides a global view where students can interact with the different countries to learn more about the culture and their enrollment statistics here at K-State. Instructors can also utilize this screen to give presentations to their students.

recreation

The K-State Multicultural Therapeutic Gardens offers outlets for recreation with an interior garden for rest, a walking loop for light exercise, and an open lawn space for students to utilize for active recreation and sports activities. The interior gardens feature a variety of seating typologies with movable seating in the gathering plaza, wooden tables and benches adjacent to the plaza, and limestone block seating surrounding the rain garden and in the outdoor classroom. Located east of the interior gardens, a labyrinth allows users to engage with the site in a way that helps quiet the mind, provide spiritual relief, and reduce stress and anxiety.



Figure 4.16 Former Korean Wing Redesigned as History Exhibit for the International Student Center (Tilley 2025).



Figure 4.17 Fitness Loop in the Exterior Garden Promotes Education with Signage on Planting and Sculpture's Connections to Country (Tilley 2025).

safety

Safety is incorporated into the design by utilizing low-rise walls in the interior gardens to help enforce circulation and divide spaces. In the plaza, the sunken planters are surrounded by concrete curbs to discourage users from entering. Additionally, these planters feature denser plantings closer to the system's edge to enhance the implied barrier effect and prevent users from entering. These planters are equipped with runnels that feed water into the planters and the central plaza during more significant storm events. The runnels are covered with steel grates to avoid tripping hazards. Furthermore, the paths across the majority of the site are paved to promote ADA accessibility and further discourage creating tripping hazards.

aesthetic richness

The design for the interior gardens utilizes orthogonal geometry to create a connection with the site's previous design. This orientation also helps maximize the programmable space while expanding the available garden areas. By retaining much of the existing limestone, the site visually aligns with its surrounding context but adds interest through its soft contrast of incorporated materials and vegetation. Utilizing unit pavers in the history exhibit, plaza, and outdoor classroom helps define the space while adding an enjoyable color contrast on the ground. As for overhead structures, warmer-toned woods align with the detailing on the former structures while creating an eye-catching contrast with the limestone. Through plant material, the space offers a variety in aesthetics by implementing smaller-sized plantings to help the space feel more human-scale in the interior gardens. In contrast, the exterior gardens' presence of existing mature trees and tall grasses provides access to a wilder presenting landscape.



Figure 4.18 Permeable Paving and Low-Rise Walls Help Define Spaces and Reinforce Circulation Patterns (Tilley 2025).



Figure 4.19 Sitting and Entering the Expanded Rain Garden is Encourage with Informal Stepping Stone Paths and Seating Blocks (Tilley 2025).

incorporations of well-being

Eight design ideas facilitate student well-being. Planting allows multi-sensory stimulation with visually stimulating colors and textures that seasonally change, the sound of rustling leaves/vegetation in the wind, and the opportunity to touch and smell plants near seating areas. A walking loop incorporating new paths strengthens existing circulation and promotes physical activity. Public art stimulates mental intrigue/activity while also representing cultural identities. Spiritual reflection is offered using a labyrinth that helps students, staff, faculty, and visitors focus and relax. Educational growth opportunities are provided via signs and materials that inform and educate about green infrastructure systems and K-State’s international student populations. The design promotes physical comfort with various types of seating in areas in differing zones across the site. User satisfaction with the space is promoted by establishing a unique identity that connects visitors to the past and differentiates itself from the surrounding area. Finally, the design reduces stress through proximity, connections with nature, and structures utilizing natural materials.

-  **Provides Multi-Sensory Stimulation** through plantings that rustle in the wind, promote touch, and are visually stimulating.
-  **Encourages Physical Activity** with walking loop
-  **Stimulates Mental Intrigue** through public art
-  **Offers Opportunities for Spiritual Reflection** with Labyrinth
-  **Provides Educational Growth** via signage educating users on green infrastructure systems and K-States international student populations
-  **Promotes Physical Comfort** with various types of seating and in areas with differing microclimates
-  **Promotes User Satisfaction** by establishing a space with a unique identity that differentiates itself from the surrounding area
-  **Reduces Stress** through close proximity and connections with nature and structures utilizing natural materials.

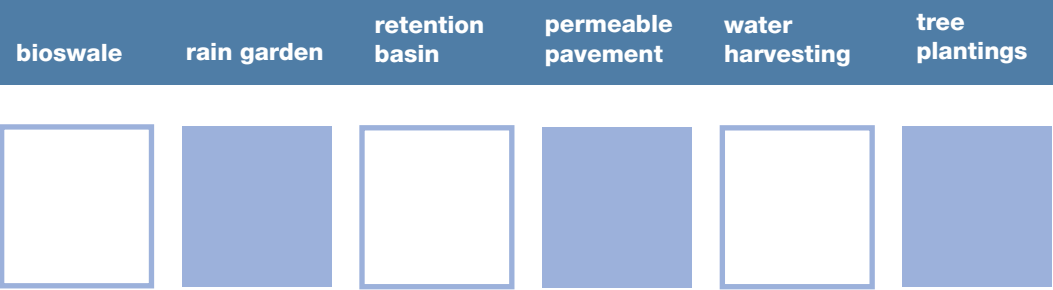


Figure 4.20 Therapeutic Incorporations in the K-State Multicultural Therapeutic Gardens (Tilley 2025).

green infrastructure utility

Utilizing rain gardens, permeable pavement, and tree plantings, the design enhances the therapeutic quality offered by on-site amenities and provides utility benefits. These three techniques help reduce water treatment needs, improve water quality, reduce gray infrastructure needs, and reduce flooding. These benefits are vital when analyzing the context and conditions of the International Student Center Site. With water flowing from the site into the adjacent Campus Creek, increasing filtration to reduce pollutants and improve water quality was a necessary consideration in the redesign. Additionally, the site features limited gray infrastructure, with most existing pipes being capped and unused, meaning that utilizing systems that reduce the need for gray infrastructure was another essential consideration. Other benefits these three tactics provide are improvements in air quality, reduced atmospheric carbon, a lessened heat island effect, and more (refer to Figure 4.22).

green infrastructure systems



supporting features

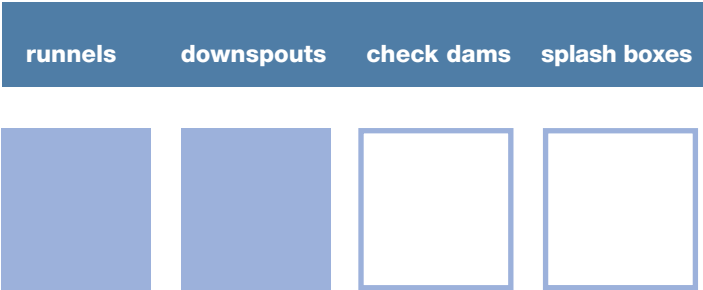


Figure 4.21 Green Infrastructure and Supporting Features Used in ISC Projective Design (Tilley 2025).

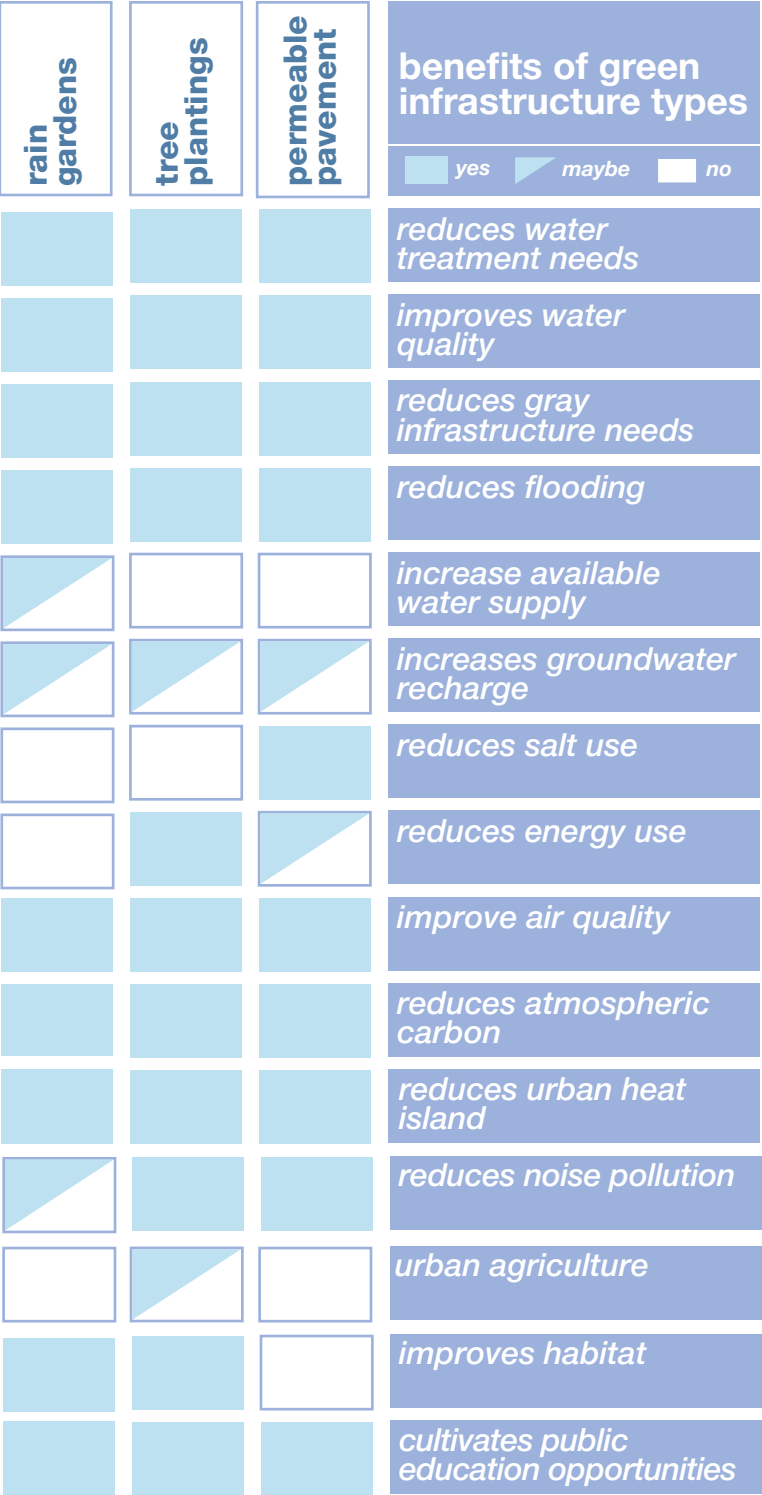


Figure 4.22 Utility Benefits of Green Infrastructure Systems Included in ISC Projective Design (Tilley 2025).

education

draw attention to systems

- Calls out green infrastructure systems by making them visually engaging using contrasts in materiality and material color that help distract users from their life’s stressors.
- Calls out green infrastructure systems by making them aromatically engaging using plants with pleasing aromas during warm seasons that help distract users from their life’s stressors.
- Designs stormwater systems on the surface and at varying heights to promote visibility and soothe users by viewing running water.

public art

- Incorporates visually engaging sculptural elements by creating contrasts between the built elements and the natural vegetation backdrop promoting passive engagement of the mind.
- Incorporates sculptural elements with educational narratives that help display the art styles of different countries and educates visitors on the country’s culture.

signage

- Creates eye-catching signage with lavender color contrasts near seating and walking areas to promote visibility and help those with visual impairments.
- Utilizes diagrammatic signage with minimal text to enhance legibility.
- Integrates an outdoor touch screen that users are involuntarily drawn to and can interact with to promote educational opportunities and provide a brief distraction from their busy lives.

Figure 4.23 Education Framework Components Incorporated in ISC Projective Design (Tilley 2025).

recreation

circulate

- Locates seating across the site in areas where users can enjoy different views and experience visual delight in watching the plantings interact with the wind and other natural elements.
- Places seating in areas with differing shade levels to provide access to different microclimates and prospect-refuge opportunities.
- Incorporates different seating types for added interest and a sense of choice where users can find comfort in their selection.
- Encourages exploration and a sense of adventure with an implied path through the expanded rain garden via stepping stones.

enter

- Creates entry points that connect with the surrounding area and the Derby Community to the south to promote access to healing landscapes.
- Defines entry points with low and high rise walls for ease of wayfinding and a positive sense of discovery when entering the space.

engage

- Encourages users to enter the rain garden with the steeping stone path increasing opportunities for tactile interactions with plantings.
- Promotes people watching opportunities with picnic table seating adjacent to the plaza, and seating within the history exhibit directing views towards the outdoor classroom space help establish a sense of community.
- Creates areas for private gatherings plantings that help create separation between seating zones.

Figure 4.24 Recreation Framework Components Incorporated in ISC Projective Design (Tilley 2025).

safety

horizontal barriers

- Utilizes low rise walls to promote close connections with systems and opportunities for sensory engagement while creating separation.
- Includes elevated path edges and changes in paving material in to enhance spacial legibility and prevent falls.
- Utilizes plantings to created implied barriers restricting visitors from entering certain systems.

vertical barriers

- Low-rise walls that shape the sunken spaces are surrounded with dense vegetation to avoid entry and ensure safety.
- Raised planters within the interior gardens create privacy and help define circulation through the space.
- High-rise walls promote a sense of safety, feelings of prospect refuge, and define the interior gardens from the exterior gardens.

tripping hazards

- Avoids rough and uneven pathways with a paved walking loop and primary paths.
- Utilizes unit pavers with tight joints to prevent trips.
- Incorporates runnels with steel grate runnels that lay flush with the adjacent path.

Figure 4.25 Safety Framework Components Incorporated in ISC Projective Design (Tilley 2025).

aesthetic richness

visual interest

- Creates visually rich spaces that utilize soft contrasts in materials and color to promote interest and maintain legibility.
- Specifies a variety of plants with intriguing growth patterns, differing heights, and eyecatching pops of color.
- Specifies rough cut limestone, tinted concrete unit pavers, and stepping stones to add visual depth to the built elements on site.
- Provides seating with views of tallgrasses that create pleasing visual movement when swaying in the wind and casting shadows.

auditory interest

- Locates seating near locations with falling water interacting with different systems for auditory delight (water falling into the gardens, rain bowls and rain drums).
- Locates seating near grasses that rustle in the wind and create calming sounds that help make users feel connected with the space.

tactile interest

- Rough cut limestone, tinted concrete unit pavers, and stepping stones add tactile texture to the built elements on site.
- Locates native plantings near seating areas to encourage tactile interactions.
- Scupper arms bringing water across the sidewalk and into the rain garden allows visitors to interact with the water flowing off the pavilion before entering the rain garden.

Figure 4.26 Aesthetic Richness Framework Components Incorporated in ISC Projective Design (Tilley 2025).

project 2

peters recreation center healing gardens

The Peters Recreation Center Healing Gardens separates itself from the projective design for the International Student Center by creating strong ties to outdoor fitness and recreational opportunities that support the interior programming of the recreation center. The design transforms the existing detention basin into a habitable space for outdoor classes while providing valuable stormwater retention at the top of the Campus Creek watershed. Aside from being utilized for fitness classes, the lawn offers opportunities for casual gatherings, and added rain and pollinator gardens serve a dual purpose of connecting users to nature to help relieve stress while helping to increase water filtration and infiltration.

The garden's design concept is a product of three key goals derived from the site analysis: bring the interior functions of the recreation center out into the landscape, improve connections with the site adjacencies and the Jardine Community, and direct stormwater practices to the surface to support ecological functions and enrich the therapeutic quality of the space.

Translating these goals into the final design, a newly implemented path along the south provides a connection from Jardine into the gardens with an offered crosswalk. Continuing into the site, this path directs visitors to the plaza in the heart, where users can rest amongst lush vegetation. The placement of the plaza is made possible with a “U-shaped” treatment train designed to hold stormwater during intense storm events, creating a moat that surrounds the plaza and lawn before being piped off-site. With the help of check dam bridges, the designed systems allow the site to be operable regardless of weather conditions.

Figure 4.27 Peters Recreation Center Healing Garden Blue Transition Aerial (Tilley 2025).

Figure 4.28 Peters Recreation Center Healing Garden Projective Design Overview Aerial (Tilley 2025).





Check Dam Bridge

Pollinator Garden

Observation Deck

..... **Fitness Lawn**

..... **Central Plaza**

..... **Rain Garden**

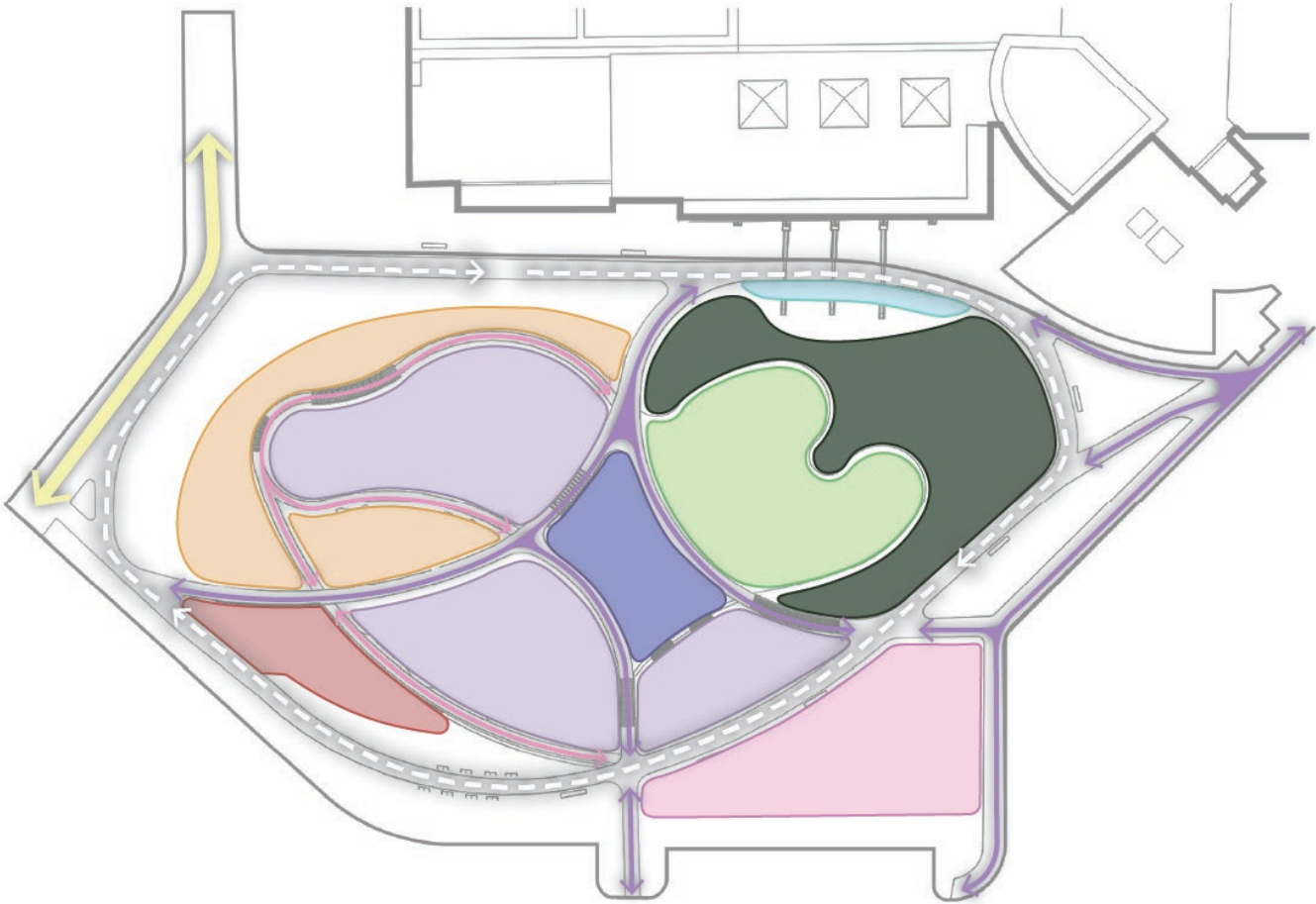
existing & new programming

The existing programming for the site selected at the Peters Recreation Center includes a crushed limestone path spanning the perimeter with connections to the adjacent areas and its role as a detention basin to hold rainwater during storm events. The proposed design continues to provide stormwater detention and retains existing paths while turning the former bare basin into an inviting healing garden centered around outdoor fitness. With this redesign, users now have access to an expanded trail and sidewalk system with a paved walking loop and seating opportunities, an outdoor activity lawn to be utilized by the recreation center as outdoor classroom space with two areas for small and large classes, a central plaza where visitors can relax, various gardens, and an observation deck.

existing



proposed



programming & circulation

- Plaza
- Activity Lawn
- Crushed Limestone Trails
- Paved Paths
- Walking Loop (0.2 Miles)
- Pedestrian Mall/Vehicle Access
- Detention Basin
- Grove
- Pollinator Garden
- Rain Garden
- Observation Deck

Figure 4.29 Peters Recreation Center Healing Garden Programming and Circulation Diagram (Tilley 2025).

process

The projective design for the Peters Recreation Center was a process spanning multiple months and involved participation from various stakeholders. Design revisions were made with the help of Kansas State University's lead landscape architect and project manager, campus facilities employees, and biological and agricultural engineering professors and students. Across these reviews, the location of the gardens shifted multiple times before concluding on this location south of the recreation center. The primary goals for this redesign were to design stormwater systems on the surface, reduce the need for gray infrastructure in the area, and enhance community connectivity by maximizing the site's usage. As a result, the final design utilizes several green infrastructure tactics, provides a space for activities inside the recreation center to be brought outside, and creates ties to the Jardine Community via a newly proposed path connection.

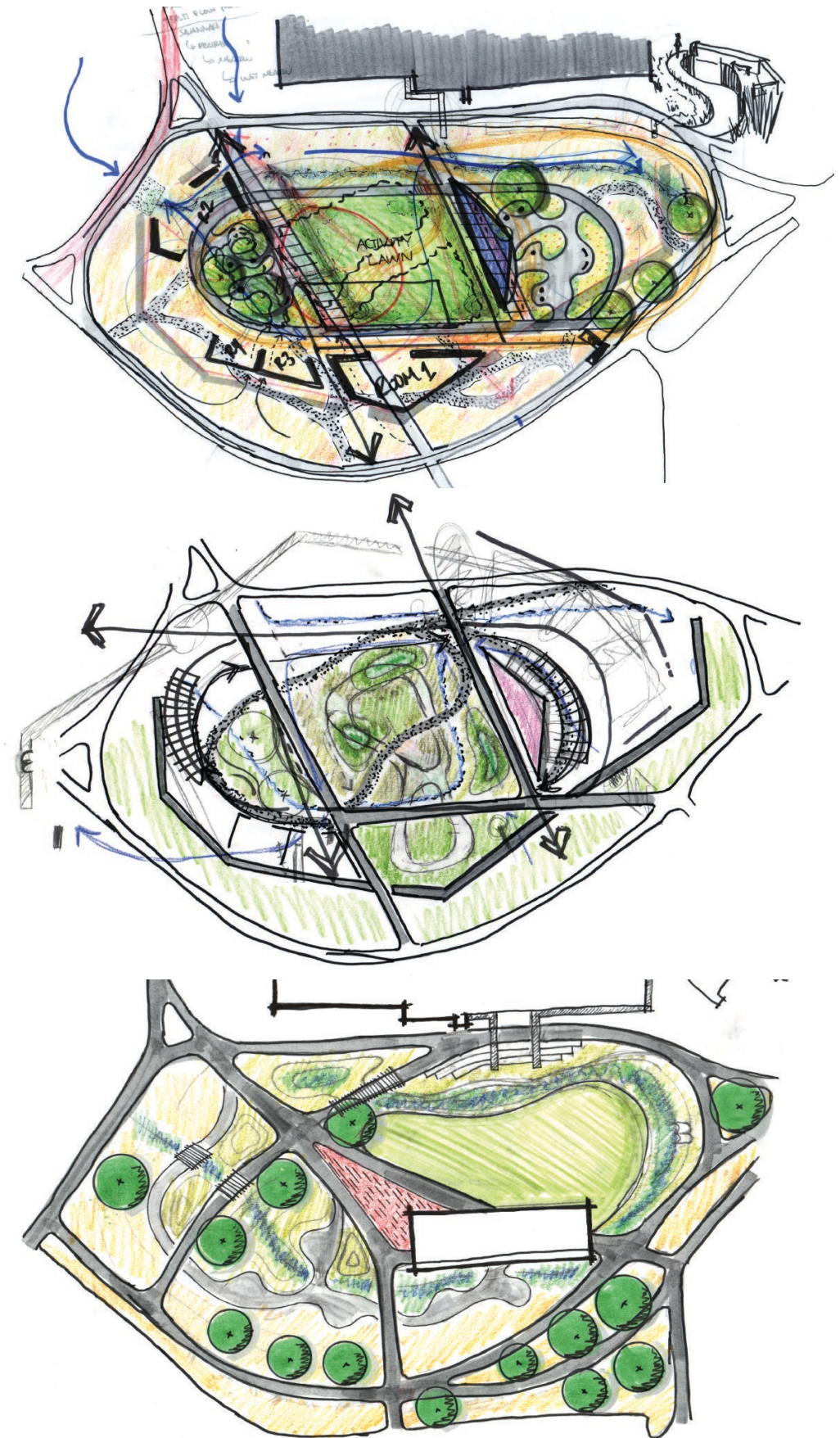


Figure 4.30 Peters Recreation Center Healing Garden Process Sketch Collage (Tilley 2025).

existing conditions

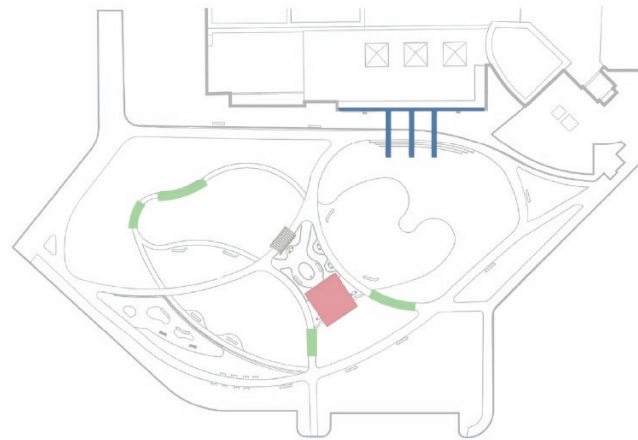


Figure 4.31 Peters Recreation Center Plan View. Adapted from Google Earth (Tilley 2025).

proposed conditions



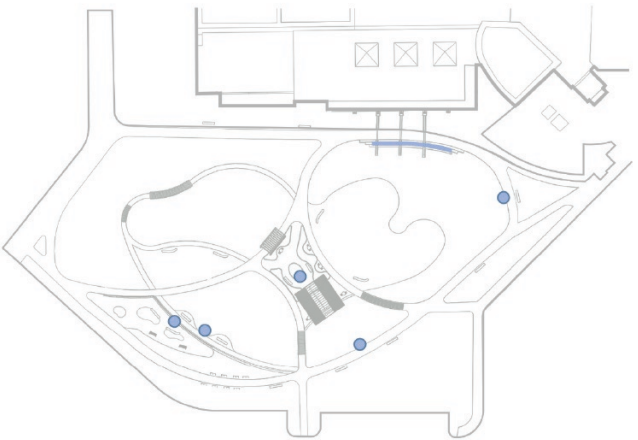
Figure 4.32 Peters Recreation Center Healing Garden Plan View (Tilley 2025).



artistic green infrastructure

- Walk Over Check Dams
- Shade Structure that Feeds Bioswale
- Downspout, Splashbox, Runnel Treatment Train

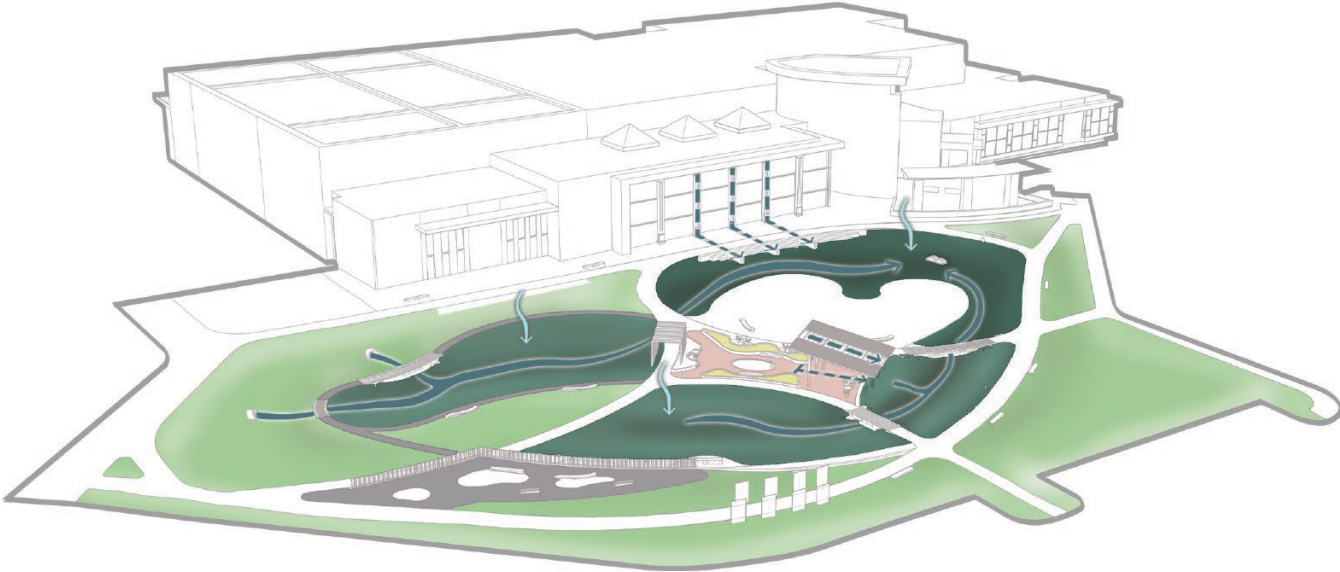
Figure 4.33 Rec Artistic Green Infrastructure Additions (Tilley 2025).



ecological education

- Informative Signage
- Engraved Ampitheater Seating

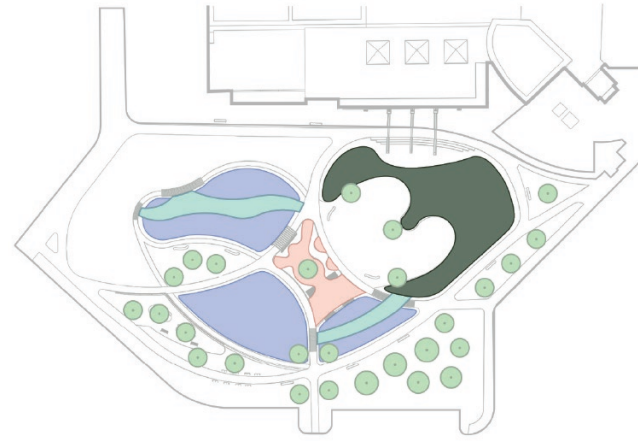
Figure 4.34 Rec Ecological Education Additions (Tilley 2025).



stormwater interception

- Flow-Through Planters
- Rain Gardens
- Permeable Pavement
- Prairie Plant Mix
- Rainwater Trails
- Designed Rainwater Connections

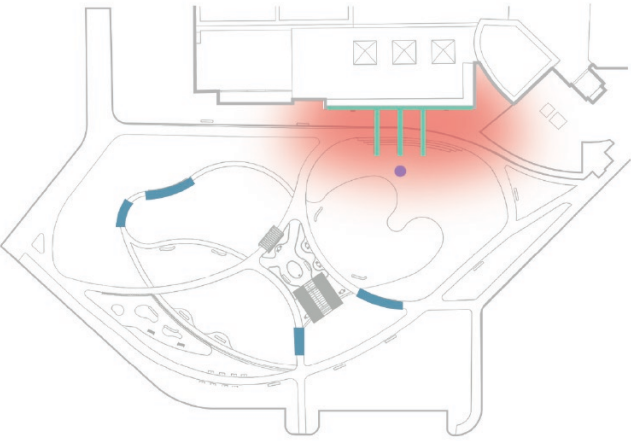
Figure 4.37 Peters Recreation Center Healing Garden Stormwater Management (Tilley 2025).



green infrastructure

- Rain Gardens
- Detention Basin
- Tree Plantings
- Bioswale
- Permeable Pavement

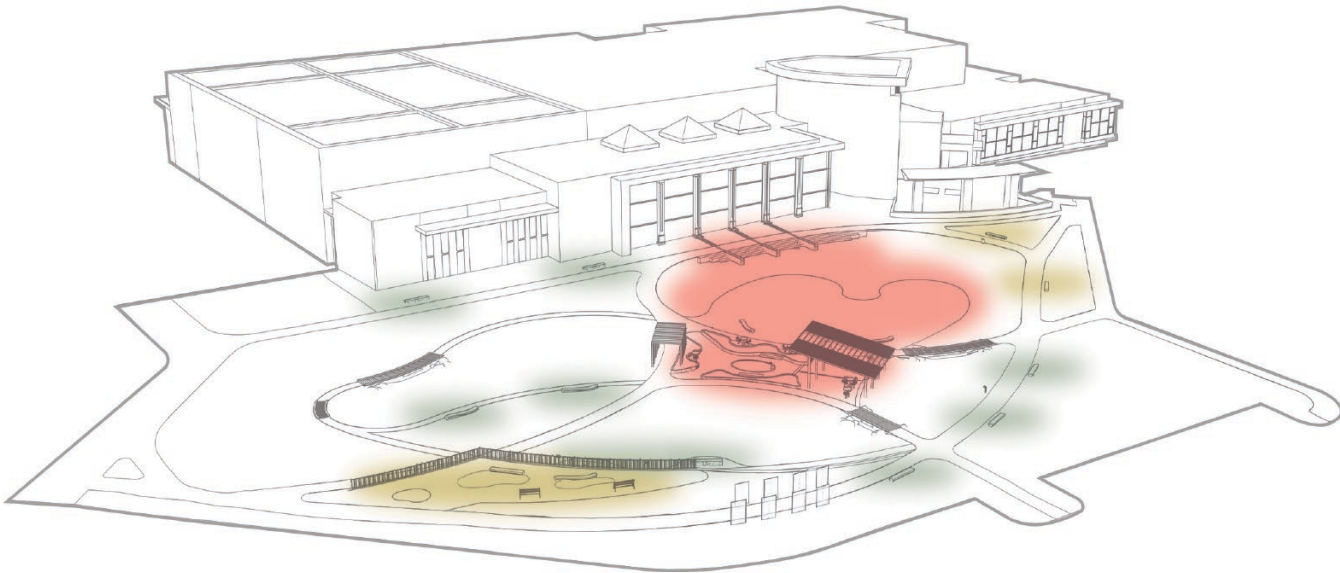
Figure 4.35 Rec Green Infrastructure Additions (Tilley 2025).



placemaking

- Repurposed Rock Gabion Check Dams
- Artful GI Off Existing Building
- Interior/Exterior Relationship
- Public Art

Figure 4.36 Rec Placemaking Additions (Tilley 2025).



degree of privacy

- Public
- Private

Figure 4.38 Peters Recreation Center Healing Garden Privacy Zones (Tilley 2025).

runoff from structures

Water from the southern end of the Peters Recreation Center's roof is brought into the site through a series that helps filter sediment and allow user engagement. Water first is directed from downspouts into stone-filled splash boxes that hold the initial sediment and overflow into exposed stone-filled runnels that are covered to traverse the sidewalk and daylight on the other side. Amphitheater seating on the side of the sidewalk opposite the building encourages users to sit amongst the runnels as water is transported into the site. It allows them to touch the flowing water before it enters the basin.

Pulling inspiration from the International Student Center, the Peters Recreation Center Healing Gardens incorporates an angled roof that helps direct water into the adjacent bioswale. Before entering the swale, water is dispersed towards two rain chains, which are slowed to decrease erosion. The rain chains also help create a visually stimulating feature for users to enjoy that increases the time between water falling from the pavilion and the swale for users sitting in the adjacent seating to enjoy.

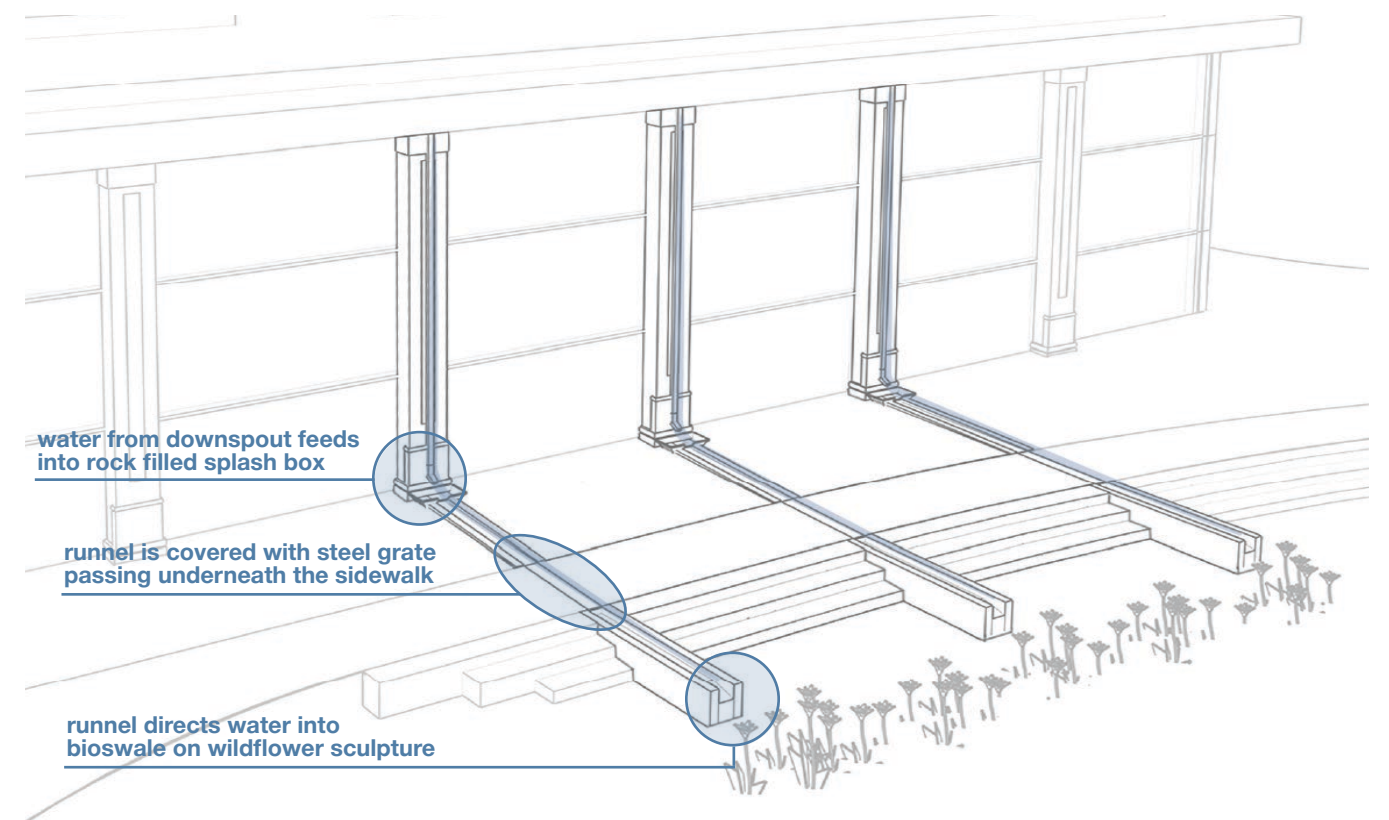


Figure 4.39 Stormwater System Directing Water from Peters Recreation Center Roof to Bioswale (Tilley 2025).

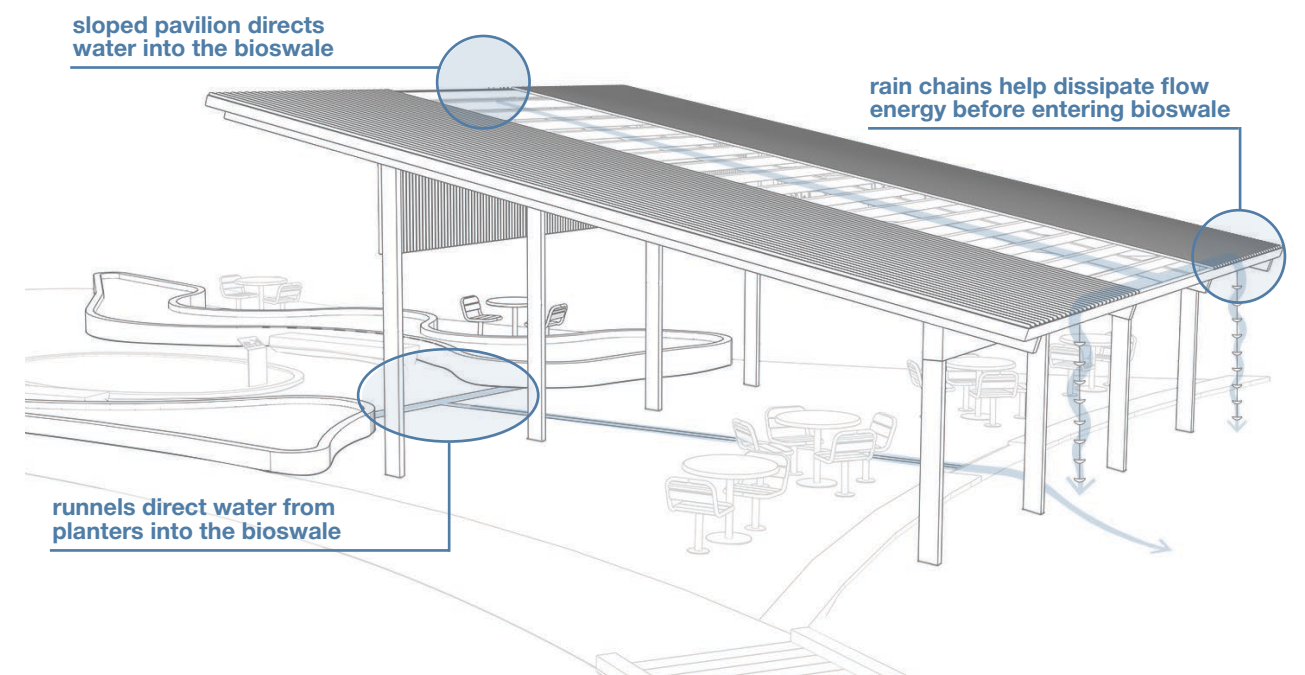


Figure 4.40 Stormwater System Directing Water From Plaza Pavilion and Planters into Bioswale (Tilley 2025).

education

Design elements enhance the site’s educational value through strategic signage and a narrative on native landscape preservation. Site-wide signage explains the incorporated green infrastructure systems. The plaza’s signage highlights the flow-through planters directing water to a landscaped swale. Signage on the railing in the observation deck provides a holistic site stormwater interception diagram expressing how all the pieces come together. The signage below details the rain garden’s role in supporting the detention basin during intense storms. Along the walking loop, the provided signage illustrates how the pavilion’s angled roof channels water into the vegetated swale and emphasizes the landscape’s capacity to retain stormwater and reduce runoff.

Aside from signage, the design conveys a narrative on the importance of preserving our native landscapes. This narrative is expressed in the site’s northeast corner, where the interior-exterior relationship between the gardens and the recreation center is most substantial. Here, downspouts of the building facade feed water into runnels and direct it into the detention basin, cutting through the provided amphitheater seating. The water is brought into the basin directly adjacent to the native wildflower sculpture, and the amphitheater seating is engraved with the quote, “Where flowers bloom, so does hope.” This quote stems from Claudia Alta (Lady Bird) Johnson, the First Lady of the United States from 1963 to 1969, a well-known environmentalist who dedicated her life to preserving the natural environment. This quote, within the context of the treatment train, helps express this narrative.

recreation

The Peters Recreation Healing Gardens promotes recreational opportunities with areas to rest, a fitness loop along the site’s perimeter for walking or running, and an outdoor lawn space for outdoor fitness classes or casual gatherings with an adjacent plaza. Across the trails, observation deck, and plaza, a wide range of seating typologies are specified for users to enjoy and take in different views of the gardens. Lastly, the crushed limestone trails and check dams allow users to develop a stronger connection with the gardens and truly become engulfed in their environment to ease their minds and help manage stress.



Figure 4.41 Runnel and Downspout Connection Directing Water into the Site and Enhancing Interior-Exterior Relationships (Tilley 2025).



Figure 4.42 Observation Deck Providing an Expanded View of the Site With Supporting Signage on Site’s Function During Storm Events (Tilley 2025).

safety

The safety of visitors is ensured within the design by providing curbed edges along the check dam boardwalks traversing the designed swales, utilizing larger plantings along the edges of systems to deter visitors from entering unwanted areas, and including a railing along the edge of the observation deck to invite users to the edge without the risk of falling. To avoid tripping hazards across the site, all primary paths are paved to promote ADA accessibility, and the integrated runnels spanning the sidewalks are covered with steel grates for easy crossing.

aesthetic richness

The garden design features organic geometries with subtle curves, encouraging visitors to slow down and enjoy their surroundings. Likewise, the lush plantings and pops of colors offered by the native perennials help create a place people want to spend time in. The plaza at the heart of the gardens accounts for this, providing an area to rest and enjoy the gardens while also designed to be aesthetically rich. Utilizing subtle contrasts in colors and materials, the plaza is defined by a shift from concrete paths to stone unit pavers along the ground plane. The greens of the plantings within the bronzing corten steel planters help showcase a delightful color contrast between built and natural elements. On the pavilion structure, deep gray steel helps to expand the array of gray hues within the space, and the incorporation of blue acrylic adds a pop of colors that casts a shadow on the runnels from the flow-through planters, artistically highlighting the system. Making the landscape feel more human-scale, repurposed rock from the eroding channels on the west side of the recreation center helps form the steel gabion check dams in the surrounding gardens and featured across the site to add detail to the large planted zones.



Figure 4.43 Central Plaza with Privacy Plantings and Flow-Through Planters Feeding Adjacent Bioswale (Tilley 2025).



Figure 4.44 Bridged Check dams Slow Water and Allow Access to the Plaza and Lawn During and After Storm Events (Tilley 2025).

incorporations of well-being

Aside from employing the constructed frameworks for education, recreation, safety, and aesthetic richness, well-being is incorporated into the design through seven outlets. First, the addition of native grasses enriches the multi-sensory stimulation on site. Bringing these plantings into the plaza and prioritizing them near seating along paths encourages tactile interactions and makes the sound of vegetation rustling in the wind more prominent to visitors. The paved fitness loop promotes physical activity, with five laps equaling a mile. Public art supplementing the runnels directing stormwater into the basin from downspouts on the building stimulates mental intrigue while creating an element unique to the space. Educational growth opportunities are provided via signage and materials that catch visitors' attention and educate them on the green infrastructure systems used and how water travels across the site. The design promotes physical comfort by offering various seating options in areas with varying microclimates. User satisfaction with space is created by establishing a strong relationship with the recreation center and designing for interior-exterior relationships. Finally, the design reduces stress through proximity, connections with nature, and structures utilizing natural materials.

-  **Provides Multi-Sensory Stimulation** through plantings that rustle in the wind, promote touch, and are visually stimulating.
-  **Encourages Physical Activity** with walking loop
-  **Stimulates Mental Intrigue** through public art
-  **Provides Educational Growth** via signage educating users on green infrastructure systems and K-States international student populations
-  **Promotes Physical Comfort** with various types of seating and in areas with differing microclimates
-  **Promotes User Satisfaction** by establishing a space with a unique identity that differentiates itself from the surrounding area
-  **Reduces Stress** through close proximity and connections with nature and structures utilizing natural materials.

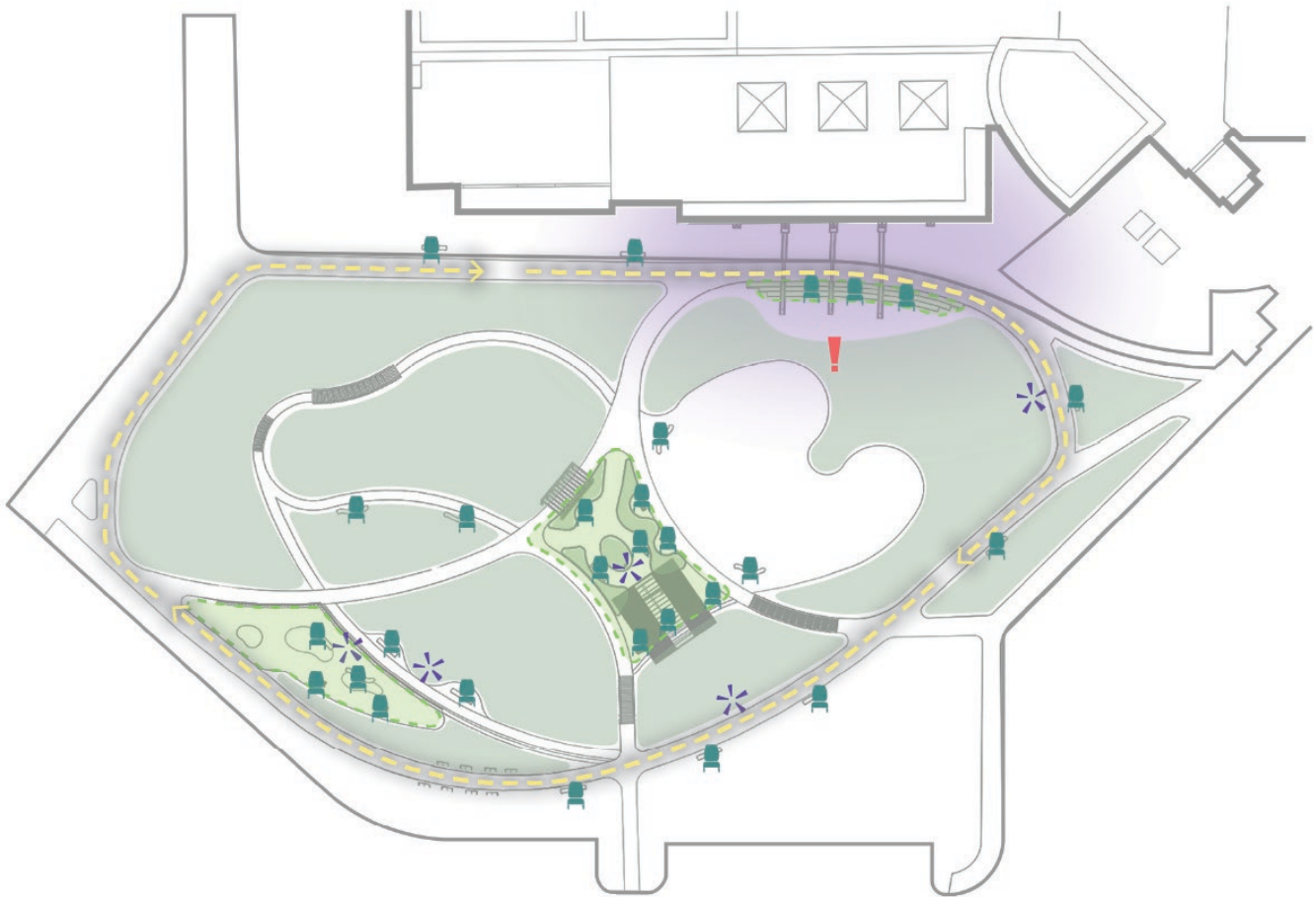
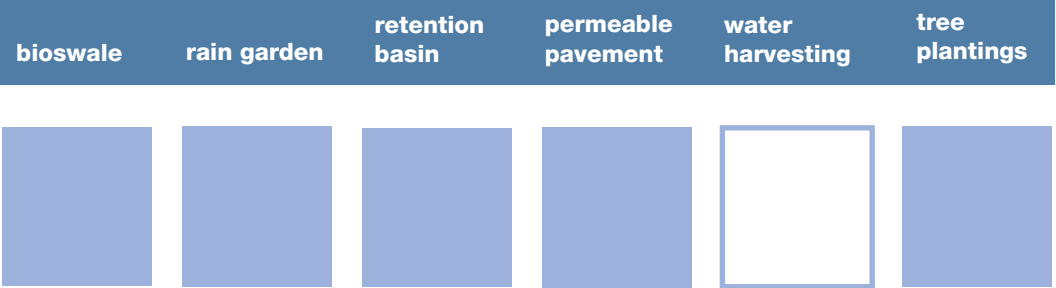


Figure 4.45 Therapeutic Incorporations in the Peters Recreation Center Healing Gardens (Tilley 2025).

green infrastructure utility

The Peters Recreation Center healing garden employs nearly all of the green infrastructure tactics identified by the Center for New Technology (2010). Aside from water harvesting, the design features include bioswales that help guide water entering the site from the north and west edges and water from the central plaza’s pavilion to the northeast detention basin, permeable pavement in the central plaza, rain gardens, and an expanded tree network. In assessing the existing stormwater infrastructure in the area and noting that water leaving the site gets piped out directly onto Kerr Drive, reducing gray infrastructure needs and minimizing flooding was necessary for this location. Referring to Figure 4.45, these techniques achieve this while providing additional benefits like reduced water treatment needs, improved water quality, improved air quality, reduced atmospheric carbon, reduced heat island effect, and cultivating public engagement opportunities.

green infrastructure systems



supporting features

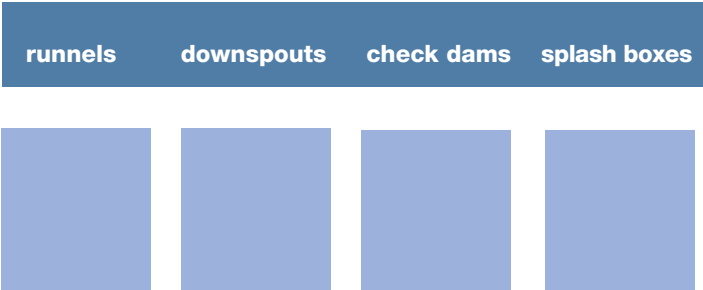


Figure 4.46 Green Infrastructure and Supporting Features Used in Peter Recreation Center Projective Design (Tilley 2025).

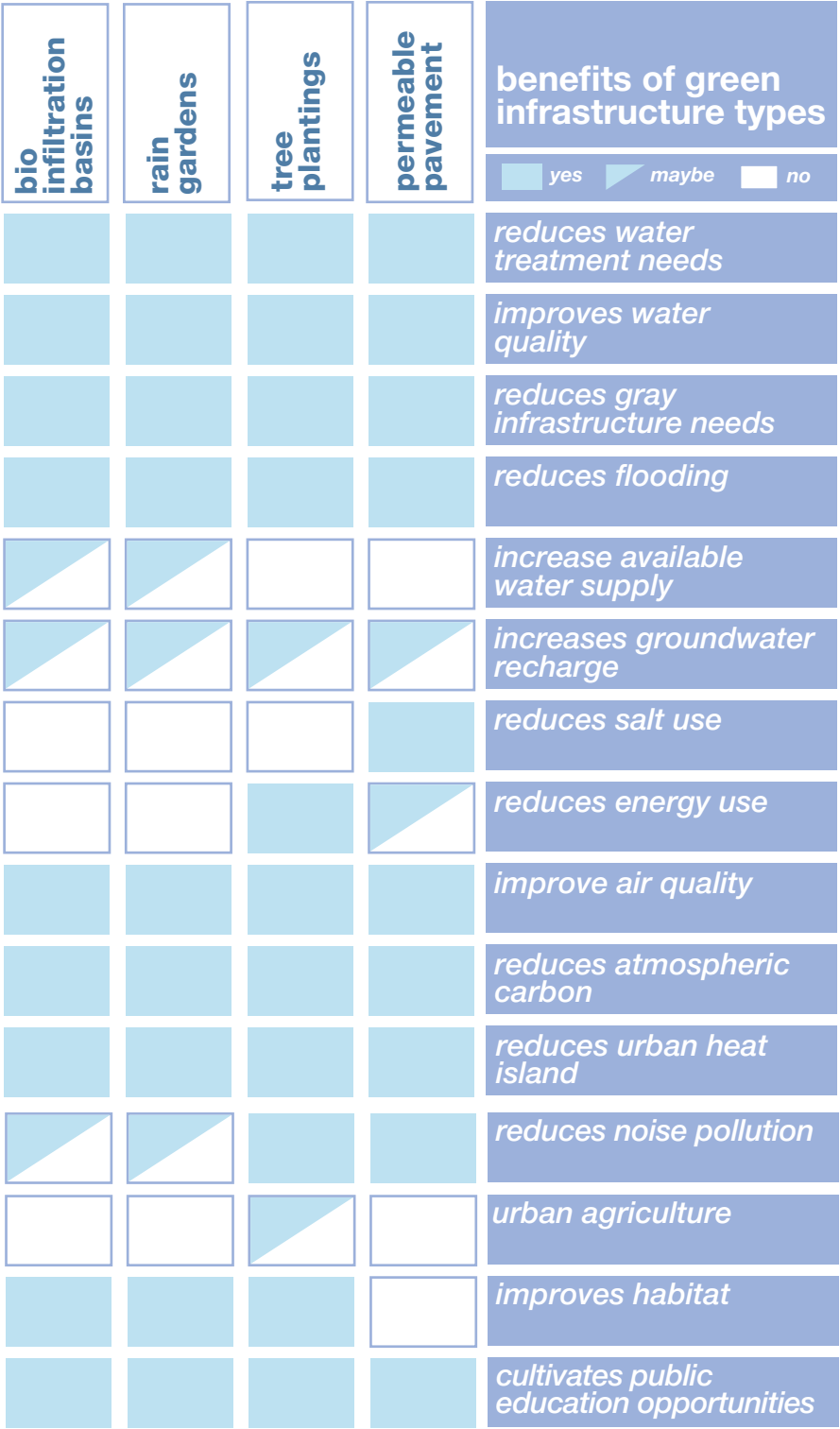


Figure 4.47 Utility Benefits of Green Infrastructure Systems Included in Peters Recreation Center Projective Design (Tilley 2025).

education

draw attention to systems

- Calls out green infrastructure systems by making them visually engaging using contrasts in materiality and material color that help distract users from their life’s stressors.
- Calls out green infrastructure systems by making them aromatically engaging using plants with pleasing aromas during warm seasons that help distract users from their life’s stressors.
- Designs stormwater systems on the surface and at varying heights to promote visibility and soothe users by viewing running water.
- Uses vegetation to frame views of designed systems.

public art

- Incorporates visually engaging sculptural elements by creating contrasts between the built elements and the natural vegetation backdrop promoting passive engagement of the mind.
- Incorporates sculptural elements with educational narratives relating to the importance of repurposing building runoff to water plants.

signage

- Creates eye-catching signage with color contrasts near seating and walking areas to promote visibility and help those with visual impairments.
- Utilizes diagrammatic signage with minimal text to enhance legibility.

Figure 4.48 Education Framework Components Incorporated in Peters Recreation Center Projective Design (Tilley 2025).

recreation

circulate

- Locates seating across the site in areas where users can enjoy different views and experience visual delight in watching the plantings interact with the wind and other natural elements.
- Places seating in areas with differing shade levels to provide access to different microclimates and prospect-refuge opportunities.
- Incorporates different seating types for added interest and a sense of choice where users can find comfort in their selection.
- Encourages exploration with paths switching between concrete and crushed limestone.
- Encourages exploration with paths differing between 8’ and 4’ widths.

enter

- Creates entry points that connect with the adjacent greenspaces and Jardine Community to the south to promote access to healing landscapes.
- Defines entry points with trees lined paths and check dams.

engage

- Allows users to walk across systems with bridged walkways spanning across rock gabion check dams.
- Promotes people watching opportunities with an observation deck, plaza seating adjacent to the lawn, and amphitheater seating directing views towards the lawn.
- Creates a sense of belonging and community cohesion with areas for private gatherings and opportunities for group activities.

Figure 4.49 Recreation Framework Components Incorporated in Peters Recreation Center Projective Design (Tilley 2025).

safety

horizontal barriers

- Utilizes low rise walls to promote close connections with systems and opportunities for sensory engagement while ensuring safety.
- Includes elevated path edges along the check dam bridges to enforce path legibility and prevent falls.
- Utilizes plantings to created implied barriers restricting visitors from entering certain systems.

vertical barriers

- Provides railings along the perimeter of the observation deck to promote safe views from the edge.
- Raised planters within the plaza function as half walls creating privacy and helping to define circulation through the space.
- Screening elements deter visitors from straying off the designated path and create a sense of privacy.

tripping hazards

- Avoids rough and uneven pathways with a paved walking loop and primary paths.
- Utilizes unit pavers with tight joints to prevent trips.
- Incorporates runnels with steel grate runnels that lay flush with the adjacent path.

Figure 4.50 Safety Framework Components Incorporated in Peters Recreation Center Projective Design (Tilley 2025).

aesthetic richness

visual interest

- Creates visually rich spaces that utilize soft contrasts in materials and color to promote interest and maintain legibility.
- Specifies a variety of plants with intriguing growth patterns, differing heights, and eye-catching pops of color.
- Incorporates rough cut limestone, untreated logs, repurposed stones, and corten steel to add visual depth to the built elements on site.
- Provides seating with views of tallgrasses that create pleasing visual movement when swaying in the wind and casting shadows.

auditory interest

- Locates seating near locations with falling water interacting with different systems for auditory delight (water falling into the gardens from runnels and water falling down rain chains).
- Locates seating near grasses that rustle in the wind and create calming sounds that help make users feel connected with the space.
- Added trees increases the presence of wildlife and chirping birds.

tactile interest

- Rough cut limestone, untreated logs, repurposed stones, and corten steel add tactile texture to the built elements on site.
- Locates native plantings near seating areas to encourage tactile interactions.
- Open runnels dividing the amphitheater seating allow visitors to interact with the water flowing off the building before entering the detention basin.

Figure 4.51 Aesthetic Richness Framework Components Incorporated in Peters Recreation Center Projective Design (Tilley 2025).

stadium master plan

The Peters Recreation Healing Gardens is part of a master plan developed for the Bill Snyder Family Stadium and Peters Recreation Complex area. The design was drafted with the help of Lukas Freelove and Natalie Kerner, as well as outside participants from the College of Biological and Agricultural Engineering, who helped with the technicalities of implementing the incorporated green infrastructure systems. The team submitted the master plan to the [12th Annual EPA RainWorks Competition](#). The EPA RainWorks Competition is a design competition open to university students in the United States centered around fostering effective stormwater management and climate resilience practices on academic campuses with a strong emphasis on showcasing the environmental, economic, and social benefits of green infrastructure. Projects must be backed up with environmental and financial calculations to support the submitted design. If selected as a top three winner, the EPA awards the chosen team and their supporting faculty as follows:

1st Prize: \$30,000

- Student Prize: \$25,000
- Faculty Prize: \$5,000

2nd Prize: \$13,000

- Student Prize: \$10,000
- Faculty Prize: \$3,000

3rd Prize: \$7,000

- Student Prize: \$5,000
- Faculty Prize: \$2,000

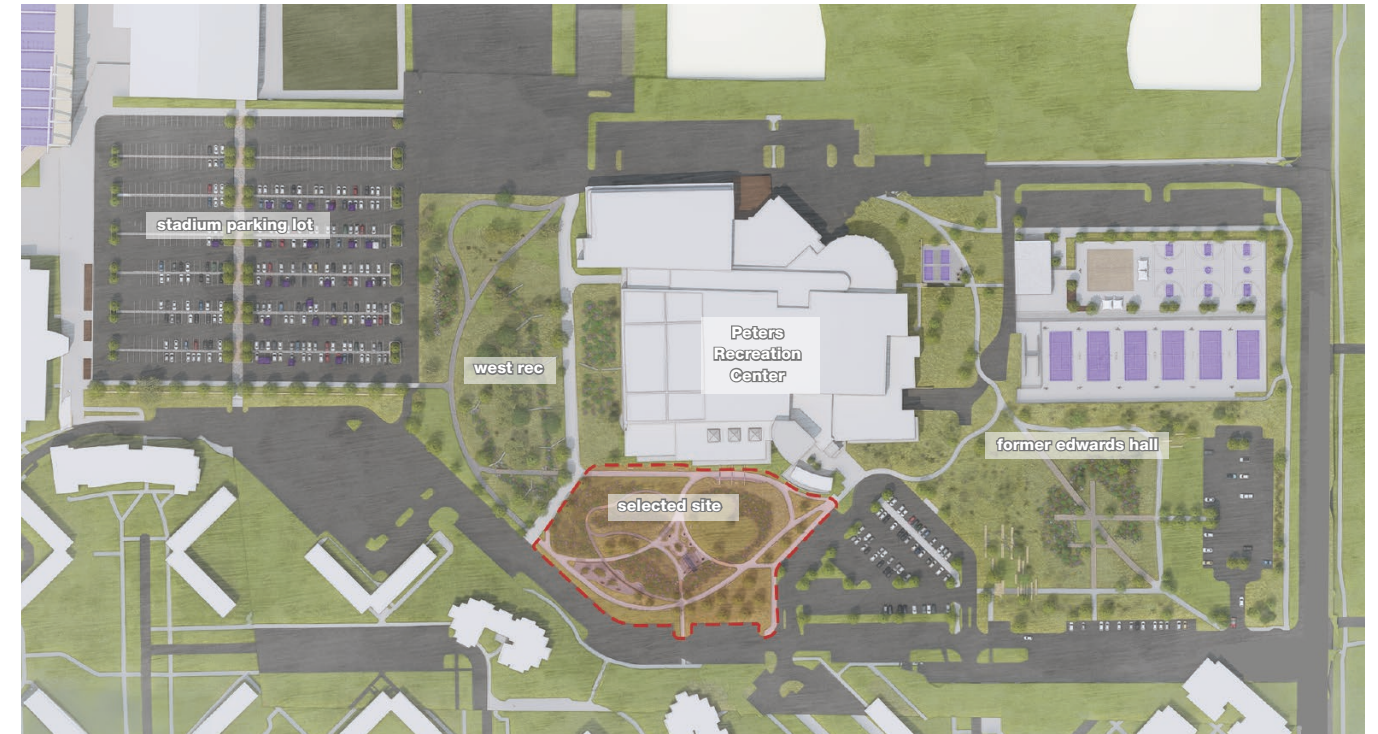


Figure 4.52 Plan View of Bill Snyder Family Stadium and Peters Recreation Complex Master Plan (Freelove, Tilley & Kerner 2025).



Figure 4.53 Aerial View of Bill Snyder Family Stadium and Peters Recreation Complex Master Plan (Freelove, Tilley & Kerner 2025).

master plan design strategies

Tackling the stormwater issues the site currently faces, the stadium parking lot is transformed to incorporate a pedestrian mall with added sunken planters, permeable paving strips, and tree plantings to help with filtering water pollutants and increasing the comfortability on site when tailgating from the added shade. Water leaving the parking lot is piped into the greenspace west of the Peters Recreation Center, where the rock-filled channels are redesigned into rain garden swales by widening the banks and creating a shallower slope. The rock from the channel is repurposed into gabion check dams that help slow water flow through the site, ultimately increasing infiltration. Once reaching the bottom of the swales, the continued water is piped under the paths into the healing gardens, passing through a series of rain gardens and reaching a basin on the northeast corner of the site where water is detained. When this basin overflows, excess water is piped downstream into the former Edwards Hall site, where a large dry basin with step pools helps hold water during extreme storm events. This area, while accounting for only one percent of the watershed, helps retain 12% of the total runoff within the watershed during a 5-year storm event lasting two hours.



Figure 4.54 Gabion Check Dams help Slow Water (Freelove 2025).



Figure 4.55 Edwards Hall Transformed into Dry Basin (Freelove 2025).



Figure 4.56 Stadium Parking Transformed into Eco-Lot with Pedestrian Mall and added Tree Plantings (Freelove, Tilley & Kerner 2025).



Figure 4.57 An Added Boardwalk Promotes Circulation through the Edwards Hall Site (Freelove, Tilley & Kerner 2025).



chapter 5

conclusion

introduction

This project aimed to learn how green infrastructure systems could be designed to enhance the therapeutic quality of a landscape to help mitigate student and faculty stress on college campuses. The findings helped influence two designs located on Kansas State University's campus in Manhattan, Kansas. The selection of the International Student Center for site location one was due to its confirmed demolition and the opportunity to submit a design proposal as part of K-State's Student Governing Association's request for a proposal competition. The Peters Recreation Center site was selected in response to the critical conditions of the designed stormwater systems in the area and the site's poor response to storm events. The projective design was also part of a larger master plan involving the stadium parking lot and former Edwards Hall site with the help of Lukas Freelove and Natalie Kerner submitted to the 12th Annual EPA RainWorks Challenge.

The methods utilized in the study were a literature review analysis, precedent studies, and site analysis. The literature evaluation uncovered the core design principles of therapeutic gardens with supporting design guidelines, and objectives for designing green infrastructure systems in desirable and engaging ways with supporting design guidelines. Additionally, precedent studies of projects incorporating green infrastructure in artistic ways on college campuses were reviewed. These projects were assessed for their applicability to the criteria pulled from the literature and cross-compared to evaluate the popularity of green infrastructure systems. From there, an overarching design framework was developed to influence the projective designs. Lastly, the two sites' existing conditions were assessed, analyzing topography, hydrology, soil conditions, vegetative cover, circulation routes, user interactions with the site, and existing programming of the present structures, landscapes, and surrounding context.

Through this process, the K-State Multicultural Student Gardens and Peters Recreation Center Healing Gardens were adapted, transforming the existing landscapes into spaces that encourage students and faculty to reconnect with nature and engage with the landscape to help reduce their stress.

Chapter 5 Page Break Aerial Shot of Lafayette College (Lafayette College 2010). Used Under Creative Commons.

Figure 5.01 Wildflowers (Donoho 1912). Used under Creative Commons.



final thoughts

takeaways

One of the essential takeaways from this project was the understanding of the importance of designing stormwater systems on the surface that encourage visual or tactile engagement between users and systems to help improve the therapeutic quality of the environment, increase the public's awareness and appreciation of systems, and enhance the ecological performance of the site. In assessing the available literature on the subject and precedent projects, an additional takeaway was understanding the vast opportunities green infrastructure can be incorporated into a design and the importance of designing systems that include a variety of tactics to ensure a system's success. Furthermore, different green infrastructure systems provide different outcomes in terms of utility, and developing the project's goals early on can help select systems that accurately achieve the goal.

limitations

Although campus project managers, facility workers, faculty members, and select students helped with curating the final designs, a key limitation of this study was that there was no involvement with the general student body. Another limitation was that the detailed development of the individual projects was lessened when generating two projective designs.

Lastly, a key limitation affecting the outcomes was the time frame. Given the quick development of the projects, additional time could have enhanced the development of the projects by allowing more opportunities for refinement and detailing.

future opportunities

Building off the presented work, outreach involving the student, staff, and faculty populations at K-State would help understand their responsiveness to the presented ideas and provide opportunities for refinement. Given the sense of belonging these spaces help provide, ensuring that users of all physical capabilities can engage with the site is essential and would be an important consideration when conducting outreach. Additionally, the public's perception of green infrastructure systems varies, and gauging what systems users respond positively to could help adjust the designs to be more visually aesthetic and contribute to the overall appeal and draw of the space.

Specifically, looking at the projective design for the International Student Center, involving international students on campus would help select sculptural elements and incorporate informational signage that successfully remembers the ISC and creates a meaningful sense of place.

For the projective design at the Peters Recreation Center, more direct conversations with employees, students, and faculty could help strengthen the design's function as a spill-out space that the center can utilize.

personal reflections

Altogether, I found this process to be challenging and rewarding. By curating two projective designs, I was able to apply my newfound knowledge to different settings and utilize various techniques. Because of this, I believe that I was able to strengthen my overall understanding of the topic. I chose to analyze therapeutic gardens and artistic ways to adapt green infrastructure systems because of my belief that landscape architecture is an art and that the natural environment is a form of medicine. Moving forward, I hope to continue working on projects of a similar nature, as I am still very passionate about the subject and believe there is much more to learn.

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Chapter 5 Page Break Image: Untitled Aerial Shot of the Lafayette College. 2010. Photograph. Courtesy of Lafayette College. Accessed January 26, 2025. Reproduced from Flickr <https://flic.kr/p/8AXWM7>

Figure 5.01: Donoho, Ruger. "Wildflowers." 1912. Painting. Courtesy of The MET Museum. Accessed January 26, 2025. Reproduced from Rawpixel, <https://www.rawpixel.com/image/9758999/image-flower-art-vintage>.

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Southwest Recreation Center at the University of Florida

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Permission granted February 18th, 2025

Stuart Echols

Stephen Elper Hall

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Permission granted March 5th, 2025

Ten Eyck Landscape Architects

G.B. Dealey Center for New Media

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Underwood Family Sonoran Laboratory

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