

Verdant Temple

Temple University Landscape Master Plan

LRSLAstudio, inc.

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FOREWORD

The story of Temple's evolution as an institution is powerful and inspiring, driven by a commitment to provide students access to education "despite their status or station in life". Temple's history of growth and increasing stature among urban research universities is truly remarkable and a testament to the perseverance of its founders and alumni. Historically, however, the physical environment of campus buildings and landscape did not develop as successfully as the institution itself. Unlike many campuses, Temple did not have the benefit of a grand plan for its campus, or a formal strategy for growth when it first began teaching students in the attics of the Baptist Temple on North Broad Street. Instead, the unique character of our campus has developed organically over many years, with new buildings filling contiguous blocks within the city grid as they became available.

Despite the organic growth, or perhaps because of it, our campus is a very unique place: It is urban, dense, architecturally chaotic, and bursting with the energy of students from across the globe. Aesthetically, the campus can be described as eclectic and somewhat harsh, lacking green space and meaningful landscape save for a few small pockets of highly coveted lawn and a surprisingly lush canopy of old trees that provide shade and beauty in some areas. But the moments of beauty are spread out across the thirty-some city blocks that comprise the actual campus, each a separate experience and seemingly unrelated to each other. In fact they are related, and they tell the story of Temple's history. They do not, however, represent who we are as an institution...world-class, determined, forward-thinking, united by a shared purpose and mission to learn, discover, and change the world.

This plan, *Verdant Temple*, has been undertaken in order to create a more unified and cohesive campus environment; one that builds upon the existing strengths and historic aspects of the campus, while creating a stronger connective layer of landscape and pedestrian open space. The plan is intended to guide improvements to and development of the campus landscape over the next decade that will bring people together and enhance the experience of each person who works, lives, and plays on and near the Temple campus. The plan proposes a highly sustainable campus landscape that works hard, serving as a research environment in and of itself; a landscape that ties the past to the present, while anticipating inevitable future changes the institution will embrace; a landscape that strengthens our identity within and connectivity to the North Philadelphia community of which we are a part.

The landscape planning process has occurred collaboratively with both the design of Temple's new Library, and the 2014 Temple University Master Plan, Visualize Temple. Taken as a whole, these plans establish Temple's commitment to raising the quality of the design and functionality of the physical environment of the Temple University campus, to better support our mission as an urban research institution of higher education. This new vision for the physical environment of Temple University recognizes and acknowledges the university's historic growth and advancement from humble beginnings, and provides a vision for the campus environment that is equal in stature to the institution itself, creating not only a strong sense of place, but also a sense of purpose.

Margaret M. Carney, AIA
Associate Vice President and University Architect
November 2014

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INTRODUCTION

ENVISION A VERDANT TEMPLE

The campus landscape is a primary component defining the perception and experience of any university. An often-cited statistic notes that 62% of high school students made their choice of institution based on the appearance of the campus buildings and grounds.* The campus landscape has the power to strengthen the learning environment and create emotional ties that link generations of students, faculty and staff. Memories of place and learning happen through informal social interaction on a welcoming campus.

Temple University is poised to develop a landscape that amplifies opportunity for collaborative interaction and benefits from the growing interest in urban communities. Expectations are high and the pressure is on for a campus landscape to perform in multiple arenas such as quality of experience, fostering collaboration, encouraging innovation while honoring tradition, nurturing environmental stewardship and being a community partner.

Temple University originated with Reverend Russell Conwell tutoring at night after work hours. In the 130 years since that first student, Temple has grown into one of the nation's premier higher education institutions. Through the years the fabric of Temple's campus has also evolved to form a collection of open spaces, buildings, vegetation, lighting, signage, furnishings and circulation systems woven by many hands in many materials and styles. This incremental and opportunistic pattern of growth within Philadelphia's complex urban setting has left an absence of a clear campus image in the traditional sense, but has poised the University to reshape itself to exemplify a quintessential urban college campus.

The intent of the landscape master plan, VERDANT TEMPLE, is to set forth a framework for the future and to provide clear direction without stifling possibilities. Recommendations build on strengths and improve weaknesses. VERDANT TEMPLE, accommodates and facilitates growth initiatives, incorporates sustainability aspirations, improves the quality of life, is responsive to city infrastructure and neighboring communities and builds a sense of place with which past and future generations can connect.

Envision a verdant Temple in which the superior academic potential of students and educators is enhanced by being situated within a sustainable, vibrant and convivial landscape.

*"The 62% figure is from Ernest Boyer's book "College: The Undergraduate Experience In America". Harper & Row, 1987. Boyer goes on to say that the most important person in recruiting new students may not be the VP for admissions, but the grounds superintendent. Some might argue that it is out-dated data, but similar findings were established in another survey, and in my own surveys last spring (2013) of high school students, which indicated that appearance influenced over 80% of potential students." Phil Waite, Associate Professor, Landscape Architecture and Environmental Planning, Utah State University, SCUP Webinar May 7, 2014.

ACHIEVABLE GOALS

VERDANT TEMPLE was developed for the University's main campus in response to an expressed need for a campus-wide system of strategies to increase present day aesthetics and functionality as well as to prepare for future development. The planning process was layered and comprehensive and recommendations for change are based on site observation, precedent at similar institutions and feedback obtained during multiple stakeholder meetings and interviews with Temple personnel. These planned, structured meetings were conducted during the course of the master planning process (July 2013 - October 2014) with and by various members of the design team depending on content and topic. **Achievable goals for creating and sustaining a physically verdant Temple campus were generated during these sessions:**

Create A Significant Green Open Space At The Center Of Campus

- Define the heart of Temple.
- Foster social interaction.
- Strengthen the identity of Temple within the community.

Establish A New First Impression

- Create visually appealing and well-defined gateways at key entry points.
- Shape an intuitive and welcoming campus experience.
- Plan a variety of memorable, functional places linked in design and spirit throughout the campus.
- Enhance and integrate valuable campus heritage spaces in the landscape.

Expand Campus Connectivity

- Integrate and expand established transit, bike and pedestrian campus networks.
- Provide complete, pedestrian-first streets.
- Create "threshold" landscapes by extending streetscape initiatives beyond the campus.

Craft A Consistent Campus Experience And Improve The Details

- Implement an appropriately designed comprehensive signage/wayfinding system.
- Elevate the quality of the campus environment with the installation of consistent well-designed site furnishings and lighting.

Leverage Interstitial Spaces

- Contribute to social vibrancy through redesign and effective reuse of inefficient "leftover" sites.
- Explore opportunities to creatively manage stormwater as a functional visual amenity.

Envision A Verdant Temple

- Embed sustainable practices in Temple's culture.
- Establish and implement a strategic, bio-diverse campus-wide plant palette.
- Create a landscape that fosters learning through research, example and function.



PLANNING PROCESS

During the planning process the design team was guided by a steering committee comprised of nine administration and faculty members. The committee provided invaluable insight, advice and feedback, and vetted planning ideas. On a day-to-day basis, the Office of the University Architect was an active partner guiding the design team, and the vision, through regular meetings, discussions and reviews.

The VERDANT TEMPLE document establishes guidelines and standards for the planning, design, implementation and management of on-going improvements to the campus landscape. The Plan was generated through the analysis and synthesis of existing conditions and the expressed goals and desires of staff, users and stakeholders. It responds to the physical, social and cultural systems that form Temple's campus and is rigid enough to provide unifying standards that will simplify design decisions yet flexible enough to respond to unknown future needs. VERDANT TEMPLE should be considered a dynamic tool that defines the design logic for future landscape projects and as such it is a living document that will require periodic updating.

To effect change and create a vision for revitalization, the design team took a holistic view of Temple's campus landscape, responded to stated goals and defined five major campus components: **Green, Walks, Spaces, Streets and Margins**. These components are in turn made up of seven complex, interdependent, campus-wide systems: **Social, Public Art, Mobility, Stormwater, Vegetation, Lighting and Wayfinding**.

The successful interface and comprehensive implementation of the landscape systems within familiar existing and proposed campus components will promote a physical and spatial transformation and redefinition of Temple's main campus leading to the creation of an exceptional higher learning environment.

The information gathered during the planning process is distilled in the VERDANT TEMPLE document in three main chapters:

Understanding Temple / Framework for Design

- A brief summary of the site analysis, and detailed illustrations of the five major campus components and priority projects.

Campus-Wide Systems

- Nuanced analysis drawings and recommendations for the seven key landscape systems that contribute to the function and meaning of the campus and inform the design of the campus components.

Design Guidelines

- Detailed design drawings and written standards to guide the implementation and on-going management of campus-wide landscape projects.

CONCURRENT PLANNING AND DESIGN EFFORTS BY OTHERS



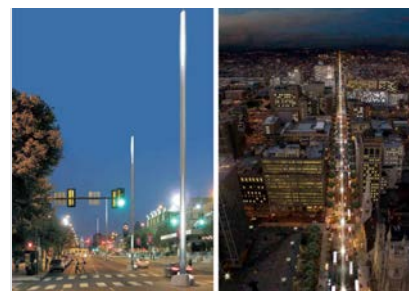
Visualize Temple

Led by SmithGroupJJR, Visualize Temple is a University, system-wide, strategic master plan and evolution of *Temple 20/20* that directs development efforts in the coming decade. Visualize Temple was informed by crowd-sourced input from students, staff and faculty and is the first Temple plan to so fully engage the community.



Utility Master Plan

The University has announced an ambitious plan to drastically reduce energy use. The campaign began with the development of a Utility Master Plan to identify conservation strategies and large-scale efficiency projects. RMF Engineering is preparing the plan.



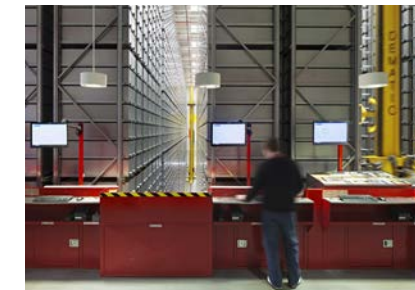
Avenue Of The Arts - North Broad Improvements

As part of a larger effort to revitalize North Broad Street, forty 55-foot tall light masts, complemented by new street trees and paving are being installed on the 39 blocks from City Hall to the North Broad Transportation Center. BCJ Architects is the project team leader.



Pennsylvania Horticultural Society: Civic Landscape Initiative

North Broad Street (from Diamond to Spring Garden Streets) is one of seven key city gateways targeted for landscape improvement.



New Library

Originally conceived in *Temple 20/20* to be located on the west side of Broad Street, President Theobald charged the Visualize Temple and VERDANT TEMPLE teams with siting the new Library east of Broad. Snohetta, renowned for innovative library design, is the architect.



Stormwater Management Enhancement District (SMED)

As designated by the Philadelphia Water Department (PWD) Temple University comprises a significant portion of a stormwater management district currently being studied. The VERDANT TEMPLE team closely coordinated with PWD's team led by AMEC.



Philadelphia City Planning Commission: Lower North District Plan

Philadelphia recently adopted (May 2014) an updated Lower North District Plan for Temple's immediate surroundings.



Bike Share Philadelphia

A network of organizations and individuals are working to bring public use bicycles to Philadelphia. The service area will be implemented in concentric zones, with Center City core locations developed first, followed by neighborhoods. The initial roll out will be 150 to 200 stations and 1500 to 2000 bikes. Suggested pod locations for the Temple community are identified in VERDANT TEMPLE.



Prediction is very difficult, especially when it's about the future.

- Niels Bohr

1.0

UNDERSTANDING TEMPLE/ FRAMEWORK FOR DESIGN

TEMPLE TODAY

CAMPUS CONTEXT

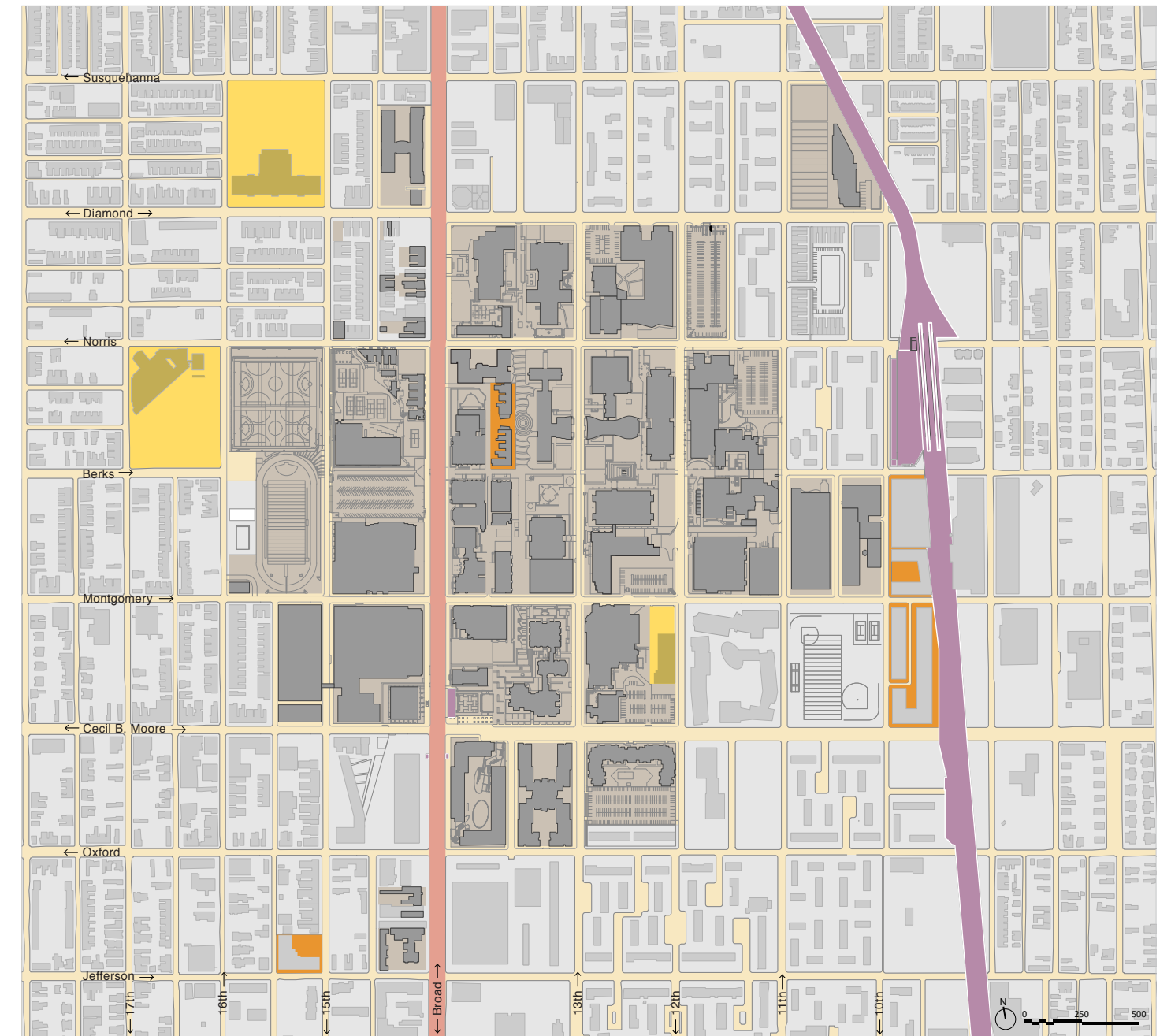
Located in North Philadelphia, approximately 1.75 miles from City Hall – Philadelphia’s perceived center, Temple University’s main campus is surrounded by residential neighborhoods and mixed commercial use. Broad Street, a main thoroughfare that extends north to the Delaware Water Gap and south through Center City to the Navy Yard, divides the campus; the majority of which is situated to its east.



PROPERTY OWNERSHIP

Surrounding public and private infrastructure, and their associated owners, are integral to the Temple University campus experience. Working and/or partnering with these stakeholders during all stages of the design process for future projects will be key to improving the campus landscape.

Land Ownership		Building Ownership	
	Temple Owned Property		Temple Owned Building
	Temple Ground Lease		Private Owned Building
	SEPTA Owned Property		SEPTA Building
	Philadelphia Public School Owned Property		Philadelphia Public School Building
	City of Philadelphia Owned Property		
	Commonwealth Owned Property		



CAMPUS CULTURE

Informational Interviews

The VERDANT TEMPLE team started the design process by conducting more than 30 informational interviews and listening to desires, concerns and needs. Most participants were interviewed in-depth more than once. VERDANT TEMPLE's evolution was greatly influenced by key insights (summarized below) gained through this immersion into the University's culture:

Temple Internal Dynamics

- Recommendations must be enduring to bridge generations of staff and administration.
- Departments and offices have a tendency to work in silos.
- Campus improvements must be easy to maintain, capabilities are already stretched thin.

External/Community Dynamics

- Coordinate with Lower North District Plan recommendations.
- Work with institutional partners such as SEPTA, PWD, PHA and PCPC.
- Continue to develop strong relationships with surrounding communities.
- Reduce student parking in surrounding residential neighborhoods.
- Make parking convenient so people will use it.
- Augment pedestrian connections to public transit.

Access

- Improve the pedestrian experience between regional rail station and campus.
- Reduce car dependency.
- Develop more incentives to increase use of public transit, car sharing, biking and walking.
- Create better bicycle accommodations, dedicated bike lanes and more bike parking.
- Investigate Montgomery Avenue as a key pedestrian and bike route.

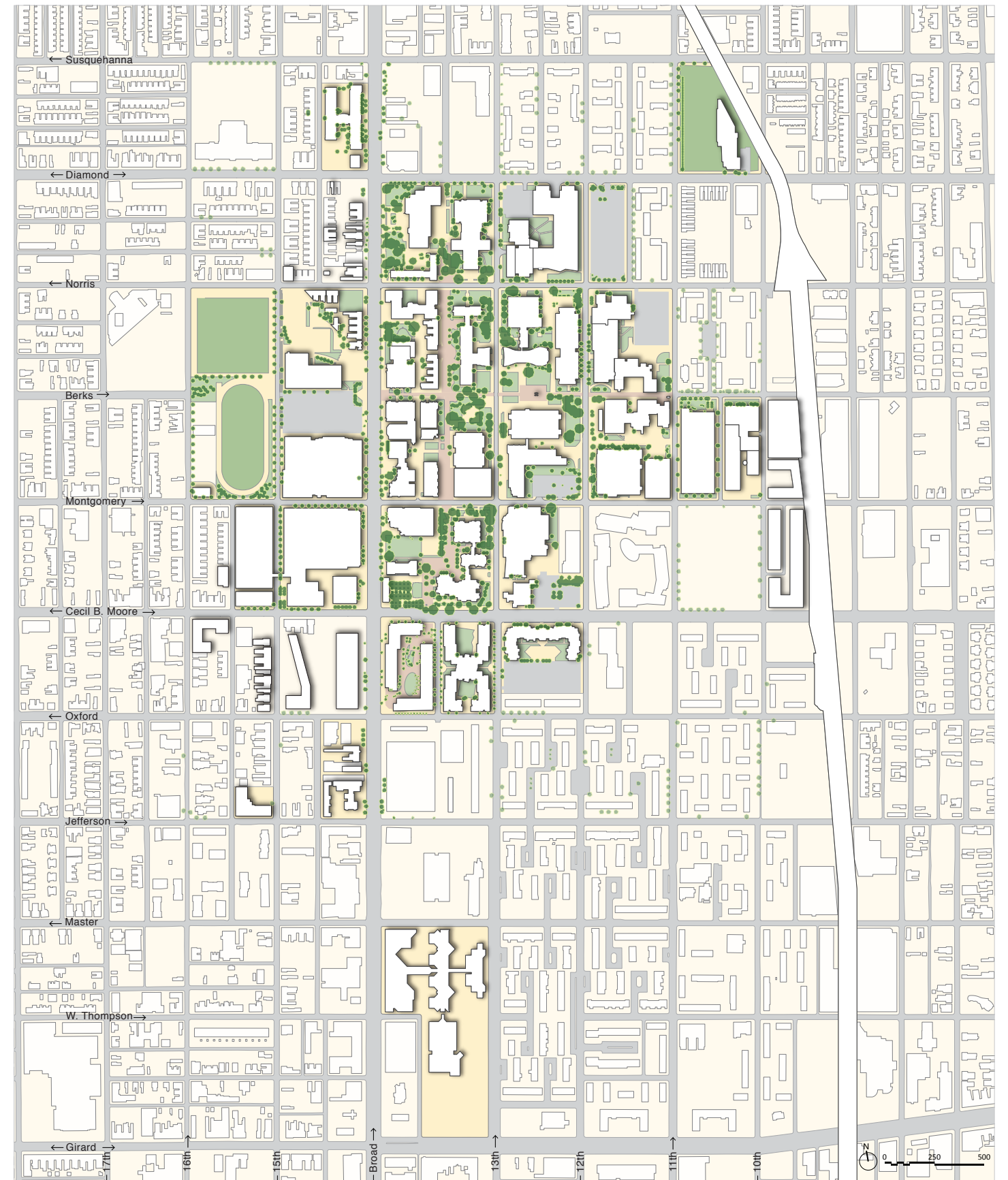
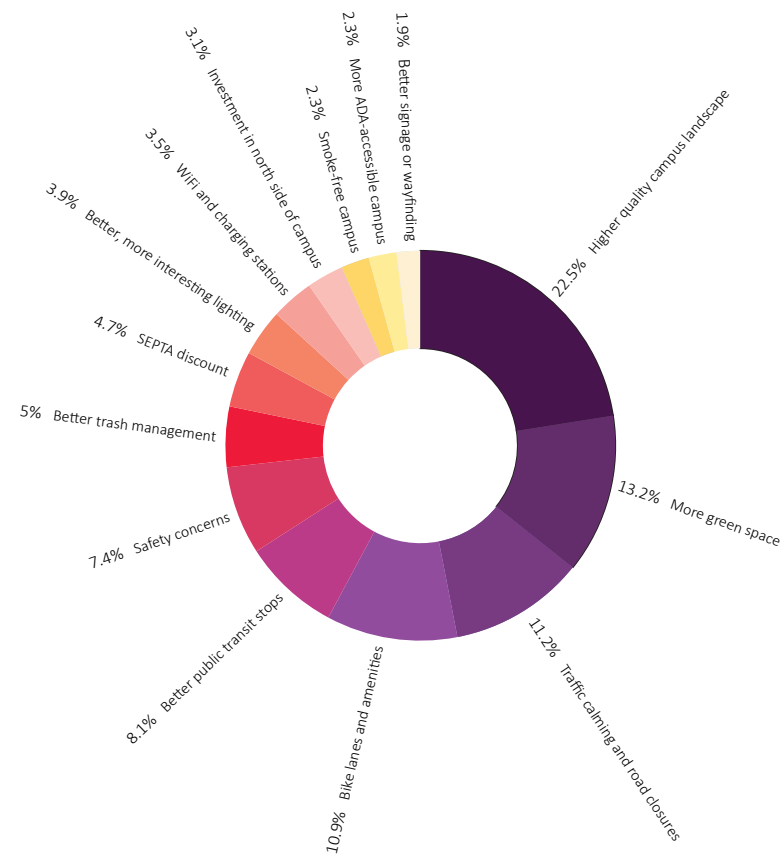
Quality Of Experience

- Address the need for a more walkable, safer feeling campus. A safe environment is key.
- Expand Liacouras and Polett Walks to avoid overcrowding.

- Explore more pedestrian friendly lighting while maintaining a sense of security.
- Resolve service drive and service truck access conflicts.
- Implement a comprehensive signage and wayfinding system.
- Identify campus landmarks.
- Create more seating, more green space and less fencing.
- Consider a smoke-free campus.
- Remove visual clutter.

ONLINE CIVIC ENGAGEMENT

The Visualize Temple team's use of MindMixer, an online civic engagement tool offering a forum for students, faculty, staff and alumni to provide input on the future of the main campus, also generated valuable feedback for the landscape master planning process. Over 28% of MindMixer comments and input were directly related to VERDANT TEMPLE's scope of work.

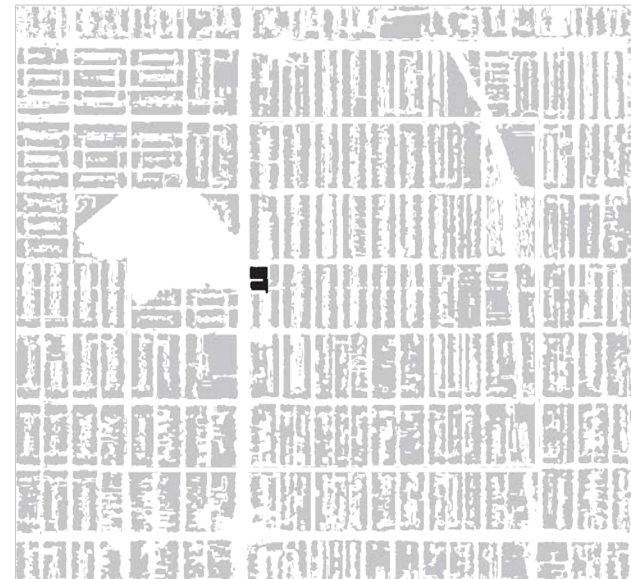


Existing Campus Plan

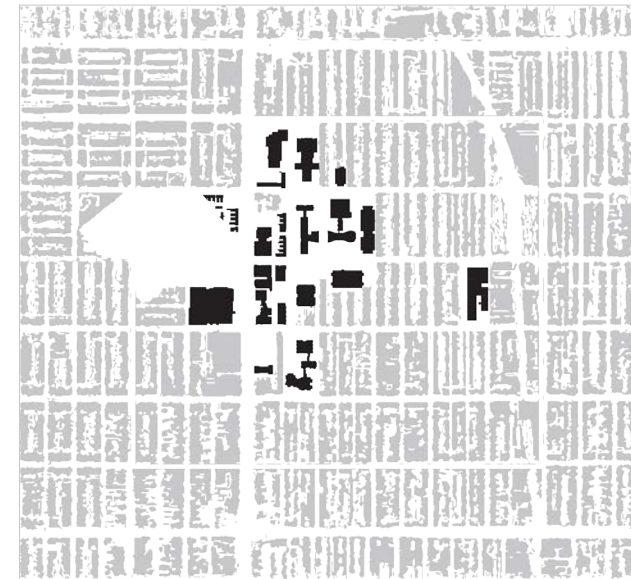
VERDANT TEMPLE: A LANDSCAPE MASTER PLAN THAT IS TEMPLE MADE

Temple University is a quintessentially urban campus that has evolved, incrementally and opportunistically over time, in the absence of a predetermined image or spatial structure. This has led to a lack of an iconic campus form in the traditional sense, but offers the opportunity to invent a fresh image for the campus and a new face for Temple.

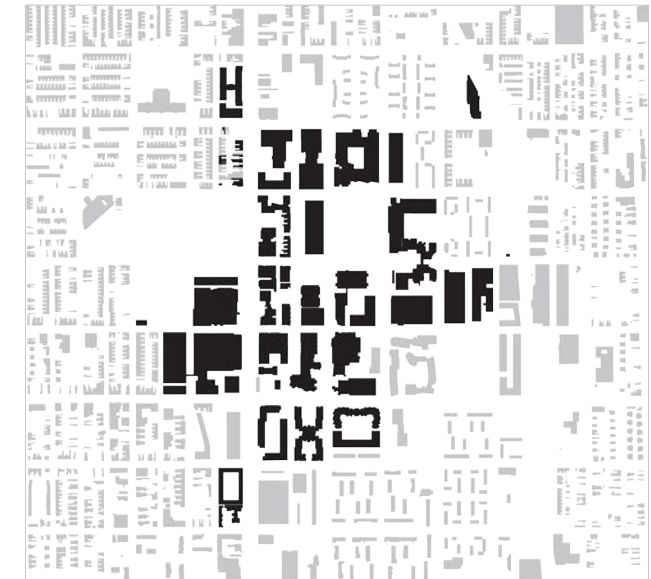
The VERDANT TEMPLE plan embraces this challenge by identifying components, systems, materials and standards that can be used to create a comprehensive organizing structure and rationale to facilitate the design, installation and management of future campus development. VERDANT TEMPLE is designed to honor the past and promote the future.



Campus: pre 1900s



Campus: mid 1900s



Modern campus

Input from interviews and personal observation focused the VERDANT TEMPLE design team on a goal to create a plan that is rooted in the place and people of Temple, one that defines the University as a unique place apart from its peers, and true to its roots. To do this the design team analyzed the successful marketing and identity products in which Temple has already invested. Each of the six statements in the “What is Temple Made?” document provides a point of inspiration for VERDANT TEMPLE:

...A Different Breed...

A campus landscape that expresses Temple’s unique identity.

Example: Convert the street system to a campus asset that reflects the University’s street-wise and vibrant essence.

...Work Harder...

A multi-purposed campus landscape that does more than just look nice.

Example: Use green areas to store stormwater and provide recreation and visual relief.

...Shaped By The City...

An urban campus landscape that reflects the vitality of Philadelphia.

Example: Make Temple's streets, a large part of its identity and connection to the city, more attractive and pedestrian friendly.

...Putting What You’ve Learned Into Practice...

A campus landscape that responds to the successes and challenges of past plans.

Example: Enhance the attractiveness and usefulness of the major walks. Examine the purpose of underutilized and costly to maintain marginal spaces.

...Beauty Made...

A campus landscape that is an asset to its neighbors offers curb appeal and is a place of beauty for the Temple community.

Example: Provide welcome visual relief in the dense campus core by creating a campus green.

...Across Disciplines...

A campus landscape that integrates the diverse needs of various disciplines is required to shape the Plan.

Example: Convert 13th Street to a pedestrian priority street with new trees irrigated with runoff from the pavement, lit by new LED street lights and indexed with clear signage.

WHAT IS TEMPLE MADE?

IT'S A MINDSET. IT'S A MISSION. IT'S A WAY TO DESCRIBE THE PEOPLE HERE AT TEMPLE AND WHAT WE'RE DOING.

If you're the Temple type, you're a **different breed**.

You're going out there every day and **putting what you've learned into practice**.

You're self made. You seize the moment, **work harder**, and your successes are all your own.

Breakthroughs Made. Challenges Made. **Beauty Made**.

You're Philly made. Educated in the real world, **Shaped by the city** of Philadelphia and its opportunities.

In neighborhoods, **across disciplines**, and on a global stage, members of the Temple community are making things happen. And that's what being Temple Made is all about.

VISION FOR A VERDANT TEMPLE

CAMPUS COMPONENTS AND SYSTEMS

The image of a campus is, at any point in time, the sum of its parts. For Temple, the design team has defined those parts as five separate but interrelated **components** (*Green, Walks, Spaces, Streets and Margins*) that are in turn composed of seven campus-wide landscape **systems** (*Social, Public Art, Mobility, Stormwater, Vegetation, Lighting and Wayfinding*).

The campus components represent VERDANT TEMPLE's vision for intervention and transformation and their interface is the Plan's foundation. The seven campus-wide landscape systems represent the design tools required to create and sustain the Plan's vision.

VERDANT TEMPLE

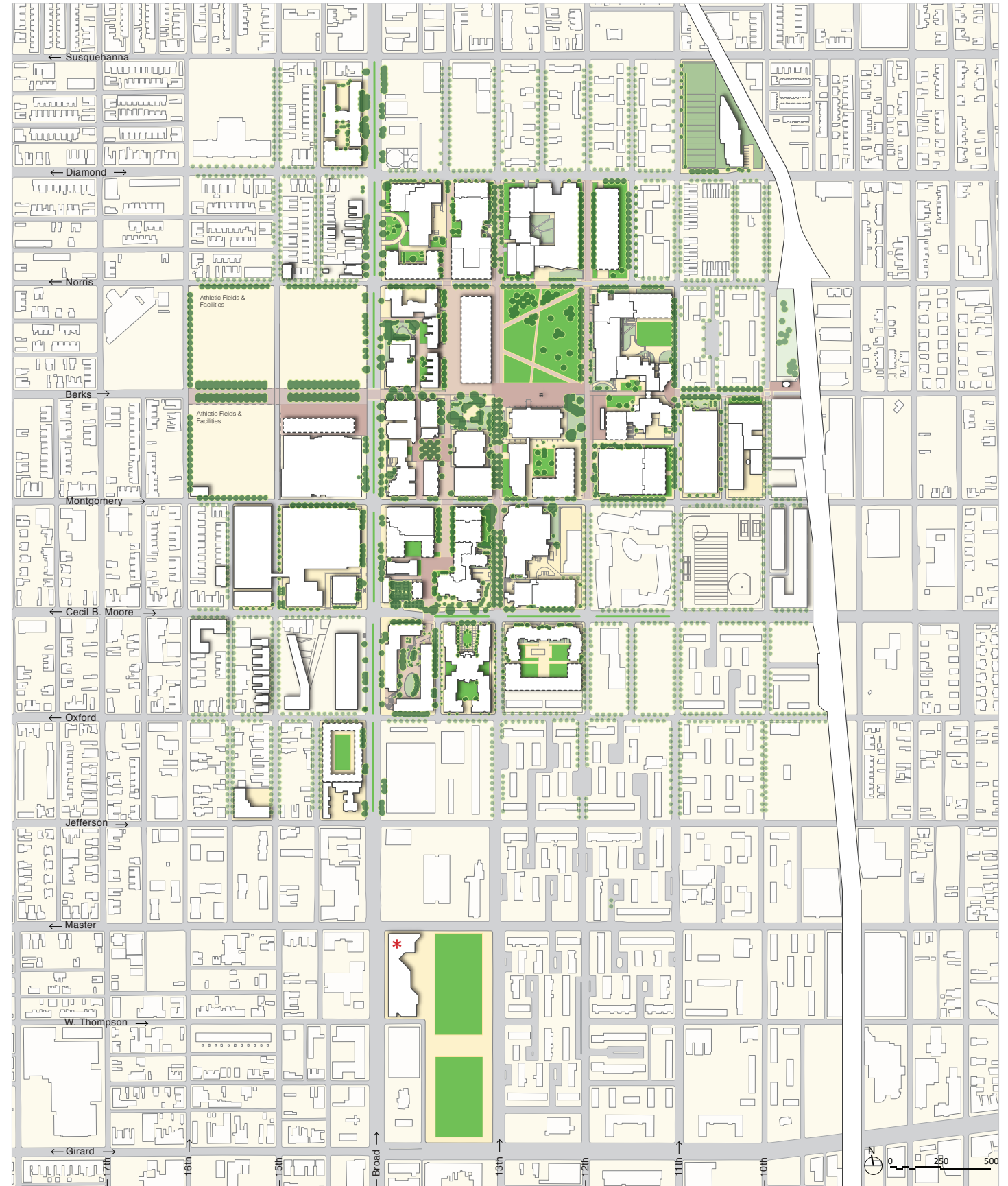
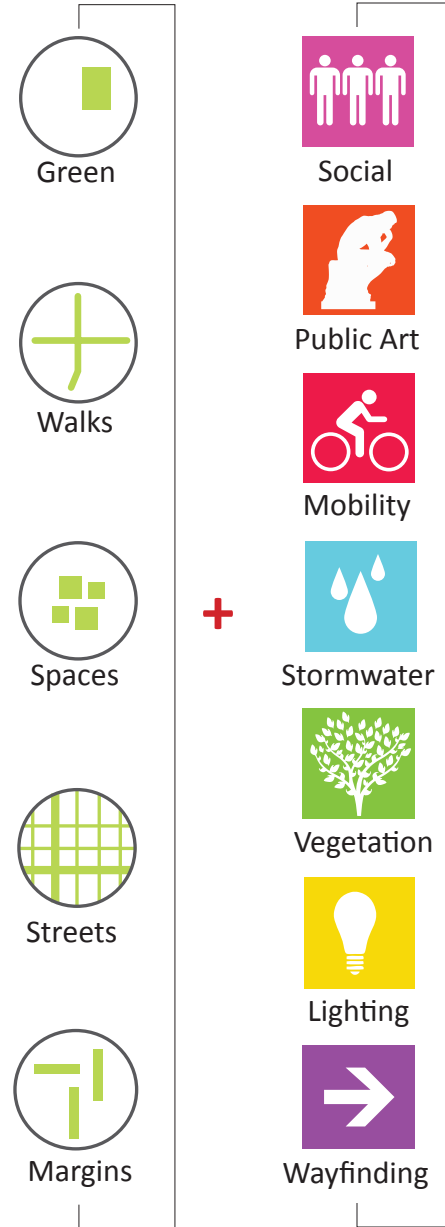
Verdant, normally associated with the countryside, green grass and rich vegetation, may seem an unlikely word to describe Temple University's urban campus. However, verdant is also associated with things that are fresh, healthy, energetic, invigorating and engaging which absolutely describe core principles of Temple as a premier educational institution.

VERDANT TEMPLE's comprehensive vision exemplifies these ideals, creating a physically verdant Temple campus to complement the institutional verdant Temple.

The overall effectiveness of VERDANT TEMPLE at all scales, from building signs to campus green, will be manifested through the creative, thoughtful, logical and comprehensive application of the landscape systems in the design of new projects within each of the five campus components.

Adopting and embracing the vocabulary of the systems will lead incrementally to a major change in both the perception of the campus landscape and its physical attributes.

The campus components are arranged and discussed in a strategic sequence to reflect; the critical need for the **Green**, the enduring importance of the **Walks**, the value and utility of the many gardens and courts that comprise the **Spaces**, the appropriation of the **Streets** as campus, and the collective importance of the many "leftover spaces" or **Margins**.



* As the landscape master planning process was concluding, Temple University purchased the William Penn High School site on Broad Street and Girard Avenue. This site has not been studied and is shown here for reference only.

VERDANT TEMPLE

GREEN

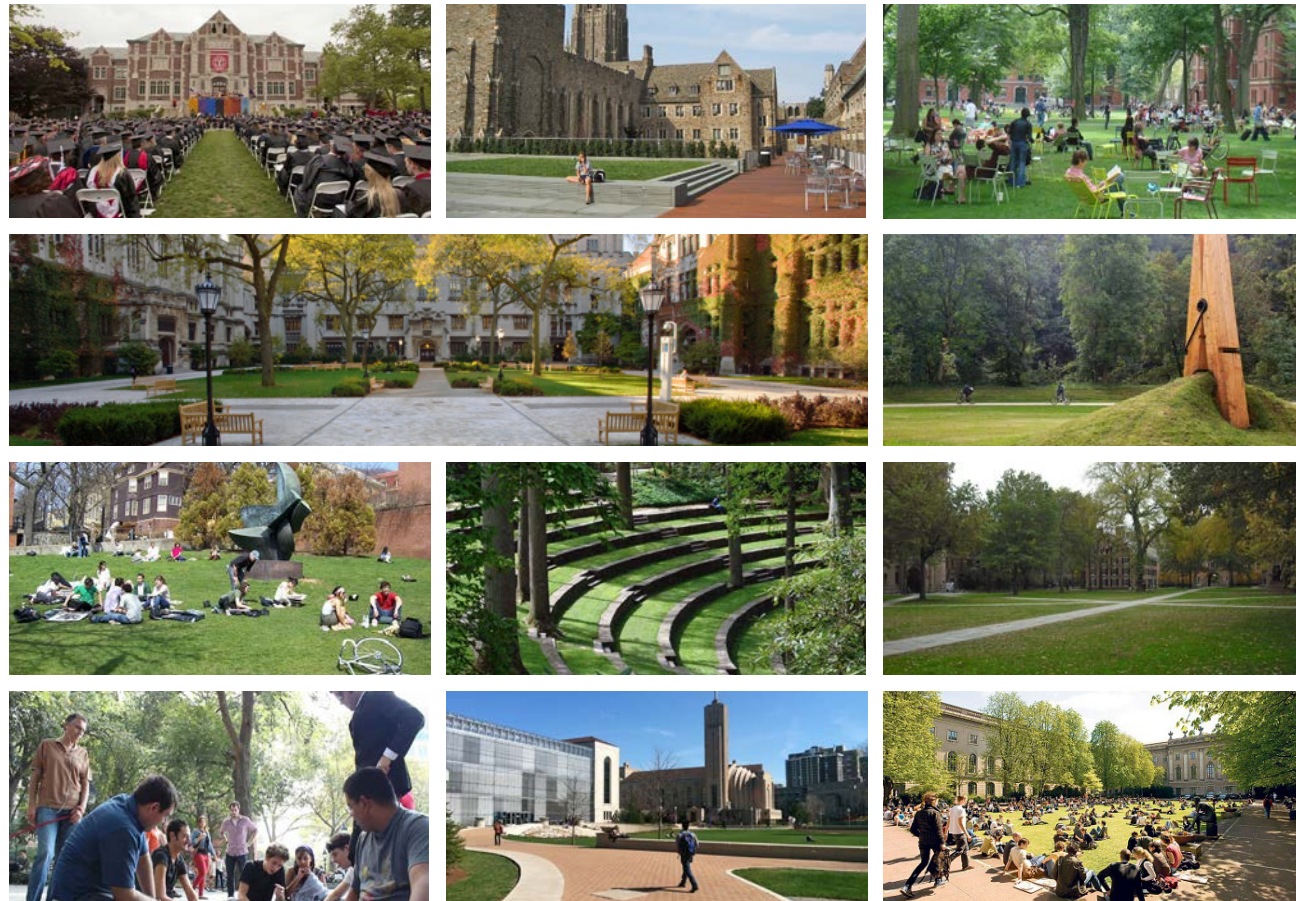
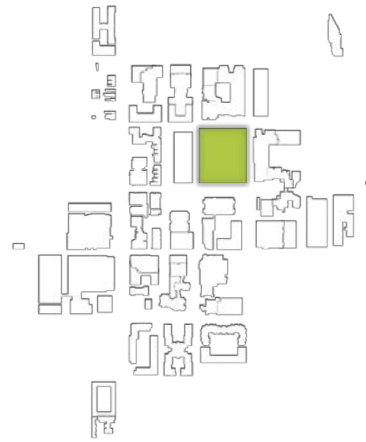


GOAL

Create a significant green open space at the center of campus.

The **Green** will be the focus of Temple's outdoor campus, a tangible symbol of collegiate life and a civic landmark. As a place for significant stormwater management, it will be a multipurpose space that provides traditional opportunities for formal and informal functions: commencements, concerts, festivals, outdoor classes and everyday casual use.

The **Green** will be the perceived center of the open space system, at the hub of Polett and Liacouras **Walks**.



Inspirational images

WALKS



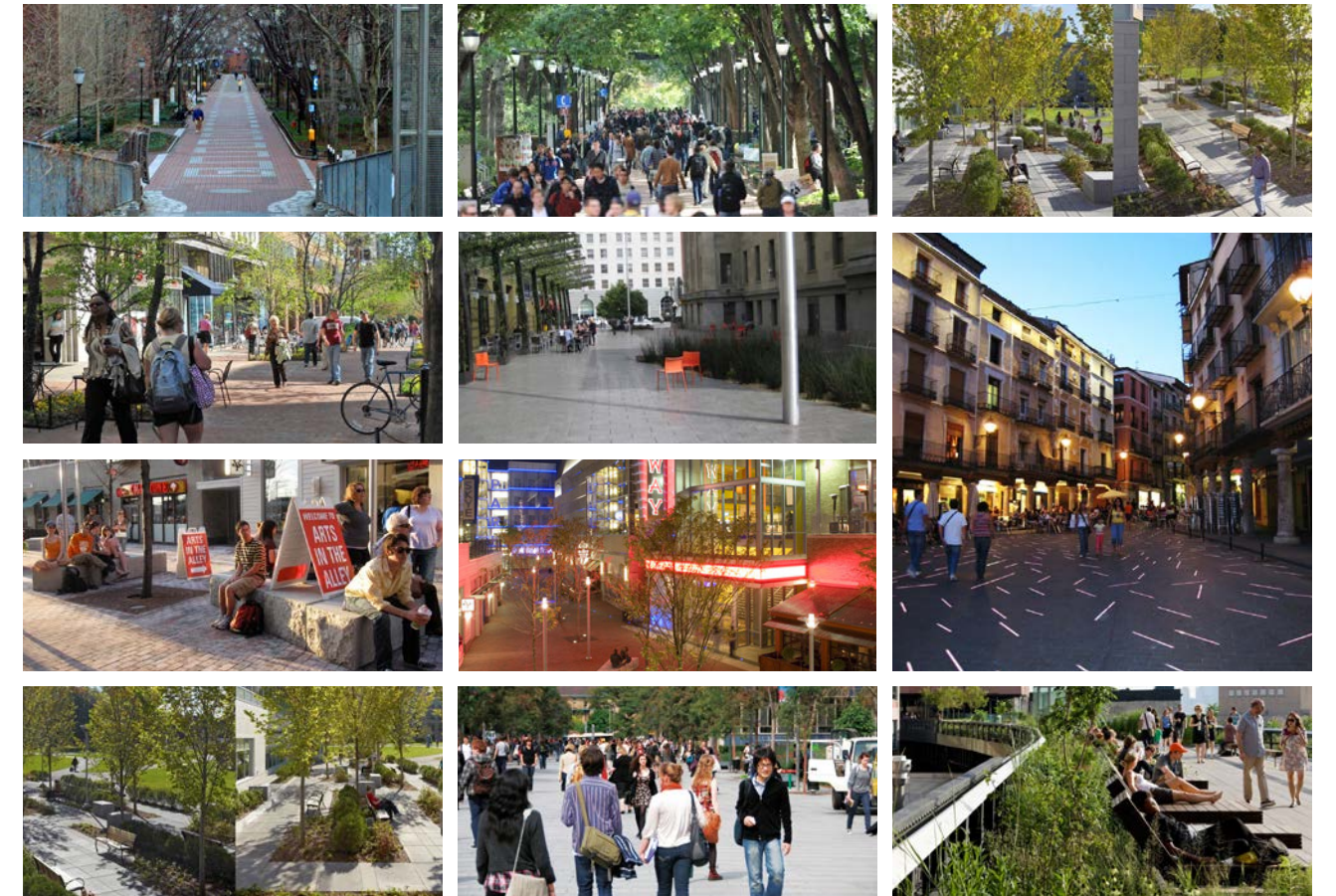
GOAL

Establish a new first impression.

Polett and Liacouras **Walks** are the primary pedestrian spines that connect the campus, intersecting at the new center of gravity created by the library and the **Green**.

Polett Walk, the east-west spine, links the SEPTA regional rail Temple Station to: the **Green**, the academic and administrative core, the performance/athletic complex and future civic plaza west of Broad and the surrounding neighborhoods where many students live. **Liacouras Walk**, the north-south spine, connects SEPTA's Cecil B. Moore subway station, the major concentration of on-campus housing in the south, the new library in the academic core, and terminates at Johnson and Hardwick Residence Halls to the north.

Functioning as multipurpose corridors, the **Walks** also work as service, emergency vehicle and utility routes. They are dynamic, interconnected social spaces providing access to a series of secondary walkways and a variety of courtyard and garden **Spaces** throughout the campus.



Inspirational images

SPACES

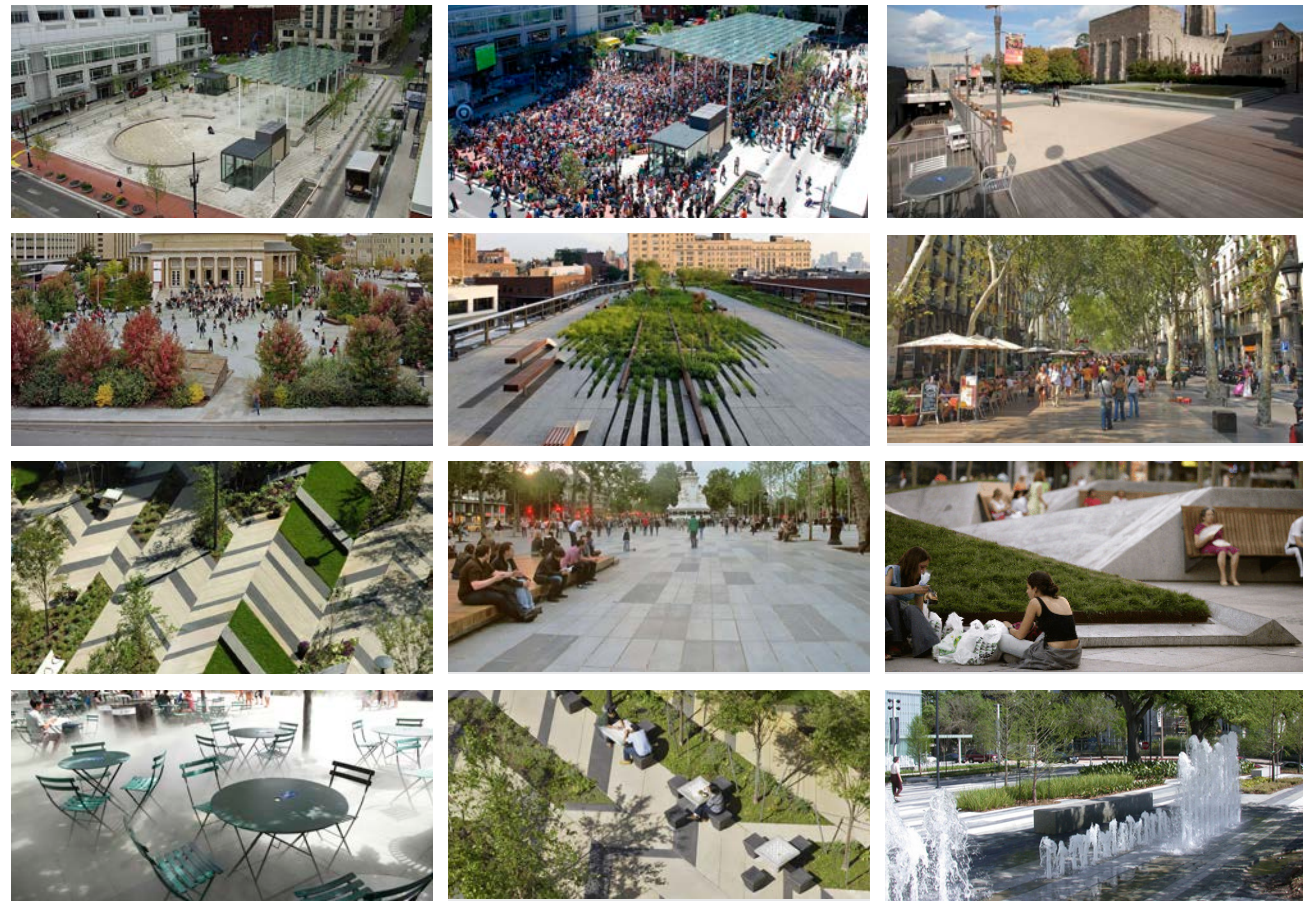


GOAL

Craft a consistent campus experience and improve the details.

Temple's campus is essentially a network of identifiable open **Spaces** of various sizes and shapes, each with a unique character and purpose. **Spaces** range in description from enclosed courtyards to gardens and include hybrid areas that extend outward from the campus interior to connect with **Streets**.

New **Spaces** proposed in VERDANT TEMPLE are intended to complement Temple's existing pattern of **Spaces** and enhance the campus experience by increasing their number, variety and quality.



Inspirational images

STREETS

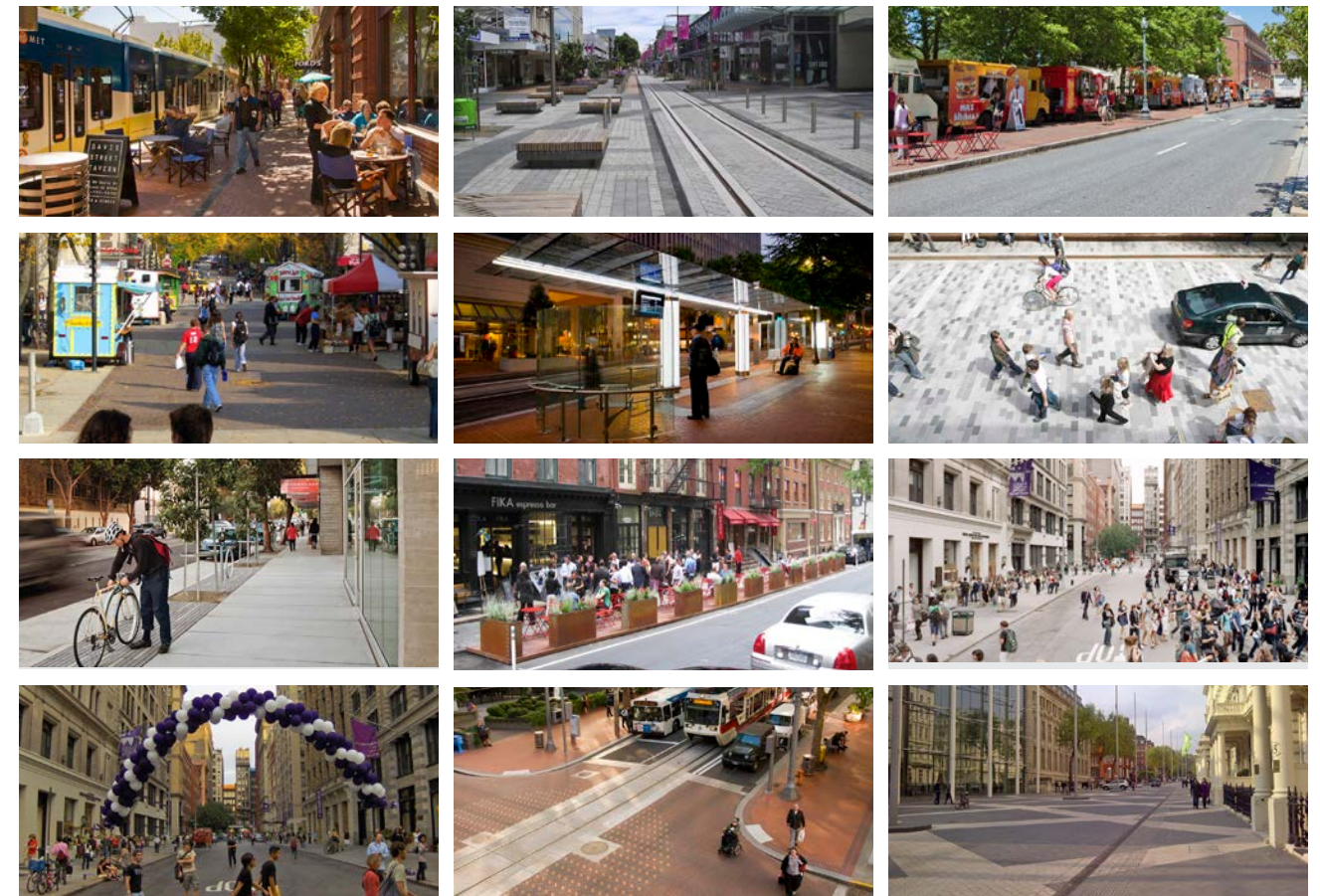
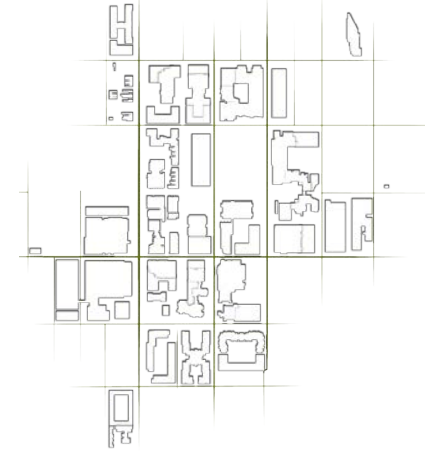


GOAL

Expand campus connectivity.

Second to the **Green** in terms of visual and programmatic impact, the **Streets** provide a significant opportunity for the campus to represent the University's brand and enhance the identity of Temple within its North Philadelphia context. Temple's identity can be defined by a new type of street-based campus, taking advantage of the **Streets**, an inevitable necessity, as a pedestrian realm and signature identity element.

Already long integrated into student life via food trucks and as connecting passages, **Streets** will become places of increased vitality. Design efforts should focus on activating the pedestrian environment of the **Streets** by adding windows and entries facing onto the **Streets**, more seating, better lighting, vigorous street trees and better integration with the **Spaces** and **Margins**.



Inspirational images

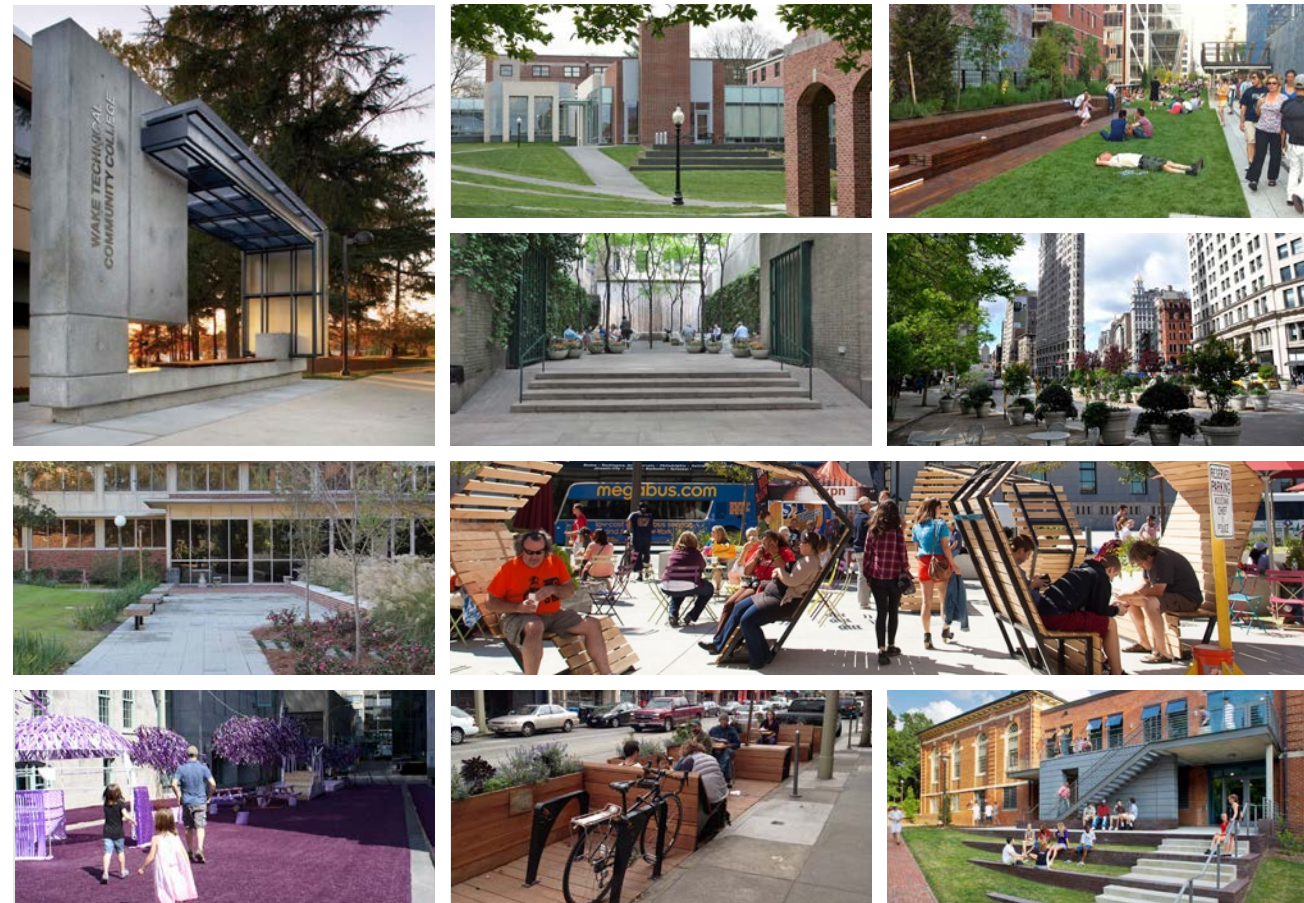
MARGINS



GOAL
Leverage interstitial spaces.

Defined as the spaces between the faces of buildings and rights of way/residual sidewalks, **Margins** collectively make up a significant portion of campus open space. The **Margins** are relics of a former era of urban redevelopment, and are opportunity areas for more productive use; new building expansion, seating areas, stormwater infiltration, vending and educational landscapes.

Temple gains 23 acres of active, effective open space for use by pedestrians or for stormwater management solutions by redefining the **Margins** as useful spaces. The repurposed **Margins** will seamlessly integrate with **Walks, Spaces and Streets** to add aesthetic value and function to Temple's campus landscape.



Inspirational images



PRIORITY PROJECT AREAS

GOAL

Envision a verdant Temple.

Based on the campus components that emerged through the design team's analysis of the campus and its context, three types of projects are identified as priority focus areas:

- **Iconic**, fundamental campus spaces that have a significant influence on the vitality of the campus;
- **Transformative**, currently functional places that once remade would play a pivotal role in improving the campus experience; and
- **Systemic**, elements requiring campus-wide design, integration and implementation to affect improvements to campus life and the pedestrian experience.



PRIORITY PROJECTS KEY MAP

Key campus landscape projects identified in VERDANT TEMPLE that utilize design strategies proposed in the Plan are described in detail on the following pages.





GREEN: Create a significant green open space at the center of campus.



(A) Perspective View of the New Green

The Green, a signature landscape unlike anything that has previously existed on Temple's campus is conceived to achieve the goals of VERDANT TEMPLE. The Green is an iconic urban open space for Temple and a showcase in Philadelphia for the essential sustainable design concepts of shared streets and a regional stormwater management system. The new library is sited on the northeast corner of the Green.



WALKS: Establish a new first impression.



Ⓑ Bird's Eye Perspective of Liacouras South

Walks and Spaces, working together form a verdant Temple campus. Campus-wide standard paving materials of red brick bordered by grey precast concrete pavers define the Walk. Spaces include a plaza shown in the background, that suggests an opportunity for public art or a fountain. Curved plant beds direct people to Ritter's entrances tucked within recessed intimate

entry Spaces. Under existing trees a new gathering Space, created by an elevated deck and continuous seat wall along the Walk, activates the landscape.



Plan of Liacouras South



Existing Condition



SPACES: Craft a consistent campus experience and improve the details.



© Perspective of Liacouras Central

Significant campus social Spaces, to temporarily pause, gather in groups or linger in solitary, are created through the design of exuberant plant beds with seating in front of 1810 Liacouras and in the placement of movable tables and chairs under a grove of trees between Wachman, 1810 Liacouras and Shusterman.



Plan of Liacouras Central



Existing Condition



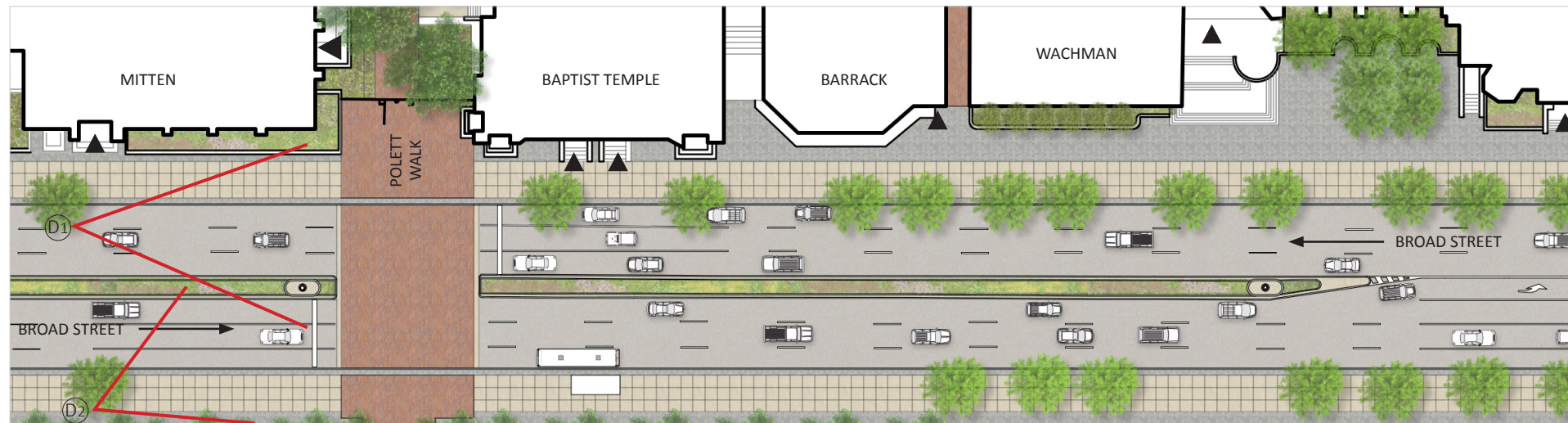
STREETS: Expand campus connectivity.



D1 Bird's Eye Perspective of Broad Street



D2 Street View Perspective of Broad Street



Plan of Broad Street



Existing condition



Ⓔ Street View Perspective of East Polett Gateway



Existing condition

BROAD STREET

A planted median, unique to the segment of Broad Street that intersects with Temple's campus, contributes to creating a welcoming image and identity for the University. Standard campus-wide paving continues through roadway crossings, linking the east and west sides of campus. Iconic signage elements are incorporated at key locations to mark important nodes and support campus wayfinding. A new public plaza on the west side of Broad becomes an important civic and campus destination.

EAST POLETT GATEWAY

A commuter corridor, accessing SEPTA's regional rail station, the East Polett Gateway is a key campus landscape. Pedestrian safety is enhanced through the use of curb extensions, which shorten crossing distance, open up site lines and are also used to collect stormwater. High quality paving materials at the intersections establish a clear campus identity. New lighting with Temple flags along with a double alley of trees enlivens the street. A protected bike lane connects to the City bike lane east of 10th Street. The station's large retaining wall is rebuilt to create a welcoming plaza with a café, outdoor seating, a grove of trees, and space dedicated for a Philadelphia bike share station.



Plan of Berks Street

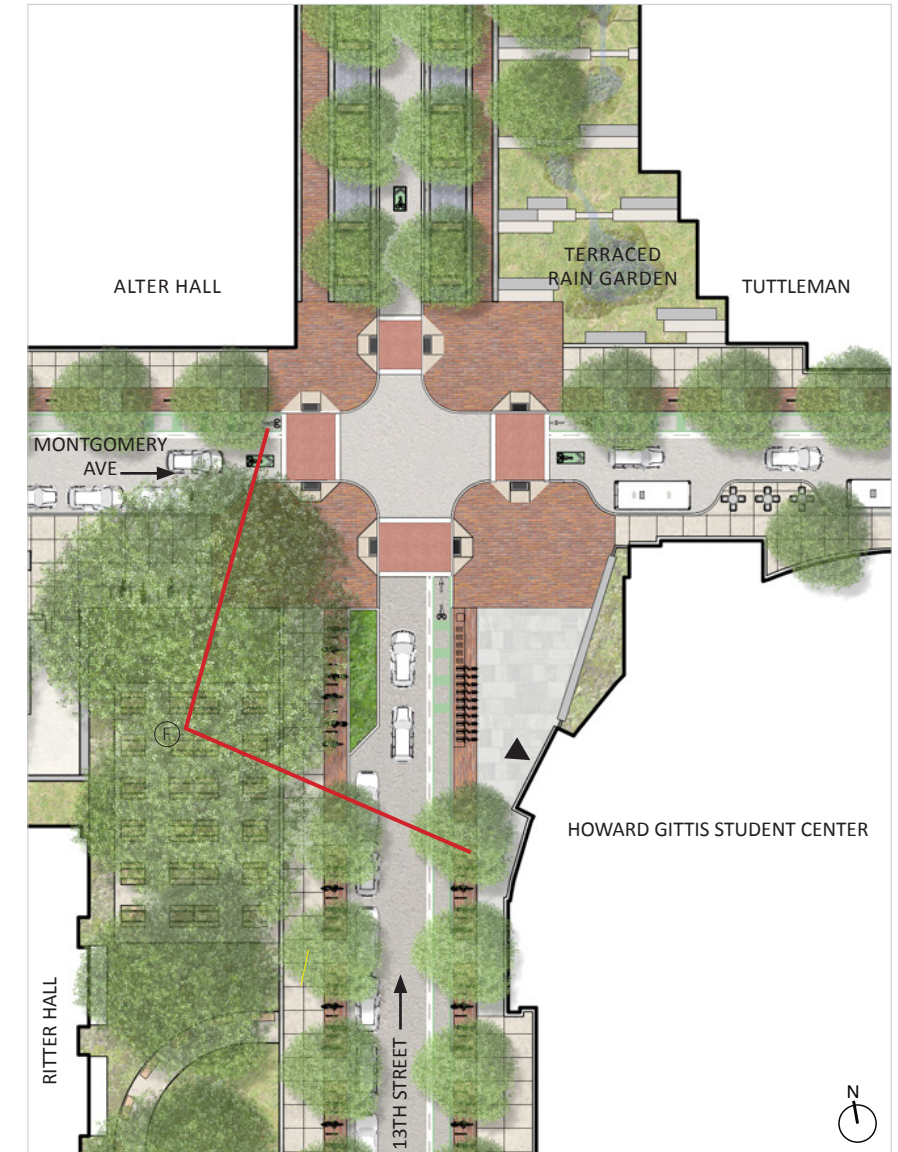


MARGINS: Leverage interstitial spaces.



Ⓕ Perspective of the Student Union

VERDANT TEMPLE envisions underutilized residual spaces having a greater purpose and along with Walks, Spaces and Streets contributing to a new social vibrancy on campus. Populated with picnic tables, large gathering spaces adjacent to Ritter serve impromptu groups and the Student Center dining hall. A terraced rain garden adjacent to Tuttleman is a teachable landscape. North of Montgomery, 13th Street transitions to a shared street prioritizing pedestrians over vehicles. Curb extensions at intersections create safer crossing conditions and an opportunity to capture stormwater, and between food trucks they open up views and create parklets with seating.



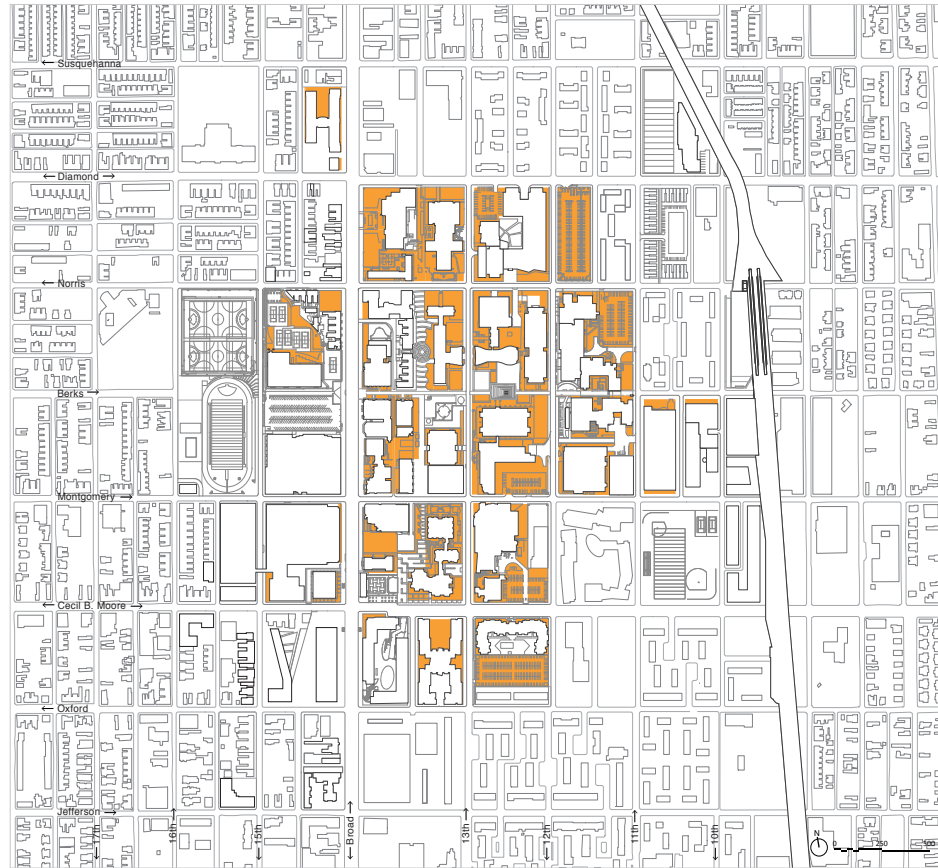
Plan of the student union



Existing condition

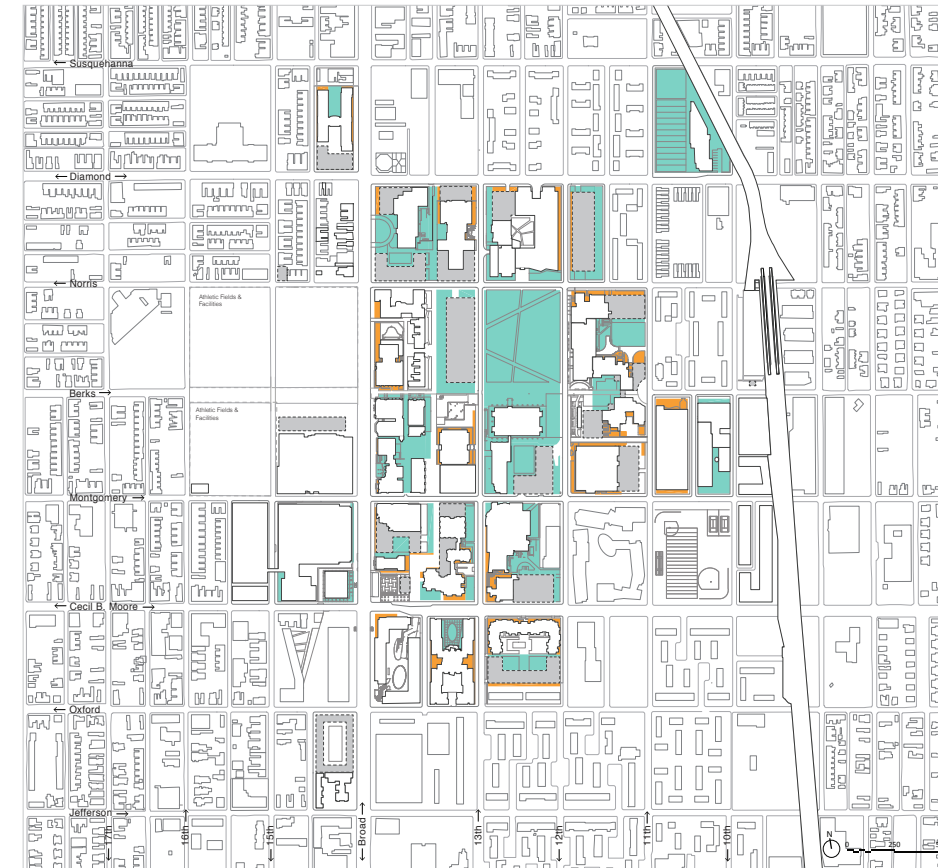
EXISTING

Much of Temple's open space is underutilized because it is the result of an era of development that favored sizable setbacks from the street and protective zones around buildings. Other large open areas are currently being used for surface parking. These residual spaces cumulatively contribute to the abundance of marginal space on campus.



PROPOSED

The impact both visually and physically on the campus landscape from these marginal spaces is significant. VERDANT TEMPLE proposes that it is possible and desirable to restore functionality and purpose to many of these spaces, bringing social vibrancy to new gathering places, allowing Temple to increase building footprints without expanding beyond existing borders and supporting the creation of a central campus green.



Margins as a site for new building space



Margins as a plaza or social space



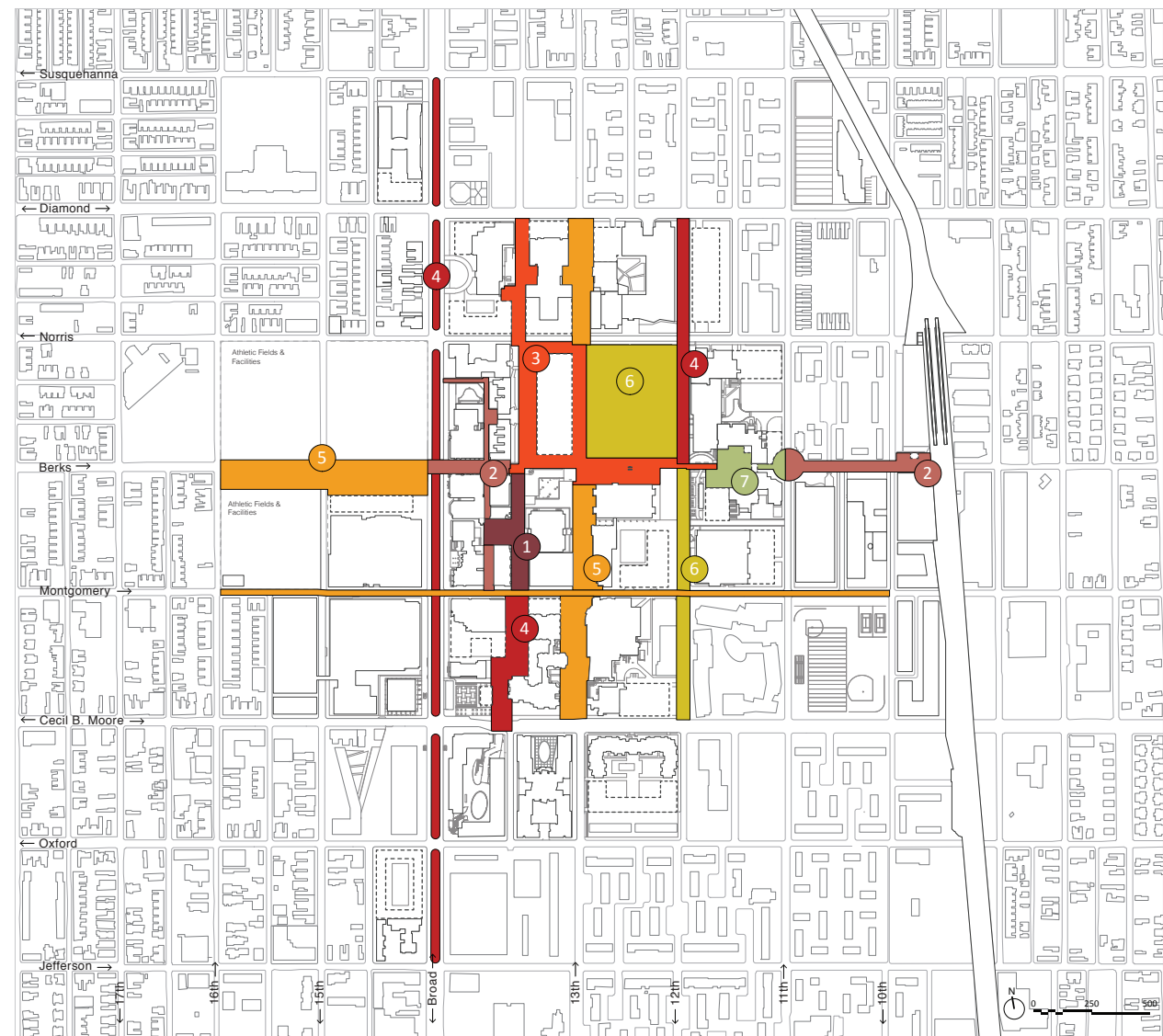
Margins used for stormwater infiltration

IMPLEMENTATION STRATEGY

The scale and complexity of the Priority Projects identified in VERDANT TEMPLE necessitates a ranking that understands a realistic timeframe and the detailed process through which construction can occur while a fully functioning campus environment is maintained. The sequencing shown here takes into account the realities of funding, the logistics of creating new buildings and open spaces and the various intermediate enabling projects that are needed to achieve the desired final outcomes.

While these Priority Projects affect change on much of the campus they do not achieve the full scope of VERDANT TEMPLE and an on-going effort to ensure a

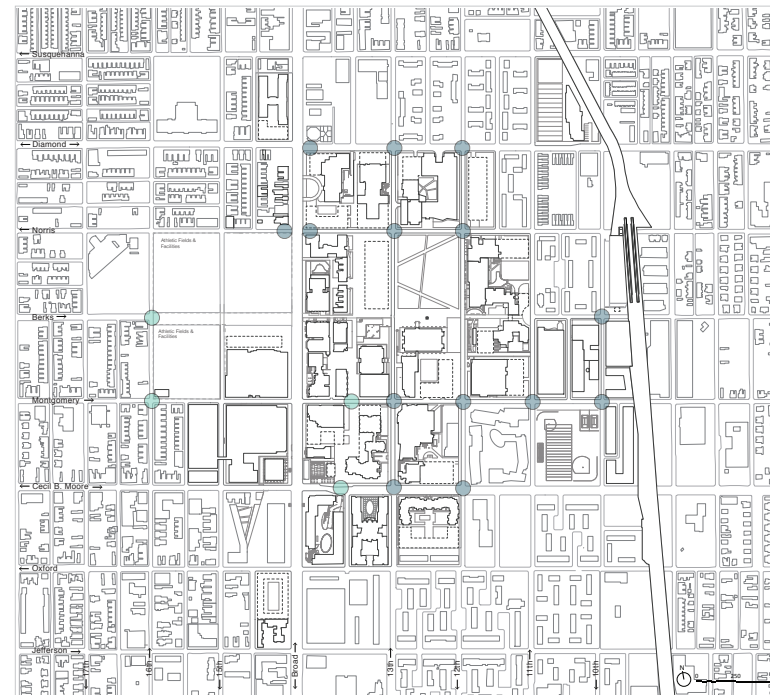
comprehensive approach to campus-wide implementation will be required. Whenever Priority Projects are implemented it is assumed stormwater management, lighting, paving, furnishings, planting, bike lanes and parking and intersection improvements will be included in the scope of renovations. However due to funding and other unknown issues, gaps in improvements to some of these campus-wide systems may occur. If these systems cannot be updated during a Priority Project's initial scope of work it would be most effective to coordinate their improvement as soon as feasible.



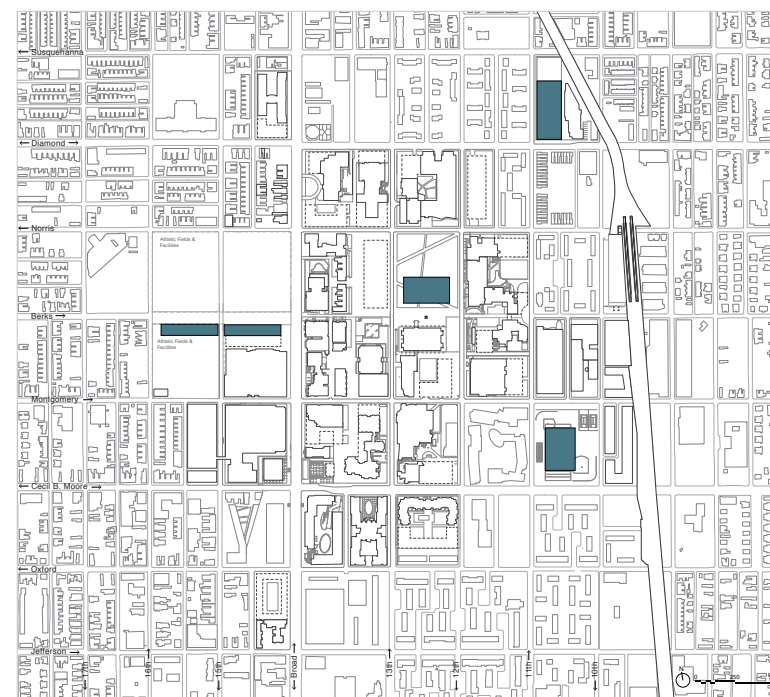
Priority projects

IMPROVEMENTS NOT INCLUDED WITHIN PRIORITY PROJECTS

- Stormwater Curb Extensions
- Curb Extensions
- Lighting
- Regional Stormwater Management System

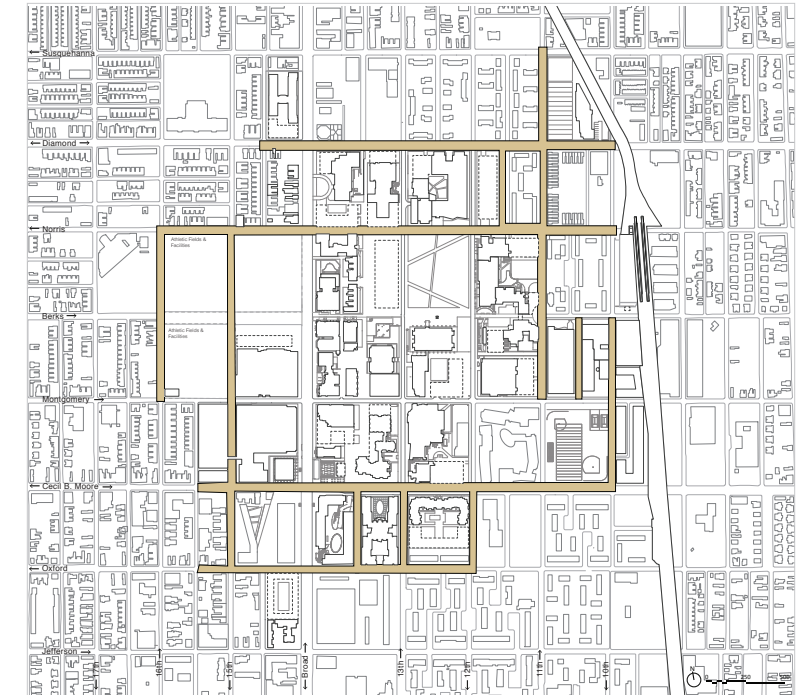


Curb extensions

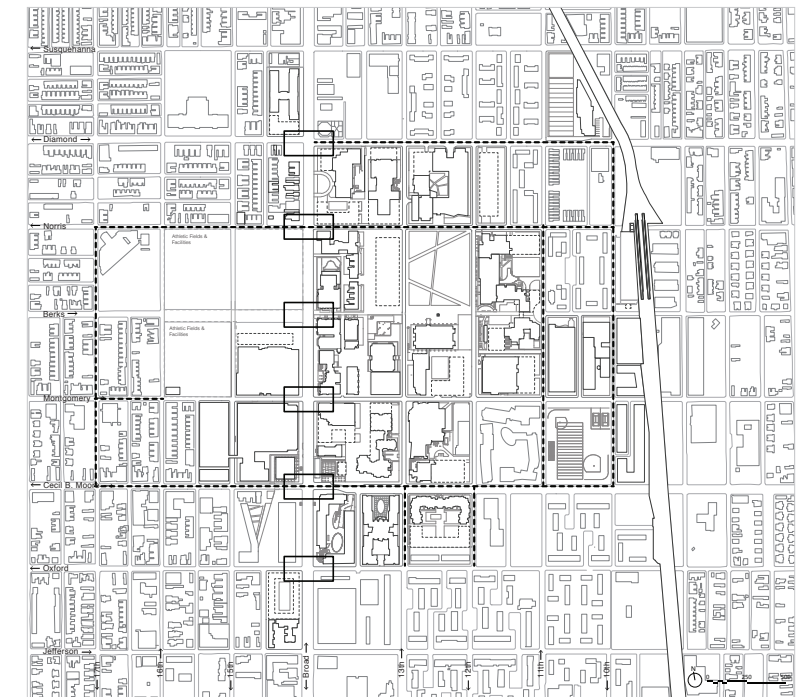


Regional stormwater management system

- Bike Lane Network
- Broad Street Intersection



Lighting



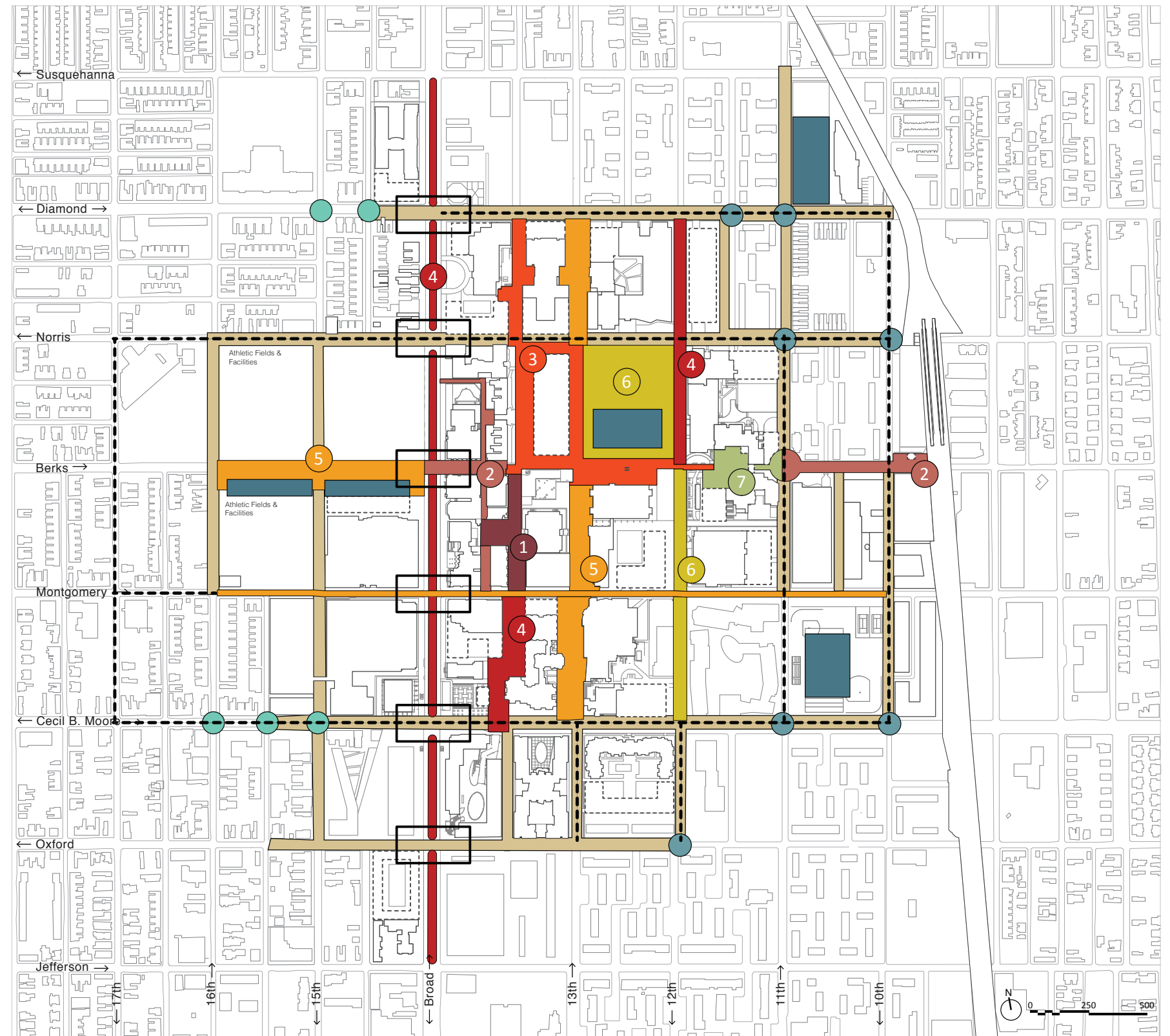
Bike lane network and Broad Street intersections

Since it is integral to all aspects of campus life the wayfinding and signage system is best comprehensively implemented campus-wide rather than on a project-by-project basis so it is not indicated on these diagrams.

The implementation strategy shown here is intended to serve as a guide for capital improvements and long-range planning and as the framework for a more detailed and nuanced plan that will be developed once budgets and funding are in place.

PRIORITY PROJECTS		STORMWATER MANAGEMENT STRATEGIES				
		Permeable Unit Paving	Bioretention	Stormwater Curb Extensions	Stormwater Tree Trenches	Regional Subsurface Stormwater Management Systems
1	2014 - 2015 Wachman Plaza Liacouras Central Walk	●	●			
2	2015 - 2016 Gateways: East and West Beasley's North and South	●		●	●	
3	2016 - 2017 Liacouras Walk South Broad Street Medians	●	●			
4	2017 - 2018 Liacouras Walk North Polett: Liacouras to 12th Street	●	●	●	●	
5	2018 - 2019 13th Street North and South West Polett Plaza	●	●	●	●	●
6	2019 - 2020 Main Quad 12th Street	●	●	●	●	●
7	2020 - 2021 College of Liberal Arts	●	●			

Stormwater management strategies correlated with priority projects



Implementation Strategy Composite Overlay

TEMPLE TODAY

The existing campus landscape environment at Temple has developed incrementally and opportunistically over the years within the complex urban setting of Philadelphia's Lower North District. The campus landscape of today, while serviceable with many cherished places, lacks a guiding vision, uniformity and clarity and does not serve the Temple community as effectively as desired or accurately represents, to its best advantage, the qualities inherent in Temple as a premier institution of higher learning.



Existing Campus Plan

VERDANT TEMPLE

This Plan establishes a strong vision for Temple's future addressing current needs and desires for the University's main campus and providing the framework on which minor improvements and major transformations can be realized innovatively, cost effectively and sustainably. The campus will continue to evolve over time, and always remain a work in progress, composed of a dynamic, complex and layered mix of challenges and opportunities.

The success of VERDANT TEMPLE will be in its facilitation of change through adoption of the campus components and the use of campus-wide systems for the planning, design, construction and management of projects generated by the Plan and for those not yet imagined. The acquisition of the William Penn High School site in mid-2014, as work on the Plan was concluding, is an example of how essential it is that Temple systematically update the Plan to ensure campus-wide standards are applied to new properties.

The VERDANT TEMPLE campus will be a place where the intellectual dynamism of students and educators flows seamlessly into a landscape that respects and intersects with community and city forming a vital, adaptable and engaging environment for learning and social interaction.



VERDANT TEMPLE



Details are not the details. They make the design.

- Charles Eames

2.0

CAMPUS-WIDE DESIGN

SYSTEM:
SOCIAL



Event Space



Outdoor Dining



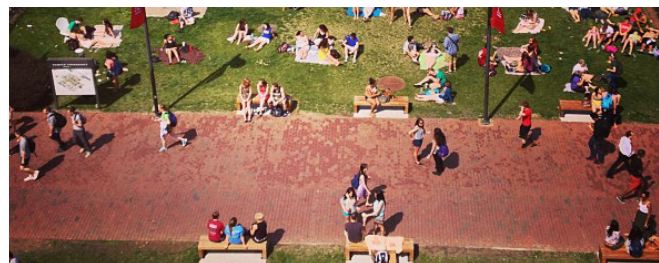
Study Space



Recreation



Student Life



- Event Space
- Outdoor Dining
- Study Space
- Recreation
- Student Life

SYSTEM: SOCIAL

BEST PRACTICES FOR SOCIAL DESIGN

Temple's landscape is its venue for campus life. Human activity, the campus landscape's **Social** component, has a profound influence on whether or not the campus is perceived as welcoming, safe and the place where the Temple community goes to see and be seen. Social activities, both structured and spontaneous, that occur in a rich variety of well-designed environments will contribute to a positive campus image.

The following diagrams and text demonstrate the design team's observations, research and understanding of how the social systems on Temple's campus are currently functioning and include recommendations for both incremental and grand scale improvement.

Many of VERDANT TEMPLE's planning and design recommendations are rooted in William H. Whyte's, *The Social Life of Small Urban Spaces* (Washington D.C., The Conservation Foundation, 1983), a comprehensive manual based on extensive observational research on how spaces are used. The following excerpts from Whyte's book support the design team's findings at Temple and have influenced the Plan.

"the best-used plazas are sociable places"

"what attracts people most, it would appear, is other people"

"the most popular plazas tend to have considerably more sitting space....people tend to sit where there are places to sit"

"it's most important that seating be socially comfortable" - variety is important including "up front, in the back, to the side, in the shade, in the sun, in groups, off alone"

"unrealized potential.....supply creates demand.....a good new urban space builds a new constituency.....it stimulates people into new habits.....al fresco lunches, new paths to and from work, new places to pause.....it does all of this very quickly"

"there are all sorts of good reasons for trees.....trees should relate to sitting spaces.....plant trees in groves"

"water features must allow access....it's not right to put water before people and then keep them away from it"

"if you want to seed a place with activity, put out food....vendors have a good nose for spaces that work...they have to...they are constantly testing the market...if business picks up in one spot there will soon be a cluster of vendors there."

"food attracts people, who attract more people"

"key space for a plaza is the street"

"a passerby is a user too...about half will turn and look in...of these, about half will smile...the sight of the park, the knowledge it is there, becomes part of the image we have for a much wider area"

"unless there's a compelling reason, an open space shouldn't be sunken....people look at you; you don't look at them"

"effective capacity: capacity if self-leveling...underuse, not overuse, is the major problem....people determine the level of crowding"

"double-sided seating should be width of 30-inches minimum, 36-inches preferred...24-inches is too narrow, but workable"

"no more than 50% of movable chairs can be credited toward linear seating capacity"

"a minimum of 5% of seats shall have backs"

"trees should be planted every 25-feet of sidewalk....there should be at least 6 trees for every 5,000 square feet of plaza"

"up to 20% of open space can be used for outdoor cafes"

FIRST IMPRESSIONS

Temple's main campus is located on 120-mostly contiguous acres-in Lower North Philadelphia. In many places the campus reaches into and merges with adjoining neighborhoods. In other places the campus purposely separates itself from its surroundings through its built environment.

Understanding the social design of Temple's campus starts with the arrival experience- first impressions influence how the social spaces of the campus are perceived and used. Getting people to campus and directing them around is discussed in-depth in *Mobility* (pp. 2.23-2.46) and *Wayfinding* (pp. 2.81- 2.134).

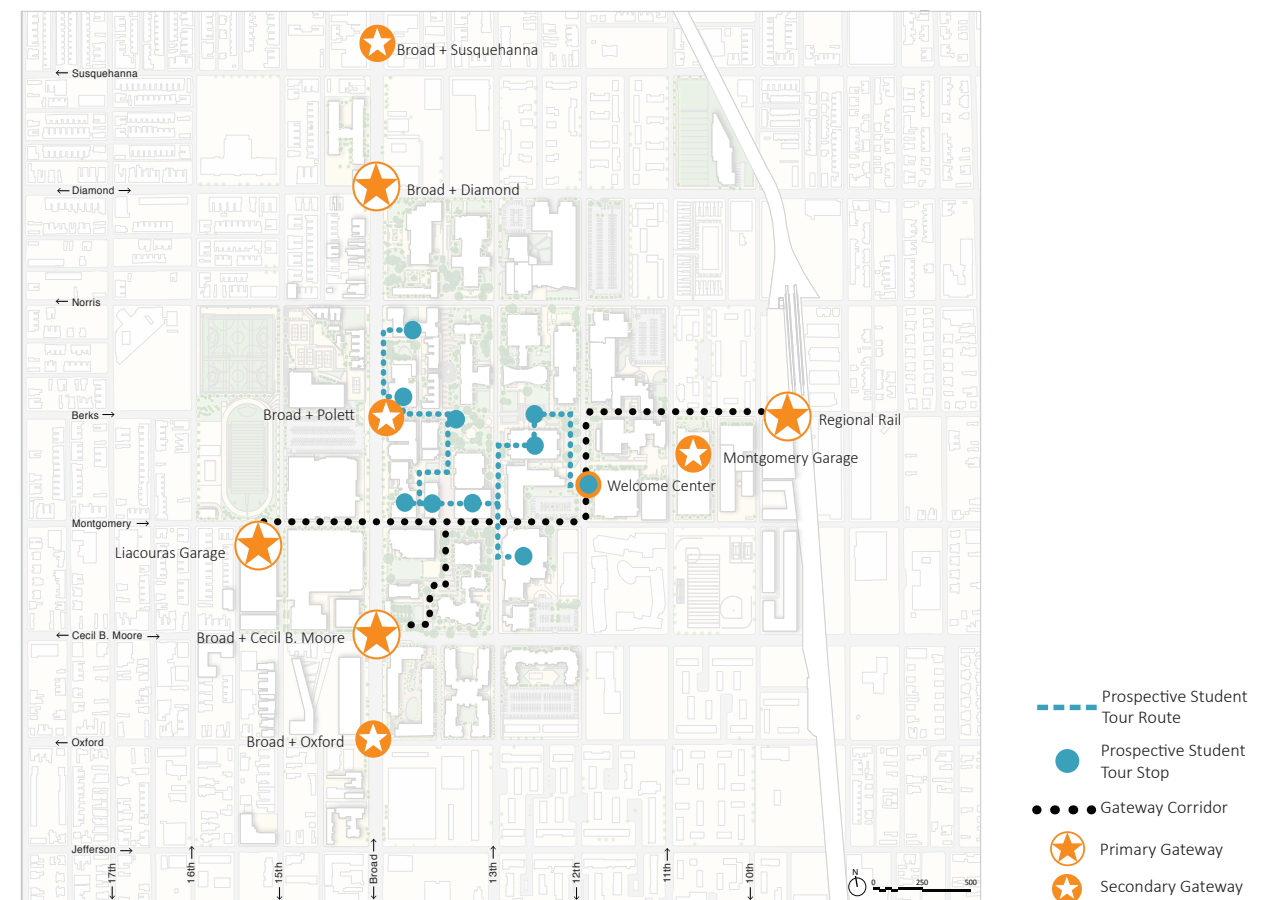
The diagram below denotes the lack of a satisfactory arrival experience as it relates to the social aspects of campus design. Ideally, social use of a campus starts at the edges where users are greeted by a clear logical threshold experience and drawn in by a well-designed campus landscape composed of streets, walks, plazas and green spaces that have been shaped by best practices in social and physical design.

Observations

- Temple is primarily accessed by car or public transit (SEPTA's subway or regional rail). When arriving by car, Temple's website directs visitors to either the Liacouras or Montgomery Garage.
- Once on foot, visitors make their way on Montgomery or Berks to the Welcome Center on 12th Street. The pedestrian experience along these routes lacks clarity and is not welcoming.
- The effective use of the "Temple T" banners serves as a visual cue to every motorist traveling on Broad Street that they are on Temple's campus.

Recommendations

- Improve the visitor vehicular and pedestrian experience.
- Streets provide a canvas for additional University recognition/branding elements including signage, specialty pavements, street furnishings, lighting and trees.
- Demarking thresholds between the University and the community at primary gateways are identified as a priority.



CAMPUS LIFE DYNAMICS

Understanding where the majority of everyday recurring activities take place on campus, their relationship to each other and to the campus landscape as a whole is key to the design of exceptional social spaces. A campus landscape is formed by a system of paths and open spaces that enhance the pedestrian environment and elevate the quality of each person's experience. A successful social landscape offers a range of environments that vary in scale and texture and are comfortable for being with others or for being alone.

The diagram below depicts non-academic building uses; where people are sleeping, eating, socializing and relaxing.

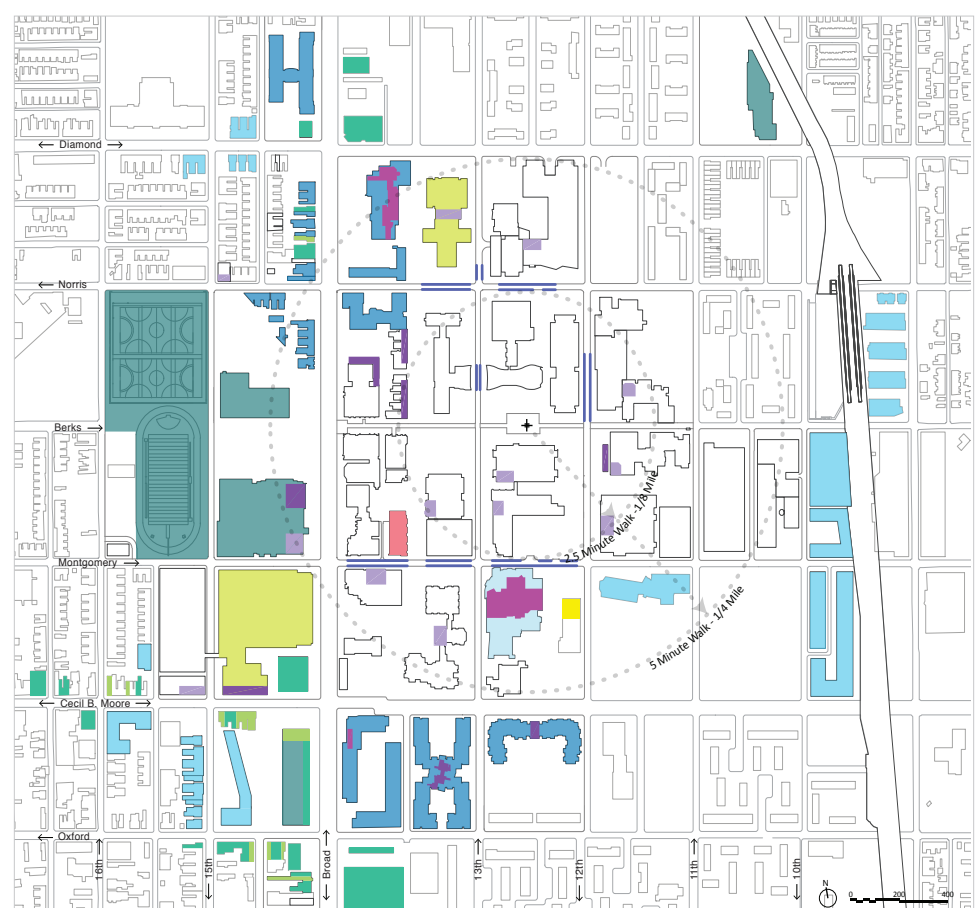
Observations

- Dining facilities, major places for socialization, are directly adjacent to the center of campus.
- Food trucks and carts, a significant part of Temple's social culture, are primarily found in the center of campus along Montgomery, 12th, Norris and 13th Streets.
- Active recreation is situated west of Broad.
- Primary entertainment venues are situated on or adjacent to Broad.

- Academic buildings dominate the heart of the campus. Daily destinations ring the heart of campus.
- The campus is physically and mentally divided by Broad Street.
- A clear system of well-defined gathering spaces is lacking.

Recommendations

- Connections between academic buildings and daily destinations will benefit from a well-defined pedestrian network that includes traffic calming, bike lanes, wayfinding and a consistent landscape experience.
- Landscape elements such as paving, furnishings, lighting and signage can be used as tools to create a strong campus identity in addition to unifying the campus across the Broad Street divide.
- A coordinated system of large and small scale gathering spaces including a centrally located iconic multipurpose campus green, walks, plazas and gardens will foster social activities for group and/or individual use.
- Activate the campus landscape by designing a series of nodes for social activity.



BUILDINGS IDENTIFIED BY PRINCIPAL USE

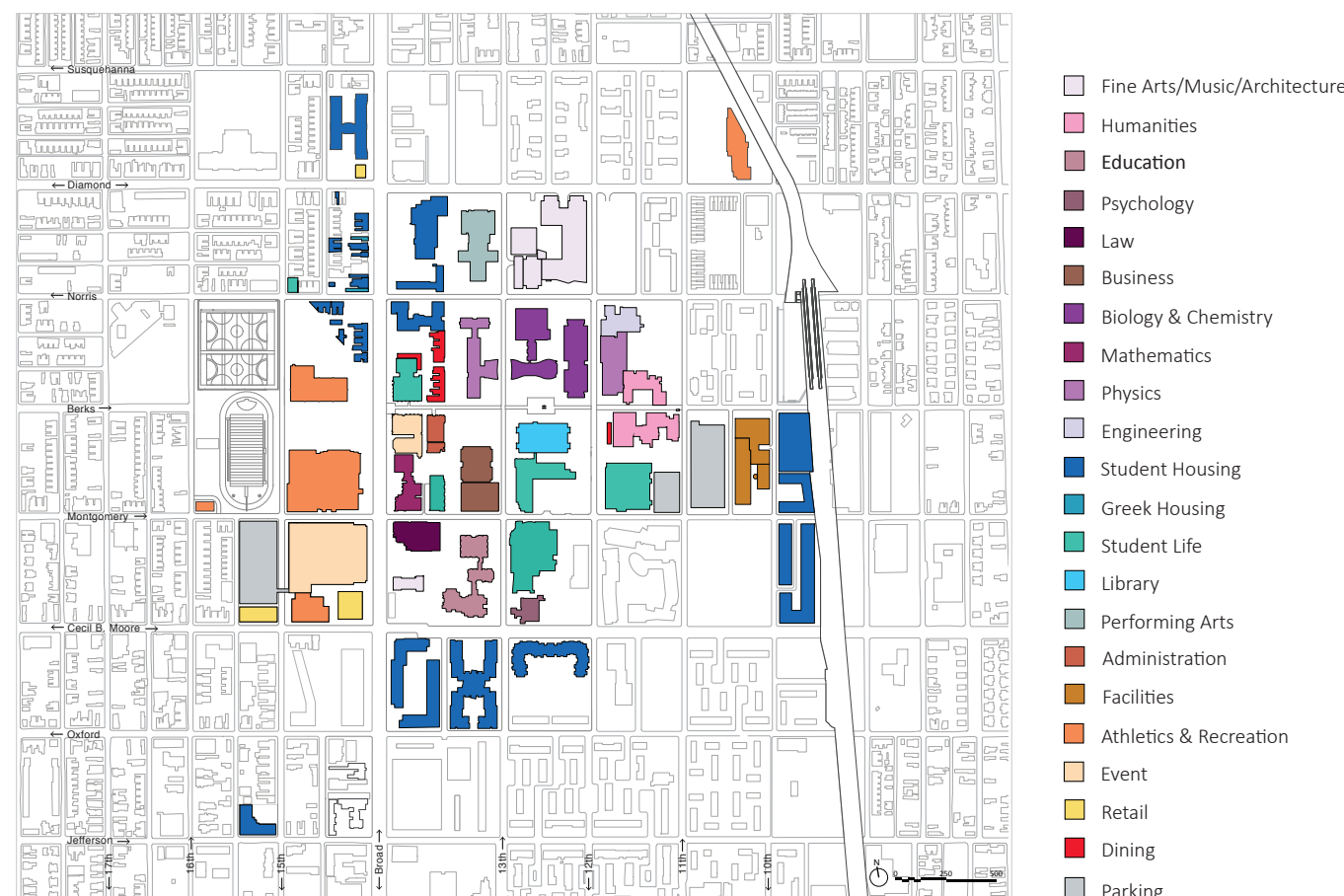
Though illustrated separately, Building Use is partnered with Campus Life. The location and function of campus buildings has an effect on how the campus landscape is used. Travel patterns between buildings create an opportunity to design places to pause and gather, to meet friends or to use as outdoor classrooms.

Observations

- Campus housing is currently organized in three general areas: north along Broad, south along Cecil B. Moore and east along 10th Street. A significant portion of off-campus housing is west of 15th Street.
- Academic buildings and spaces are generally located in the area between Broad and 11th Street from Diamond to Cecil B. Moore.
- Athletic facilities and event use is primarily west of Broad Street.

Recommendations

- Create a system of large and small scale gathering spaces that support each other and create a dynamic campus experience optimizing opportunity for meaningful social interaction.
- The city street network is a key aspect of the campus experience. Redeveloping the streets is an opportunity to enhance the campus identity, clarify and improve pedestrian circulation and create important spaces of transition and gathering.



DENSITY COMPARISONS

Based on data available from a 2014 Center City District report and the 2014 Lower North District Plan it is clear that Temple's main campus has a density that is unlike its surrounding neighborhoods and is more comparable to Rittenhouse and Washington Square in Center City.

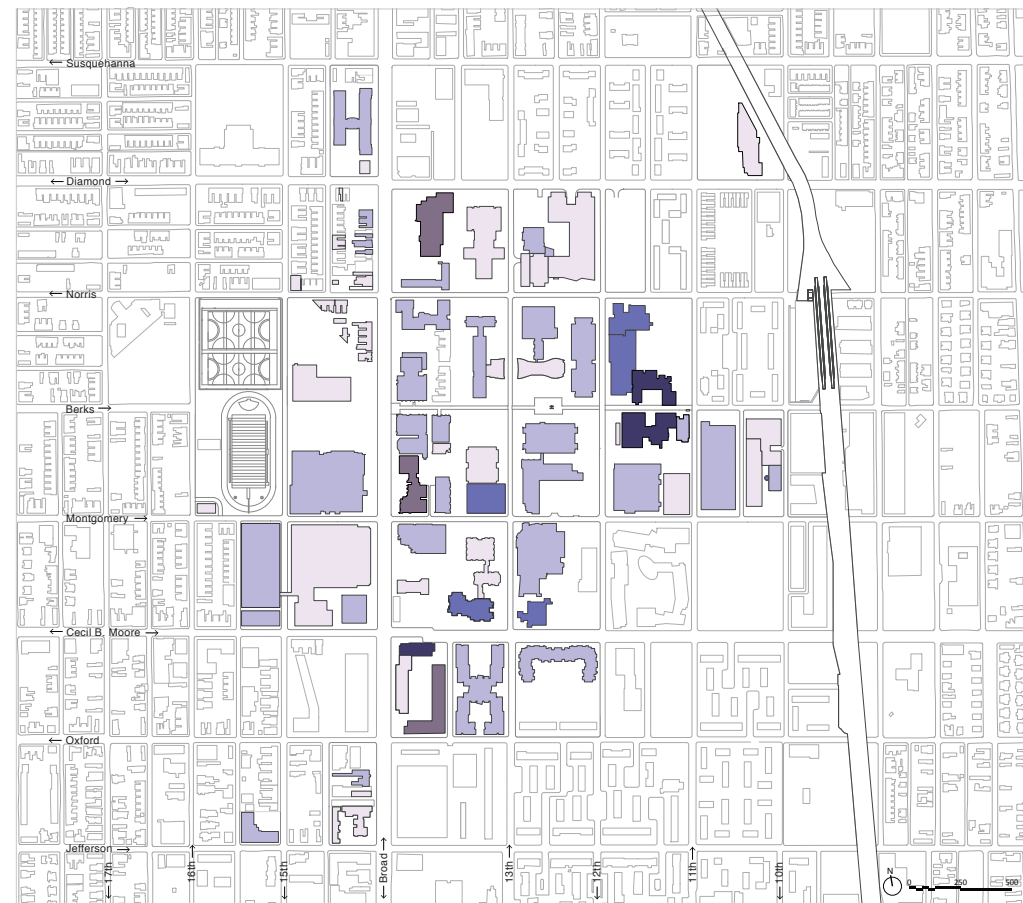
Observations

- Temple Main Campus has approximately 243 students per acre assuming approximately 32,000 students are on campus at one time.
- The core Center City Business Improvement District has 203 jobs per acre.
- According to the Temple website, there are approximately 10,000 students living on or directly adjacent to campus, which is approximately 67 students per acre.
- 63 persons per acre live around Rittenhouse Square.

- Lower North District density is approximately 25 people per acre.
- While not a parallel or direct correlation, Temple's student population is comparable to Center City's jobs per acre and Temple's residential density is comparable to Rittenhouse Square.

Recommendations

- The campus density suggests an important opportunity to improve the social opportunities within the campus landscape more richly than currently exists to better serve the Temple as well as the neighboring community population.
- The density data supports the demand for a signature campus open space, the creation of which will significantly impact the type and scale of social programming at the University.



- 1-3 Stories
- 4-6 Stories
- 7-9 Stories
- 10-12 Stories
- 13+ Stories

RESIDENTIAL DENSITY DISTRICTS

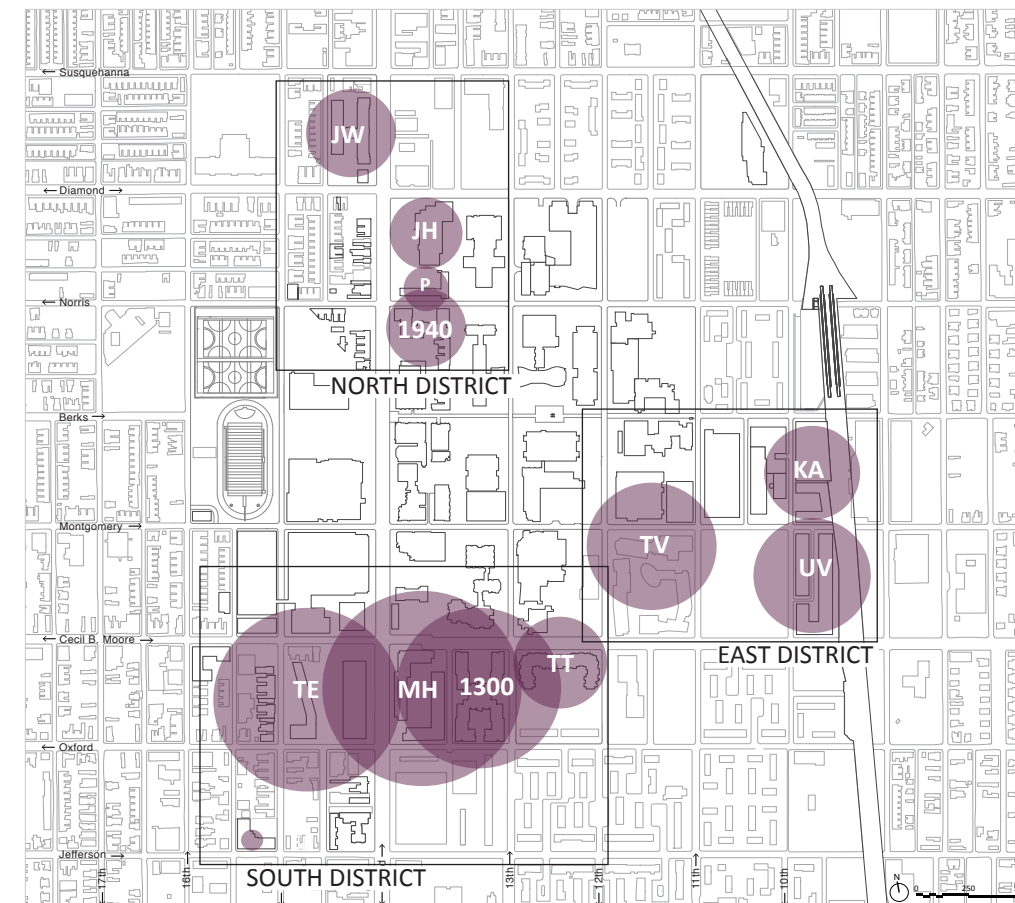
On-campus and directly adjacent off-campus housing are diagramed below, by districts, to document where concentrations of students are living. This analysis is focused on students that have a 24/7 campus presence, who uniquely influence campus life.

Observations

- Patterns suggest that Liacouras Walk, Cecil B. Moore and Montgomery receive the majority of pedestrian traffic from resident students to and from the campus core.
- The majority of students live in the south district. Intersection crossings along Cecil B. Moore are functional, but would benefit from improvements to make conditions safer.
- Montgomery is the primary corridor for east district access to the academic core. Cyclists often ride the wrong way down Montgomery or on the sidewalk.

Recommendations

- Key locations for intersection improvements along Cecil B. Moore include Broad Street, the midblock crossing at Morgan Hall, and 13th Street. Improvements will create safer pedestrian circulation conditions and a stronger campus identity.
- In addition to streetscape and intersection improvements, a dedicated contraflow bike lane on Montgomery will facilitate safer circulation and enhance connectivity.
- Susquehanna station improvements and streetscape improvements will enhance the pedestrian experience.



SOUTH DISTRICT (51.4%, 4,265 beds)	
1,275	Morgan Hall (MH)
1,200	The Edge (TE)
1,050	1300 (1300)
600	Temple Towers (TT)
140	Elmira Jefferies (EJ)
EAST DISTRICT (26.4% 2,197 beds)	
750	University Village (UV)
615	Kardon & Atlantic Terminal (KA)
832	The View at Montgomery (TV)
NORTH DISTRICT (22.2% 1,835 beds)	
570	James S. White Hall (JW)
510	1940 (1940)
465	Johnson/Hardwick Halls (JH)
290	Peabody (P)
TOTAL	8,297 Beds

* Number of beds was multiplied by 0.75' to achieve the diameter of the circle for each building.

BARRIERS

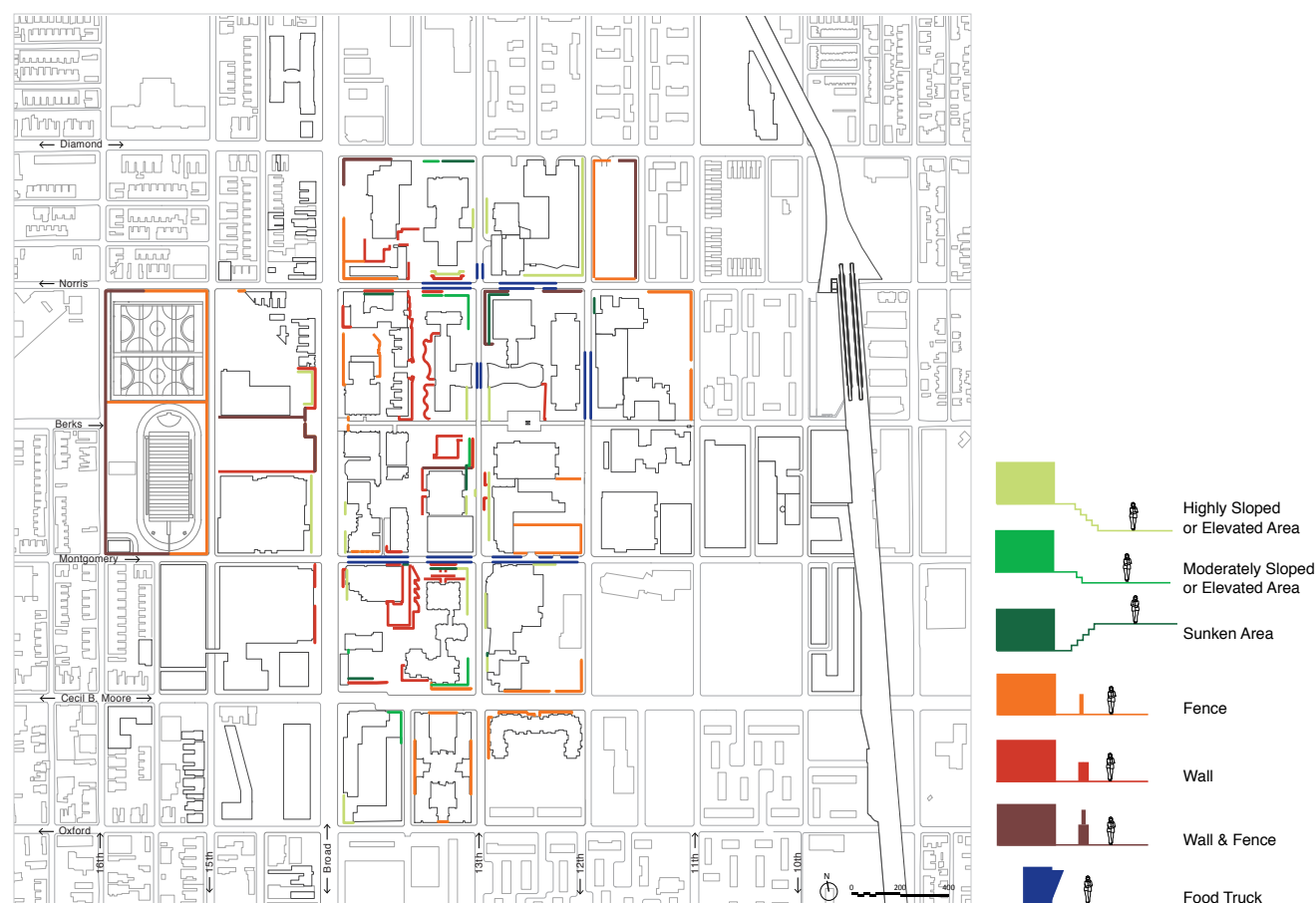
Impediments that may obstruct or influence pedestrian circulation as perceived barriers along streets and within the campus core are diagrammed below. These barriers often affect the ability of naturally occurring campus spaces to fully function as places conducive to social interaction.

Observations

- Many streets are lined with food trucks parked closely together, creating a wall, blocking sidewalk views.
- Perceived barriers may be layered at buildings, creating a physical and mental separation of building life and street life.
- While VERDANT TEMPLE was being prepared, Temple was actively removing hundreds of linear feet of iron fencing, opening up lawn areas and making the campus more inviting.
- Many fence and wall conditions relate to grade changes.
- Fences are often associated with controlled facilities such as athletic fields and parking lots.

Recommendations

- Redistribute and provide more space between trucks to maintain and create site lines to sidewalk activity, making the street livelier.
- Remove barriers and make ground floor connections to blend building life and street life, increasing a sense of community.
- Create better ground floor connections by moderating grade changes in future development.
- Limit fenced areas.



GRADE CHANGE

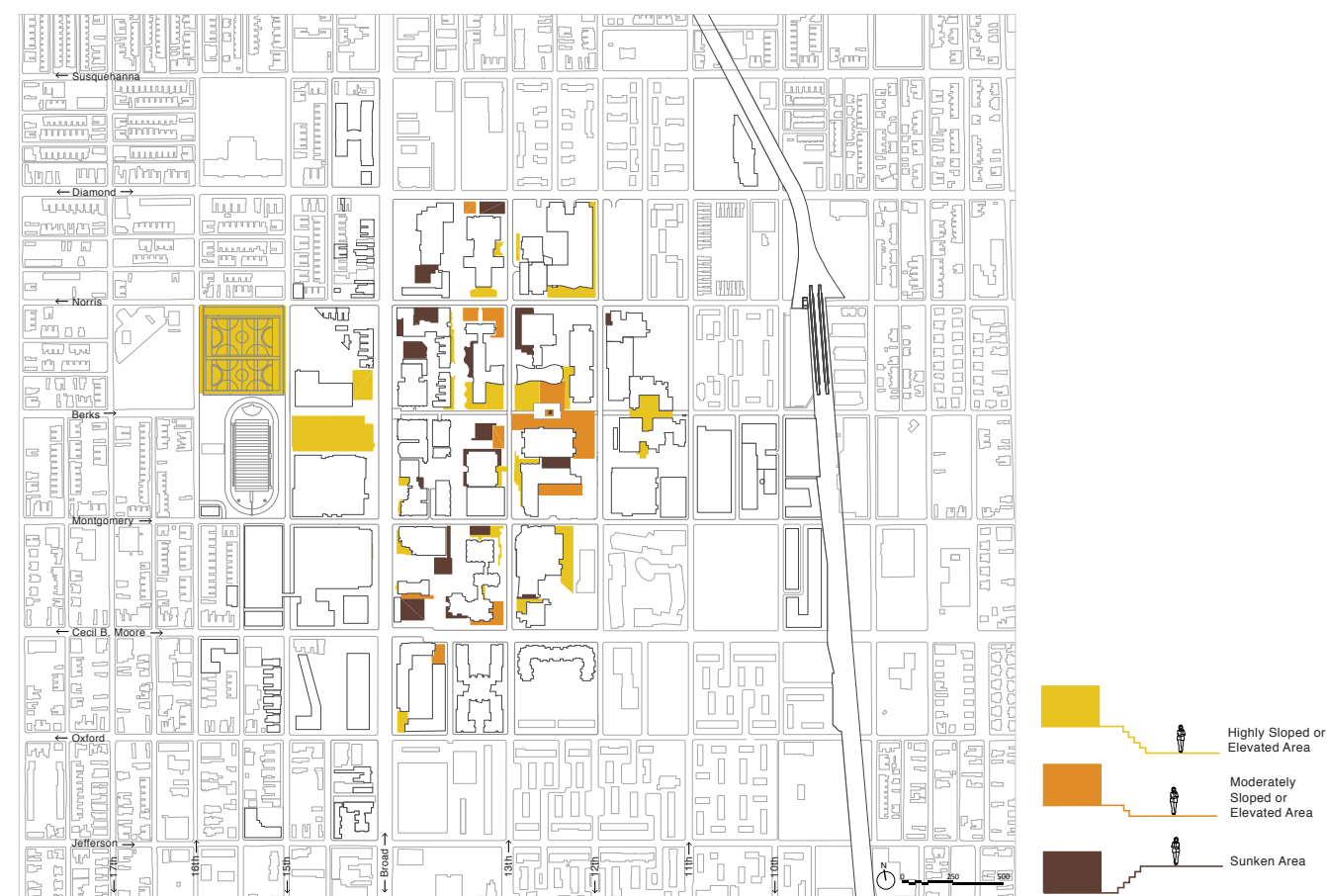
An important influence on usability of open space is topographic condition. Generally, sunken and highly sloped areas are not well used. Gently sloping lawns offer opportunity for multiple uses and provide visual relief from the built environment.

Observations

- In many cases, open space adjacent to buildings is inaccessible.
- One of the primary open spaces on campus is the lawn area adjacent to Beury Hall near the Bell Tower. As the primary open lawn on campus, it is highly used despite the fact that much of the lawn is modestly sloped. Polett Walk, one of two major pedestrian campus walks bisects the lawn. The slope of the Beury lawn is gentle enough to allow people to sit on the hillside to observe others walking by.
- The sloped lawn along Norris at the Tyler School of Art is also well used. Since the lawn is above sidewalk level it functions as an informal amphitheater from which to watch street life.

Recommendations

- Improved access, visibility and amenities for the Anderson / Gladfelter terrace will make this a unique campus destination. Conversely, removing key portions of the terrace to open up the building entrances will create an airy courtyard at the pedestrian level.
- Leverage interstitial spaces.



GATHERING SPACE TYPOLOGIES

People are naturally drawn to communal campus spaces that offer seating, shade or sun depending on the season and food. Temple's campus currently offers a variety of gathering space options (diagrammed below) many of which have the potential for improvement (diagrammed to the right).






Observations

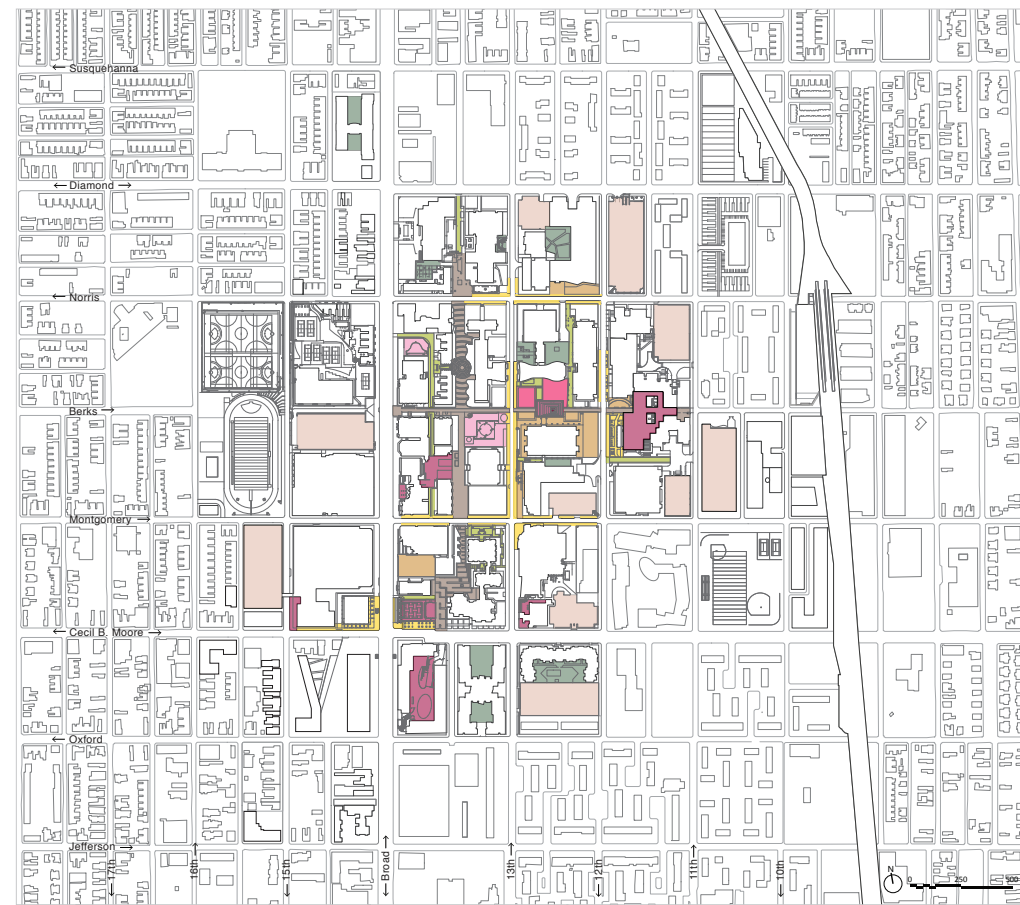
- Picnic style seating fosters interaction when clustered together in busy open areas.
- The 12th Street food vendor area, with picnic tables, is one of the most highly used spaces on campus.
- There is an overall lack of casual seating throughout campus; however, the recent addition of wooden benches has increased opportunities for relaxation and the enjoyment of the landscape.
- The few successful exterior spaces that exist on campus fall short of their potential because they lack the design details and quality that make spaces feel welcoming and safe.

Recommendations

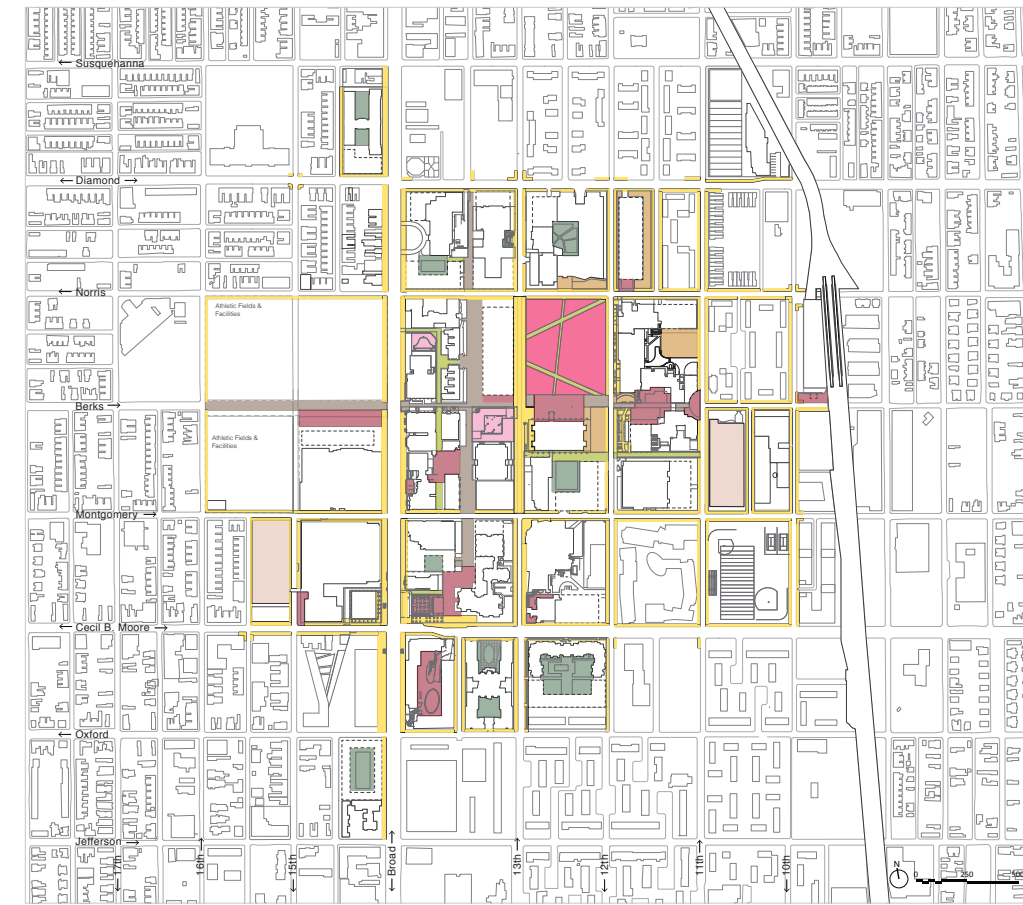
- Renovation of existing spaces will increase the opportunity for meaningful social use by attracting people and fostering interaction.
- Providing a selection of seating types, such as loose tables and chairs, linear seating, picnic tables, backed or backless benches and lounges will accommodate a mix of social uses.
- Attention to details in materials, site elements and accessibility will increase the appeal and use of gathering spaces.

The systemic renovation of existing spaces together with the design of new gathering places, at a variety of scales and level of intimacy, will create a rich social ecosystem and expand the possibility for the increased dynamic and functional use of Temple's campus landscape. As previously described and illustrated (pp. 1.7-1.9) the five components necessary to create a renewed and verdant Temple landscape are:

-  **Green:** Create a heart for the campus, a place for social interaction, programmed functions and individualized learning.
-  **Walks:** Incorporate destination spaces along Liacouras and Polett Walks to enliven them, both in the experience of traversing the campus and in the opportunity to meet others either intentionally or by happenstance.
-  **Spaces:** Develop refined spaces with seating, planting, lighting, stormwater management, public art and related elements.
-  **Streets:** Reorganize food trucks and add parklets.
-  **Margins:** Reclaim underutilized open space for pocket parks and stormwater management strategies.



Existing



Proposed

CAMPUS ACTIVITY

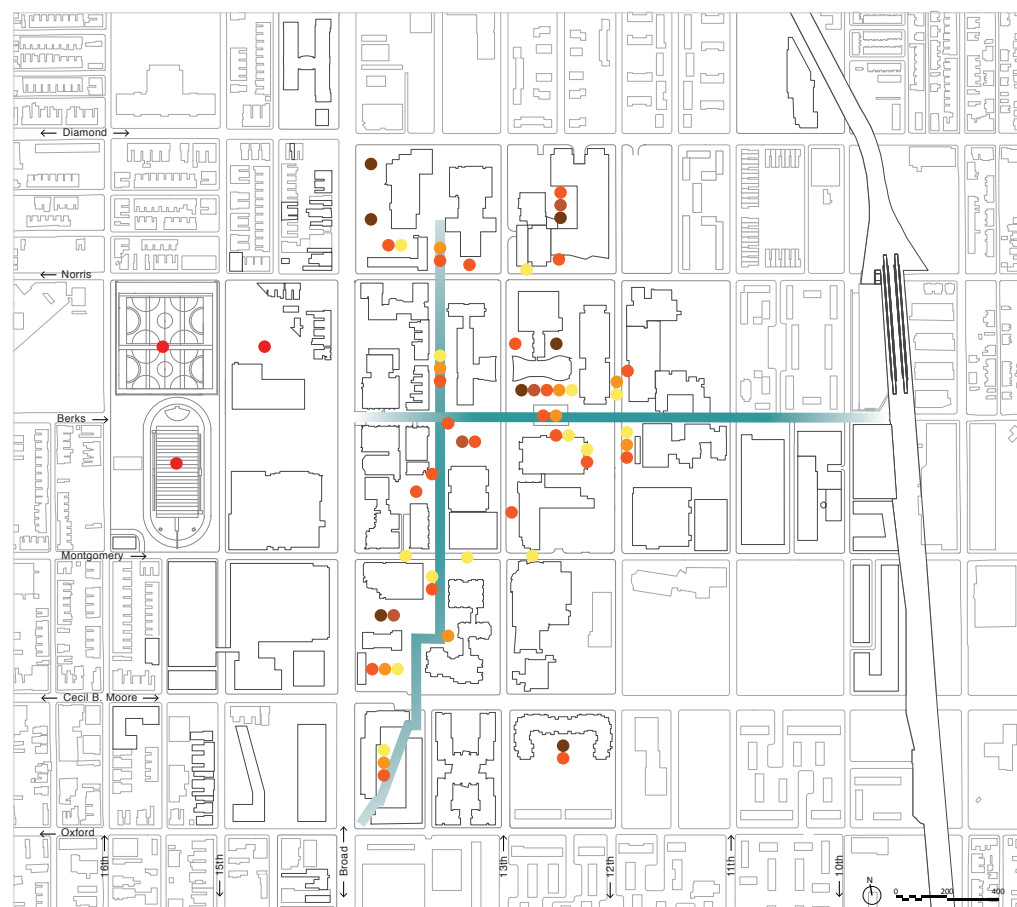
Temple's campus is composed of a variety of spaces that greatly influence human activity and interaction. Understanding the hierarchy, function and use of these spaces informs the potential opportunity/need for their betterment as a means to improve the social fabric of the campus community.

Observations

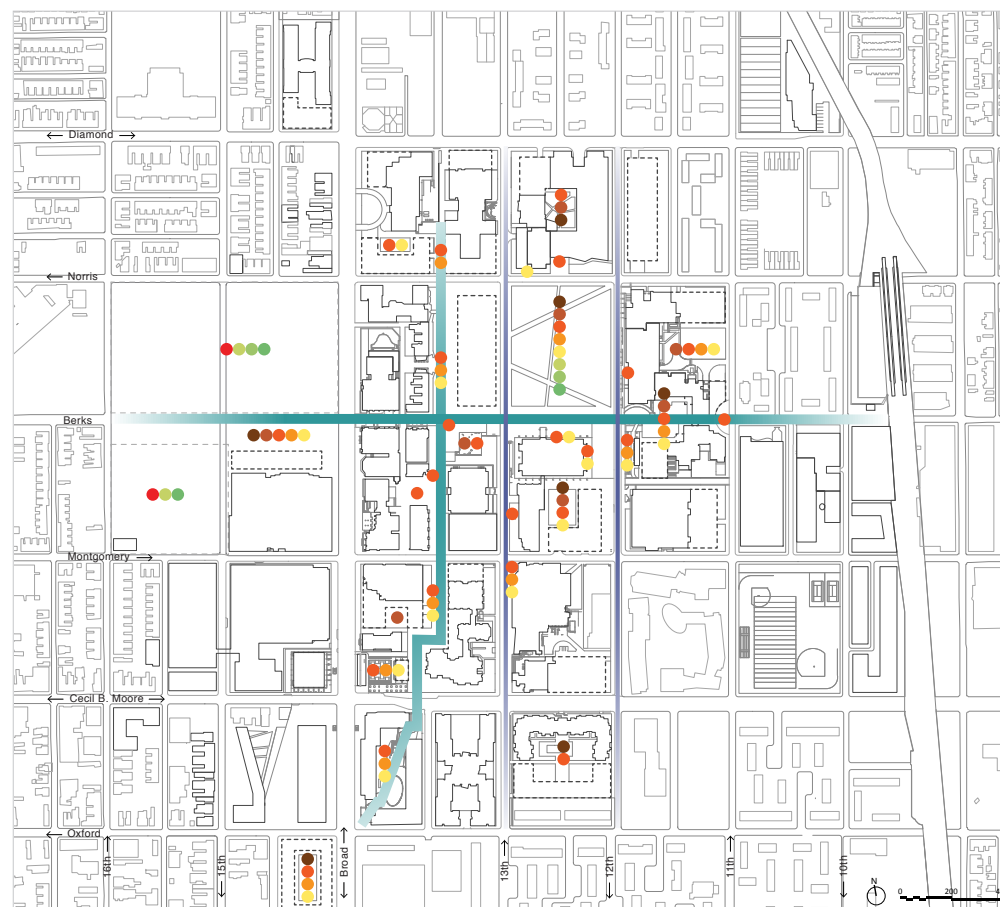
- The majority of observed activity use is concentrated along Liacouras Walk and in the Bell Tower area.
- Vehicular and pedestrian conflicts are common on the very active 12th and 13th Street corridors.
- The campus does not have an appropriately sized outdoor open space to host large events.

Recommendations

- Thoughtfully designed and expanded outdoor social spaces will relieve overcrowding on Liacouras Walk and near the Bell Tower.
- The conversion of 12th and 13th Streets to shared streets will prioritize pedestrian movement and scale. The addition of parklets and pocket parks along these corridors will help to physically and psychologically remove them from the city grid and establish them as integral to a verdant Temple landscape.
- A central Green at heart of Temple's campus core will be a significant lasting legacy. It will influence campus social systems for generations, as it becomes the place to meet or be, where both civic and personal events happen.



Existing



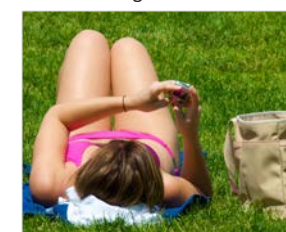
Proposed



Walking



Festivals



Sunbathing



Concerts



Active Recreation



Dining



Shared Streets



Athletics



Group Activity



Graduation



Lounging

DIGITAL LANDSCAPE

Incorporating access to WiFi and other digital technology throughout the campus is critical for today's (and the future's) learning environments. Since technology will inevitably evolve, the components and systems of the VERDANT TEMPLE landscape are designed to be adaptable to incorporate and embrace elements not imagined today.

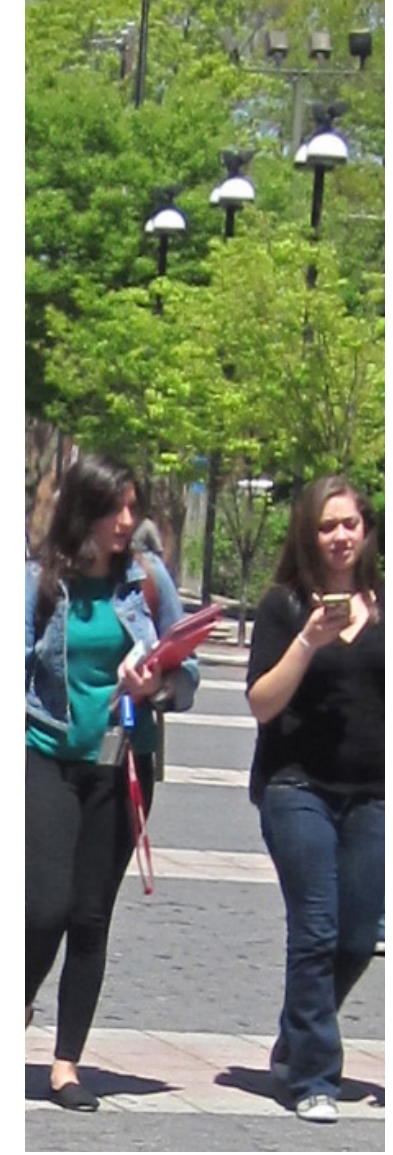
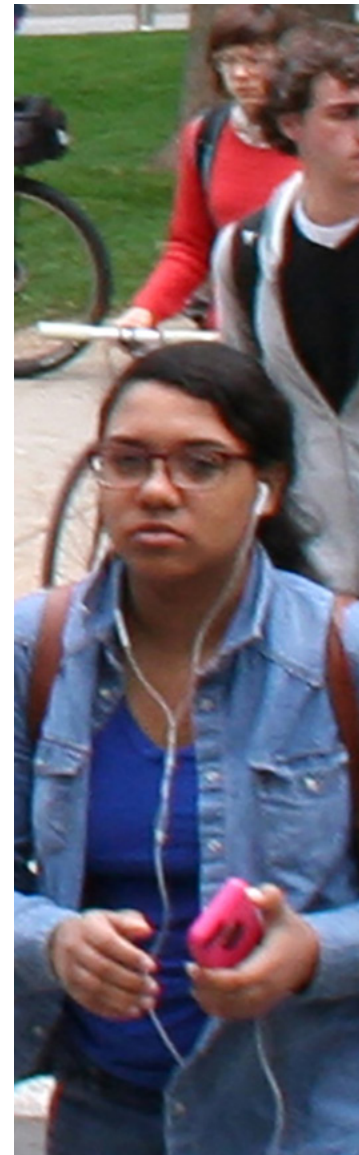
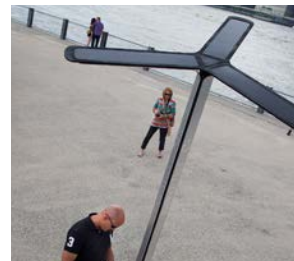
Observations

- Much of the current generation of Temple students are “digital natives” who have never known a world without smart phones, WiFi or the Internet.
- Many of the faculty and staff are “digital immigrants” who have adopted the new technologies and also become reliant on their portable devices.
- The number of connected devices will exceed the world's population - more than seven billion - by the end of 2014 according to Cisco research. *
- Connected lives rely on batteries and the demand to keep devices powered up is growing.

Recommendations

- Encourage unhooking the abundance of portable devices from the grid and allowing Internet access from key campus social spaces by designing and installing unique Temple solar charging stations.
- Consider working with an artist to develop and design these stations as functional public art creating a series of iconic forms located throughout the campus.
- Design the stations to be social hubs and include associated seating and other amenities that will activate campus spaces.
- Add vibrancy to the street scene and increase the Temple community's ability to work and study out of doors by distributing a fast and reliable WiFi signal at these stations.

* *Soon, Everything Will Be A Charger*, Popular Science, May 13, 2014.

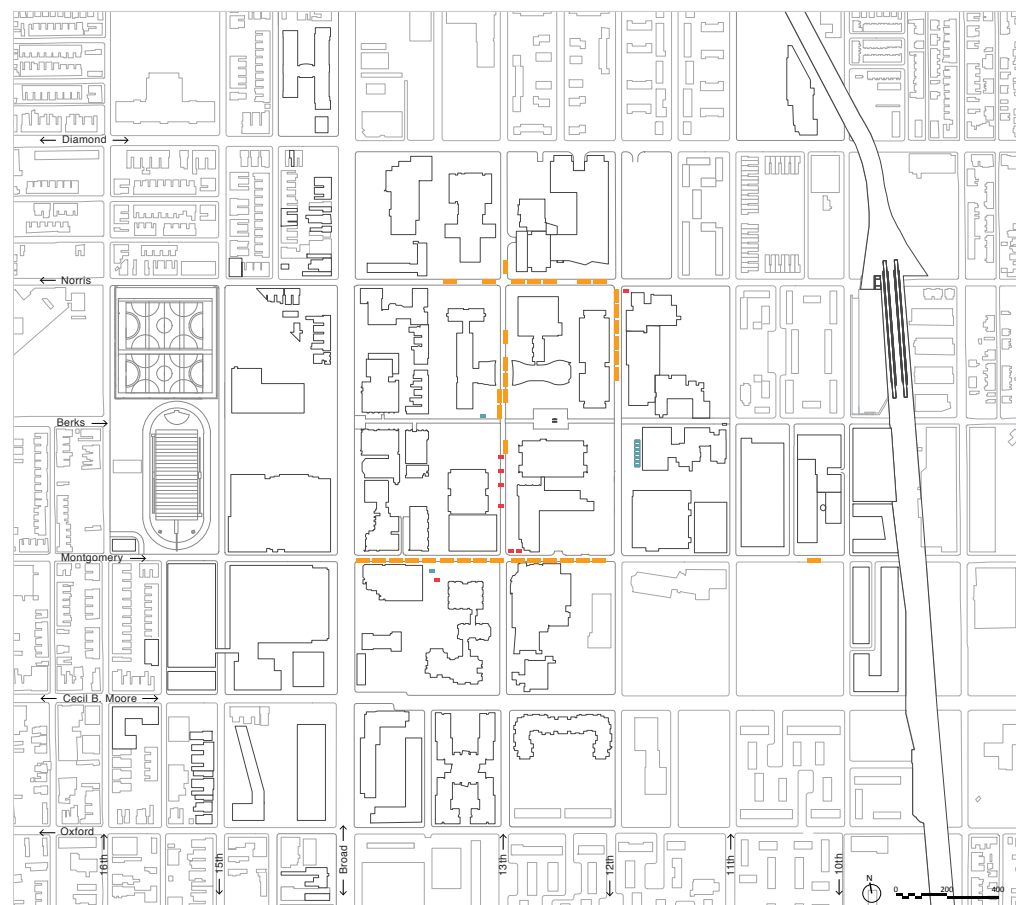


FOOD TRUCK EXPERIENCE

Food trucks and their scene are integral to the social culture on Temple's main campus. VERDANT TEMPLE views the food truck environment as both a challenge and an opportunity. While the trucks offer a wide variety of food choices, activate the street and create places for casual and scheduled rendezvous, they are often located in crowded non-code compliant conditions.

Observations

- Generally, food trucks ring the campus core. Many park close together, creating a “wall” blocking views and channelizing streets and sidewalks creating an unsafe condition for pedestrians heading into traffic.
- Demand at the vendors is high. Overcrowding and conflicts with the traffic result when sidewalks can't support the volume of patrons.
- Food trucks attract crowds bringing life to the street.
- Many vendors do not strictly adhere to street vendor rules in the Philadelphia Code.



Existing



- Food Truck
- Food Cart
- Semi-Permanent Vendor
- 54 Total Food Vendors

Recommendations

- To reduce congestion on the streets, collaborate with vendors to explore the possibility of relocating food trucks to designated safe and attractive, purposely designed, ‘pods’ or ‘parks’ on Temple property.
- Provide food truck parks with resources (trash collection, power, water, lighting, seating, landscape, etc.) to attract vendors.
- Consider designating Parking Lot 2 as a food truck park. The creation of a new public plaza west of Broad at Polett Walk is an additional opportunity for a food truck park.
- Require parked food trucks to be located with greater spacing between them to help open up views and alleviate overcrowding.
- Establish a Temple district that limits the total number of street vendors allowed within a specific campus zone.

- Install curb extensions (p. 2.27) between trucks to:
 - create more seating areas, and relieve sidewalk crowding.
 - provide greater space between trucks to help reveal street life.
 - produce a dam, creating the opportunity to capture street stormwater runoff in a subsurface system below the seating area.
 - eliminate obstructed views by, where possible, locating trucks at the back of the sidewalk.
- Locate food truck pods for small groups of up to five trucks on Temple property to activate underused campus spaces.



Proposed



- Mobile Food Vendor
- 12-15 Mobile Food Vendors
- 68 Maximum Mobile Food Vendors

CAMPUS GREEN

ICONIC SPACE ANALYSIS

There has long been a demand to create a significant green open space at the center of Temple's main campus. This desire for a large Green was clearly established during the VERDANT TEMPLE planning process through discussion, crowd-sourced input and analysis. The site selection and design of Temple's new library heightened the immediate need for a centrally located open space to be conceived in tandem with, and provide a civic scaled setting for, the new library building.

The planning and design of an iconic space that will, for generations, define the heart of campus and enhance Temple's image and identity is necessarily layered and complex. To determine the Green's proper size within its urban context and the spatial demands of Temple's growth an analysis for "right-sizing" the Green was undertaken.

In the series of diagrams to the right the larger logo square represents optimal open space size based on a planning standard relative to student population. The smaller green square represents existing open space size. Each is proportional to the other.

The design standard used to calculate the size of the logo square is based on Standards for Outdoor Recreational Areas (American Society of Planning Officials, Chicago Illinois, 1965) which suggests 30 square feet per person be used when space planning for new open space.

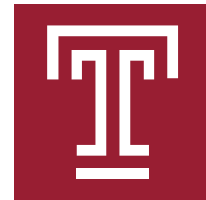
Observations

- Temple lacks a sufficiently sized iconic space in proportion to its student population. Compared to other universities studied, Temple's total open space is generally much lower.
- Temple's growing residential population, future campus growth and historic demand for a signature open space, increases the pressure to designate a campus Green to meet program needs.

Recommendations

- In total, campus open space should be a minimum ratio of about 6:1 students to iconic space. The most direct correlation is the University of Pennsylvania (Penn). However, Penn has a more extensive open space network than Temple. Considering the density of Temple, the limited opportunity to expand open space, and the likely demand on an iconic open space, a larger space or more generous ratio would be ideal.
- A ratio of about 4:1 students to iconic space would be ideal for Temple's campus Green. This ratio is similar to the iconic spaces at the Universities of Virginia and Toronto and it would create a significant green space for Temple where historically the lack of available land has limited the potential to expand dedicated open space.

TEMPLE UNIVERSITY

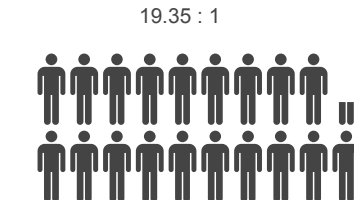


30,000 STUDENT POPULATION
30 SQ. FT. PER STUDENT
= 900,000 SQ. FT. OPEN SPACE



46,500 SQ. FT.
BELL TOWER GREEN

RATIO OF STUDENTS : ICONIC SPACE



UNIVERSITY OF VIRGINIA

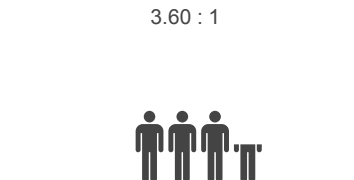


23,907 STUDENT POPULATION
30 SQ. FT. PER STUDENT
= 717,210 SQ. FT. OPEN SPACE



199,125 SQ. FT.
THE LAWN

RATIO OF STUDENTS : ICONIC SPACE



HARVARD UNIVERSITY

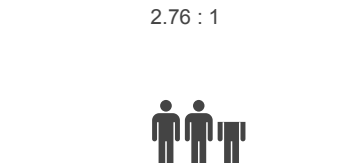


21,000 STUDENT POPULATION
30 SQ. FT. PER STUDENT
= 630,000 SQ. FT. OPEN SPACE



228,000 SQ. FT.
HARVARD YARD

RATIO OF STUDENTS : ICONIC SPACE



UNIVERSITY OF PENNSYLVANIA



24,725 STUDENT POPULATION
30 SQ. FT. PER STUDENT
= 741,750 SQ. FT. OPEN SPACE



112,000 SQ. FT.
COLLEGE GREEN

RATIO OF STUDENTS : ICONIC SPACE



UNIVERSITY OF TORONTO



56,000 STUDENT POPULATION
30 SQ. FT. PER STUDENT
= 1,680,000 SQ. FT. OPEN SPACE



403,270 SQ. FT.
FRONT CAMPUS +
BACK CAMPUS GREENS

RATIO OF STUDENTS : ICONIC SPACE



UNIVERSITY OF CINCINNATI



41,000 STUDENT POPULATION
30 SQ. FT. PER STUDENT
= 1,230,000 SQ. FT. OPEN SPACE



135,600 SQ. FT.
McMILLEN COMMONS

RATIO OF STUDENTS : ICONIC SPACE



GEORGE WASHINGTON UNIVERSITY

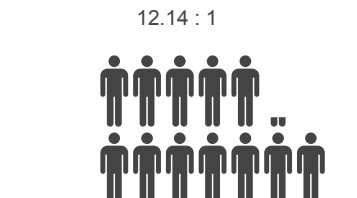


25,000 STUDENT POPULATION
30 SQ. FT. PER STUDENT
= 750,000 SQ. FT. OPEN SPACE



61,800 SQ. FT.
UNIVERSITY YARD

RATIO OF STUDENTS : ICONIC SPACE



THOMAS JEFFERSON UNIVERSITY

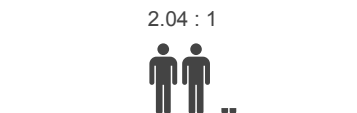


3,300 STUDENT POPULATION
30 SQ. FT. PER STUDENT
= 99,000 SQ. FT. OPEN SPACE



48,500 SQ. FT.
HAMILTON PARK

RATIO OF STUDENTS : ICONIC SPACE



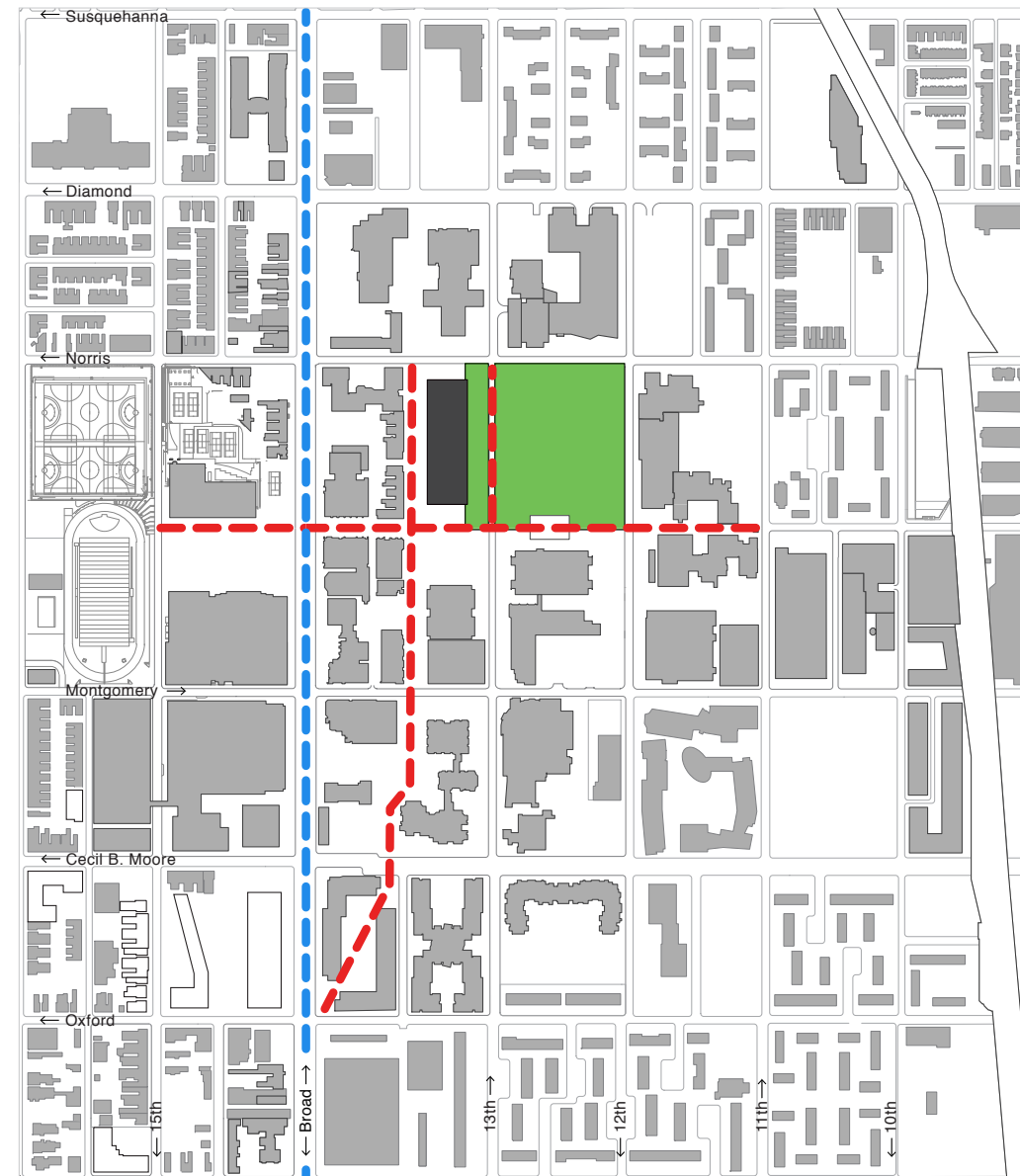
SPACE ANALYSIS RECOMMENDATIONS APPLIED TO A CAMPUS GREEN

Early in the VERDANT TEMPLE planning process various sites for the new Temple University library were investigated. It soon became clear that the new library required a prominence that was unattainable on the current campus grid unless a major iconic open space could be created in tandem with the library site. Removal of two outdated science buildings was explored and finally determined to be the most cost effective and realistic way to achieve a significant site for the library and an appropriately sized open space at the very heart of Temple's campus.

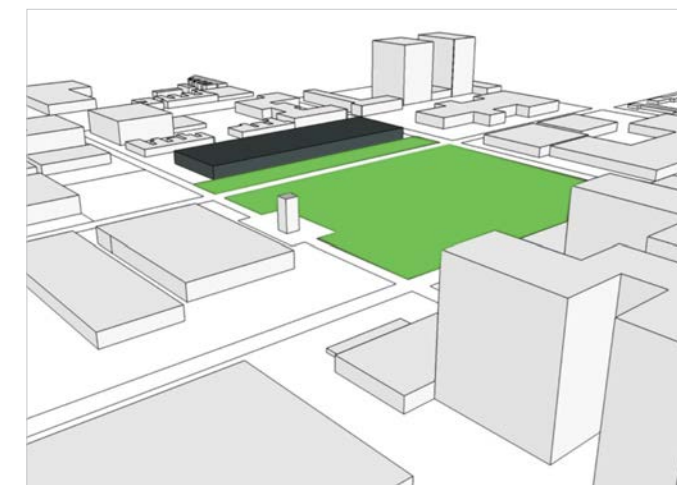
Several building and open space configurations were studied to test the open space potential and location possibilities for the new library. The illustrated study demonstrates removal of Beury Hall and the Biology-Life Sciences Building and the addition of the new library on the Barton Hall site.

This configuration yields a favorable iconic space ratio and sites the library on the Green within the academic core of the campus. It also situates signature buildings fronting the Green, including Tyler School of Art, the Science, Education and Research Center, Paley Library along with the new library. The Green, in this location and configuration, is also visible from Norris, 12th and 13th Streets, which will work to connect the social life on the streets with that of the Green. Integrating the Bell Tower into the new Green is also possible.

As the design of the campus Green progresses beyond the master planning phase, in order to be successful as a forecourt to the buildings, and to function effectively as visual relief at the center of campus, it will be critical to ensure that the open space and surrounding buildings are scaled appropriately to each other. Additionally, since this configuration requires the removal of existing buildings planning for the relocation of their associated programs will be a factor in the development of the Green going forward.



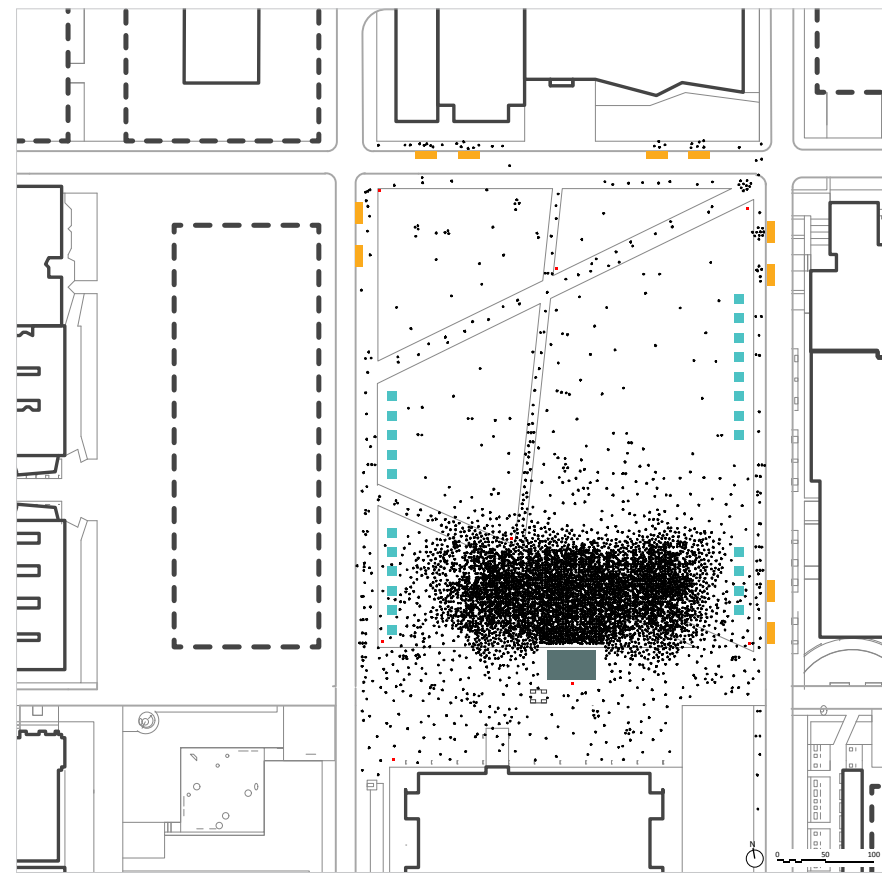
Ratio of students: iconic spaces 3.3:1



- New Library
- New Green
- Major Pedestrian Routes
- Broad Street

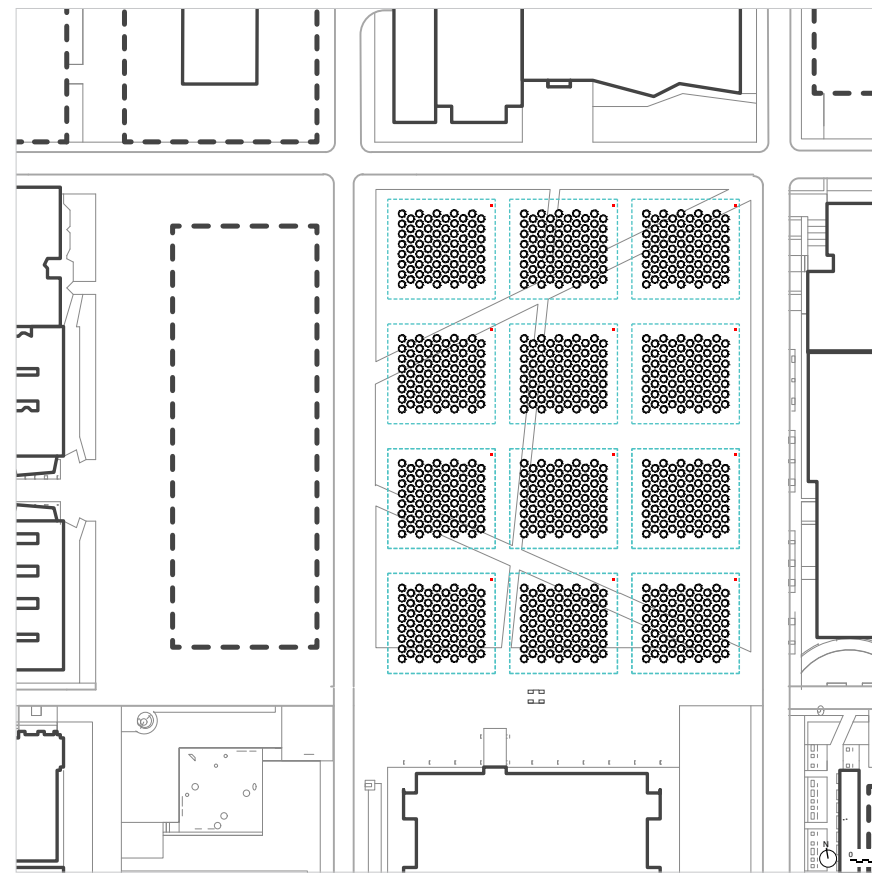
CAMPUS GREEN PROGRAM CAPACITY

The diagrams below are examples of massing studies for possible events to be held on the Green. These studies clearly demonstrate that a central Green will provide Temple with a multi-purpose venue for special events as well as the everyday socialization that is an essential component of campus life.*



Spring fling and other festivals

- Outdoor Festival 5,000 People
- Media/Water/Power
- Mobile Food Vendor
- Event Tent
- 30' x 50' Stage



Formal event

- Formal Event 7,200 People
- 12 Tents
- 600 People Per Tent
- Media/Water/Power
- 112' x 100' Event Tent
- 72" Round Table, 8 Chairs



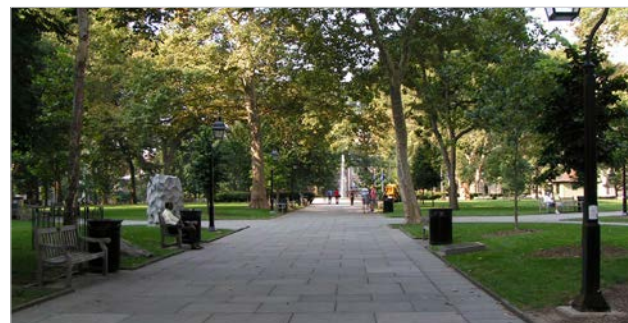
Graduation

- Graduation >11,440 People
- Liacouras Center 10,200 People
- Media/Water/Power
- Event Tent
- 30' x 50' Stage

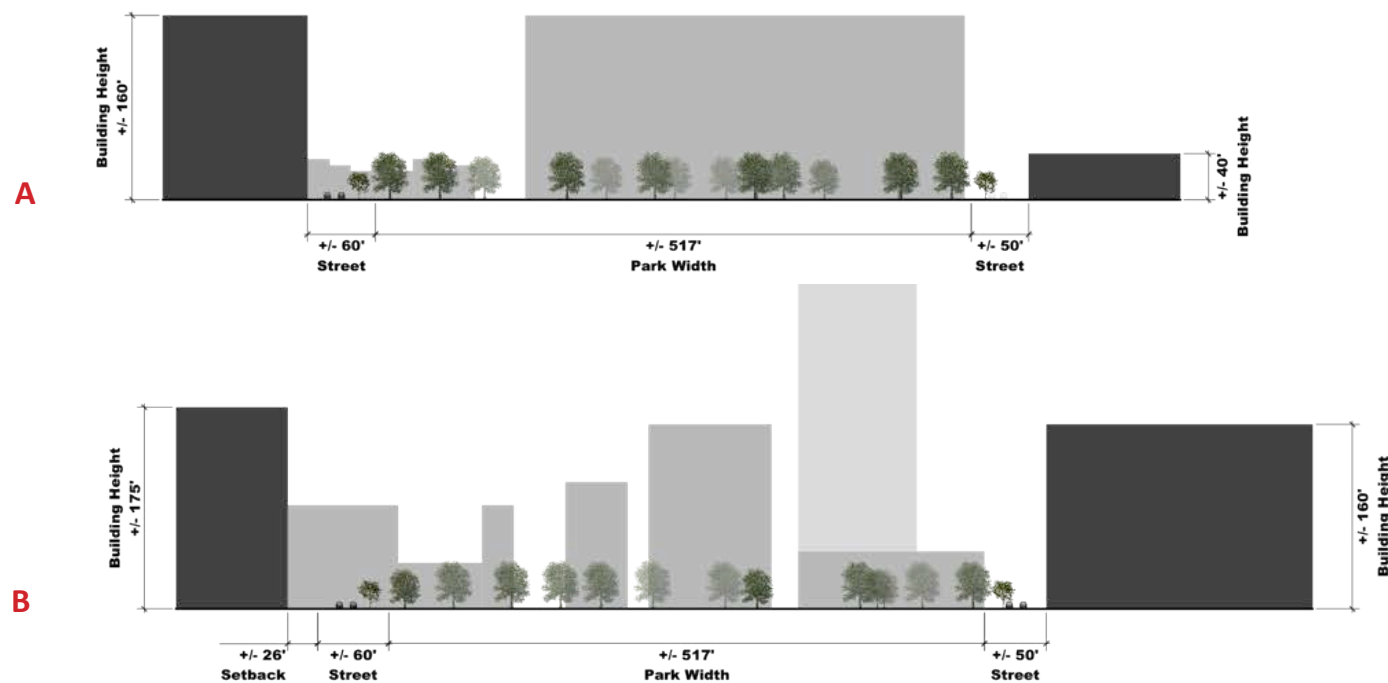
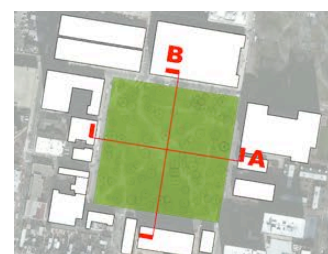
*Note: Site-specific limitations such as grading, planting and other site elements have not been factored into these diagrams and may affect the actual program capacity of the Green.

WASHINGTON SQUARE PROPORTION ANALYSIS

Temple is a growing urban institution with limited ability to expand beyond its current accepted borders, which makes it probable that future expansion may include the development of taller buildings. Philadelphia is filled with a rich variety of socially vibrant open spaces in its urban core. The design team studied Washington Square, a city park surrounded by active streets and buildings of varying heights, to gain an understanding the impact taller buildings will have on the design and socialization of the Green.



The study analyzed the width of the square's open space in comparison to the heights of adjacent buildings. A ratio of average building height to width of open space of approximately 1:5 was calculated. The data gathered was used to establish comparative metrics that informed the open space planning decisions described in VERDANT TEMPLE.



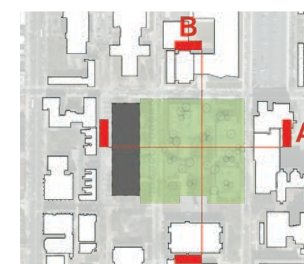
WASHINGTON SQUARE PROPORTION ANALYSIS APPLIED TO TEMPLE

Since the campus Green is proposed to be a totally new open space designed by the subtraction of existing buildings and developed as a forecourt for the new library it is critical that its size and shape and that of the surrounding structures relate to each other proportionally. The spatial design and layout of the Green will also be required to support its function as the primary campus gathering space for group and individual social activities.

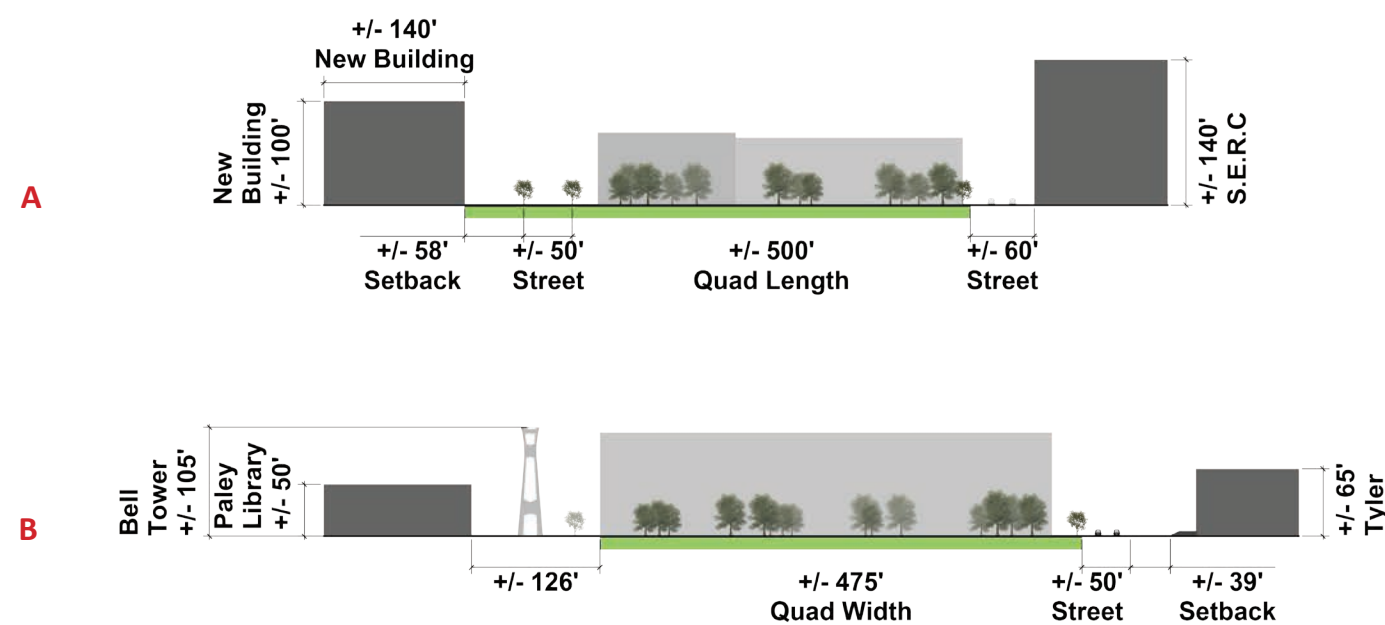
- The configuration illustrated below assumes 13th Street is closed to vehicular traffic and integrated into the Green.
- Based on field observations and supported by analysis detailed in Mobility (pp. 2.23-2.46), the preferred condition to create the Green is to close 13th Street, with the minimum extent of closure occurring between Norris and Montgomery and the ideal between Diamond and Cecil B. Moore.
- The viability of the design for the Green proposed in VERDANT TEMPLE does not rely on closing 13th Street.
- As demonstrated by the Washington Square precedent, a large open space can be highly successful even when bordered by active streets.

Recommendations

- The ratio of building height to open space of 1:5.65 for the Green, as proposed in VERDANT TEMPLE, is consistent with recommendations suggested in the comparative analysis.
- The open space as sized will support the campus density, relate well to the scale of the surrounding buildings and complement University growth.



Area	Dimensions	Average Building Height	Ratio H:W	Average Ratio
256,523 sq. ft.	500 ft x 475 ft	+/- 84 ft	1:5.65	1:4.30



SHARED STREETS ENHANCE PEDESTRIAN EXPERIENCE

The possibility of increasing pedestrian connectivity between the new library and the Green was explored early in the process through the concept of modifying 13th Street into a shared street (Mobility p. 2.38). Emphasizing the pedestrian character of streets that run through the interior of urban university campuses is a frequent solution to common pedestrian/vehicular conflicts.

Observations

- The University of Pennsylvania (Penn), located in west Philadelphia with pedestrian/vehicular conflicts similar to those at Temple, has successfully converted several former streets to pedestrian only walks.
- An analysis of Penn's campus revealed these converted streets have resulted in a "car-free" campus core of approximately 33 acres.

Recommendations

- The conversion of 13th Street, between Montgomery and Norris, to a shared street will maintain vehicular use but make the street more pedestrian friendly and accessible, as detailed in Mobility (pp. 2.23-2.46)
- The proposed change to 13th Street will contribute to creating a pedestrian centric campus-core of approximately 26 acres supporting the VERDANT TEMPLE goal to expand campus connectivity.



University of Pennsylvania - 33 acres



Temple University - 26 acres (with potential closure of 13th Street from Norris Street to Montgomery Avenue)



University of Pennsylvania Locust Walk - Car-free street.



13th Street at Montgomery Avenue - Existing conditions.

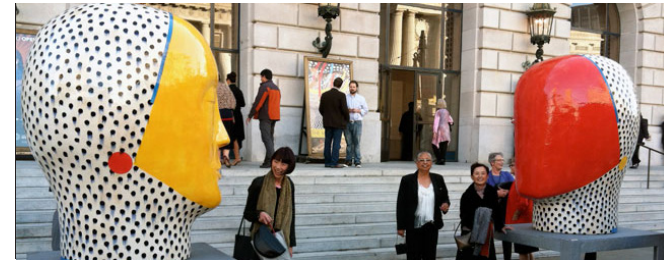


13th Street at Polett Walk - Existing conditions.

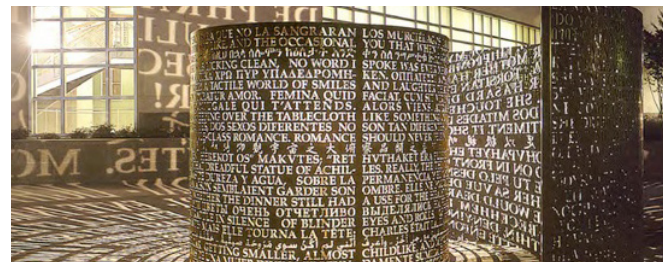
SYSTEM:
PUBLIC ART



Iconic



Intimate Space



Temporal/Ephemeral



Serial



Iconic

Intimate Space

Temporal/Ephemeral

Serial

SYSTEM: PUBLIC ART

A VISION FOR THE FUTURE

Temple University is experiencing rapid change that corresponds to the pattern of development in higher education taking place nationally. Especially over the past decade new buildings and renovations on campus have occurred that coincide with Temple’s growing reach as an academic institution and much more change is anticipated. The founding of a public art program during this period of exciting transformation at Temple seems auspicious. Such a program would bring attention to the University as a leader in the arts, embodying in physical form the achievements of its well-known art school, music school, theatre, dance and media programs. It would illustrate visually that Temple is a significant player in the cultural milieu of the Philadelphia region. As an integral part of VERDANT TEMPLE, a public art program would enhance the sense of place creating focal points around campus and ultimately providing opportunities for visual and aesthetic contemplation during busy days for students, faculty and staff. Art placed in key locations throughout the campus would contribute in unique ways to the character of Temple and its campus.

PUBLIC ART ON UNIVERSITY CAMPUSES

Public art on university campuses is a tradition ranging from installation of commemorative statues many years ago to advanced programs of public art developed since the 1960s. Artworks embody big ideas and can create strong visual statements visible from a distance. Artworks attract people, inspire appreciation, illustrate artistic excellence, add to a sense of place and can be iconic and dramatic. Universities have often started modest programs and expanded them as opportunities and circumstances changed. A great public art program contributes to campus identity and demonstrates commitment to a unique and creative view of life.

Two examples of such programs that have come to be recognized for their excellence are the University of California, San Diego <http://stuartcollection.ucsd.edu> and Massachusetts Institute of Technology <https://listart.mit.edu/collections/public-art-collection>. Their major programs consist of individual artworks, installations in courtyards and on pathways, artworks integrated into new buildings, outdoor seating and tables designed by artists, and much more. Overseen by curators and active public art committees they have collections that include some of the most well known artists of today and the past fifty years. There are many more universities with strong public art programs including some relatively small yet highly selective programs that attract attention. Many public art programs are featured on university websites. Those programs are seen as providing an important facet to the life of the university community, a facet that can attract potential students by their favorable first visual impression of a campus.



A PUBLIC ART PROGRAM AT TEMPLE

Observations

- At present Temple has on view outdoors less than a dozen artworks acquired and placed on campus in an ad hoc manner over many years.
- Although never part of a curated program, with care and conservation, these art works could be the foundation for a new public art program.

Recommendations

- To start a professional public art program some key components are needed: an active committee, funding, a curator, a policy and a plan of action.
- The active committee should have representatives from across the University including Facilities Management, Tyler School of Art, School of Environmental Design and the Administration.
- A staff or consulting curator is needed to implement all aspects of the program and carry out the decisions of the committee.
- The plan of action will provide the vision, goals and objectives of the program. The policy will articulate procedural details for all the important activities and decisions of the public art program such as strategic planning, implementation of the program, selection of artists, installations and integration of artwork into the life of the Temple community.
- A well-run public art program of any size, by its very nature, will stimulate collaborative activity across the University at the practical level as projects come to fruition.
- Once artworks are installed the public art program will stimulate activity at the cultural and social level, as they become part of the daily life of Temple.

Public Art Committee And Curator

The committee and curator establish a vision, goals and objectives for the program. This work is ongoing ensuring that the public art program is always as proactive as possible. Strategic planning regularly looks ahead at all campus plans and examines the opportunities to place new artworks in coordination with planned change. Part of ongoing planning work is to develop a list of potential and desirable artists and types of art to consider when opportunities become clear. It is important to look years in advance to achieve the finest results as it takes time

to identify good artists for particular commissions and sometimes years to develop a great artwork that is appropriate to a location. When an opportunity exists for placement of a new artwork the committee and the curator will plan the project using the policy as a basis for decisions at each step of the process.

The public art program committee and curator also manage decision making about other types of objects and artwork proposed for the campus such as alumni tributes, commemorative art objects to be placed outdoors and gifts. A strong policy, an active committee and knowledgeable curator make it possible to manage proposals intelligently with gratifying results. For example a college in Minnesota worked to identify a specific area of the campus for all alumni tributes and commemorative art and outlined the appropriate materials for their construction to create a harmonious area. By planning ahead they created an attractive place where memorials and commemorations could be viewed together.

Occasionally donors or artists themselves offer to give gifts of artworks. The role of the committee and curator is to examine such opportunities and analyze whether the gift would match the plans and overall program vision. From a long term perspective it is also important to ensure financial resources are available to care for the art once installed well into the future. If not, a gift might have to wait for further support. A comprehensive public art program provides guidelines for how to analyze the rationale for acceptance, or not, of a potential gift.

The Policy For The Public Art Program

The policy first describes the vision for public art on the campus and explains the purpose and goals of the policy. Policies typically define what is meant by the words “public art”. It may list types of art; materials that may be used, processes to evaluate accept or reject, locate and maintain art. It will suggest how planning is integrated into the activities of the program through the work of the curator and the committee. It will outline procedures for choosing, commissioning, and placement of art. Installation details such as permitting and fabrication should be addressed. It details the maintenance and conservation of installed artwork over time. The policy ensures that all artworks are properly documented and that on-site signage provides information pertinent to

each work. In addition the policy should encourage the program to find ways to connect Temple and the community to the artwork as part of university life. This refers to educational activities, public relations and marketing. Each new project is an opportunity to apply the policy to the flow of activities.

Funding Public Art

Funding is a necessary part of the activities of a public art program. Major works of art can cost hundreds of thousands of dollars to cover the process from the beginning of an idea through fabrication, installation and then ongoing care. Smaller works of art, rotating exhibitions, temporary installations all require some level of financial resources. With the kind of professionalism, planning and foresight suggested in VERDANT TEMPLE it would be possible to undertake major fundraising activities in support of specific projects as well as the costs for the program overall. Certain funders, individual and institutional, are specifically interested in art. Those funders can be cultivated to be part of a growing and ambitious program of high-level artworks. There are grants available to support creation of art and the more that excellence is demonstrated in all aspects of a public art program the more funding it is likely to attract.

Another source of funding within universities for their public art programs is a percent for art program similar to those in cities. What this consists of is a commitment to designate a percentage of any major construction project to public art on the campus. For example the University of Texas in Austin has as a goal for its public art program that "1-2% of the capital cost of new construction or major renovation...should be allocated to the acquisition of artwork commissioned by the university". *

OPPORTUNITIES

Until a public art program has been fully developed various opportunities for additional art could be considered.

A Competition For A New Bell Tower

In front of the current Paley library is a bell tower built in a 1960s modernist style. This bell tower is in poor condition yet it serves as the only iconic image on the campus whether it is classified as architecture or art. Its location

* The University of Texas at Austin; Art in Public Spaces program handbook of operating procedures 4-1290 <http://www.policies.utexas.edu/policies/art-public-spaces>.

is strategic. A new bell tower could be commissioned that would have the potential to become a 21st century icon for Temple. The University could conduct a high profile competition, probably lasting a year or more that would offer occasions for major publicity and fundraising activities. A competition to commission a new bell tower could attract famous architects and artists to participate, some by invitation and others by entering their preliminary proposals in the first stages of this unique challenge. Once built the new bell tower could become a significant image on campus and if located where the current bell tower is it would be in one of the most prominent sites on campus adjacent to the proposed new campus green.

A Competition For A Major Artwork

As an alternative to a new bell tower and assuming the old one is taken down this location would be excellent for a significant and iconic piece of art. A similar high profile competition for the artwork could be undertaken and would provide great opportunities for fundraising and publicity.

Columbia Plaza

The eastern end of the Columbia Plaza Subway entrance installation, which came about as a city public art project in 1985-86, consists of a theatre like setting with a proscenium arch, grassy stage and plaza area for audience. It has never been used as a theatre and yet now may be the time for that to be encouraged through programming by the theater, music and dance departments at Temple. The installation itself needs to be checked to ensure it is safe for more activity and the areas adjacent upgraded to create a stronger sense of security and comfort to users and audiences. The interaction at this site between students, skateboarders and neighborhood citizens deserves to be studied and steps taken to clarify the borders for distinct activities. Some minor changes in the landscape around the plaza might contribute to this effort.

Temporary Installations And/Or Exhibitions

To stimulate interest in the growth of a public art program it is possible to consider temporary art installations. These might be as short as a day or two or much longer, a month, a year. With the presence of Tyler School of Art on campus (one of the top art schools in the country)

Temple has faculty and staff resources for identifying exciting projects that would bring attention to the University in significant ways. An example of a spectacular temporary installation that attracted international attention and enchanted many people was The Gates by Christo and Jeanne-Claude in New York's Central Park for several weeks in February 2005. Although such a huge and expensive production would be beyond the means of most universities the concept demonstrates how effective a well thought out installation can be and the amount of publicity it can elicit.

Performance

Encouraging performance in spaces throughout the campus could be a way to highlight focal points that lend themselves to supporting particular types of activities. How delightful it might be to come upon a small chamber music or acapella singing group performing for a half hour in a lunchtime plaza or sheltered garden. Might a small acting troupe perform a famous scene from a play on the grassy stage of Columbia Plaza? Could dancers use a larger area such as part of the new campus green for a performance?


FIRST STEPS TO A PUBLIC ART PROGRAM

The very first step for Temple to take to start a public art program would be to engage a curator. This person could be a staff member or consultant, with public art and program development experience. They would be charged with forming a first committee, and drafting an action plan and policy for the campus. The curator would have a specific scope of work and timeline to assemble the committee, develop a master plan and


policy with the committee, review university master plans, do a current assessment and outline an action plan for implementation. This might take a year and should position Temple for the acquisition of artworks and strategies for finding the resources to support the projects. The ideal curator will have experience fundraising as well as extensive program management experience in the visual arts including public art.



OBSERVATIONS: EXISTING ART AUDIT


1  *Columbia Plaza & Subway Station Entrance*
Richard Fleischner, 1985-86
Granite, brick, Planetrees, turf, tiles
Condition: Stays in place and should be refurbished as directed by a conservator.

2  *Lincoln the Lawgiver*, Emil Seletz
Bronze
Condition: Poor with surface erosion. Needs conservation treatment. Consider moving indoors.

3  *Abstract Forms*, Peter Gutkin, 1964
Marble
Condition: Black streaking and mold on north side of sculpture. Needs conservation treatment and recommend moving into the garden.


4  *Johnny Ring*, Boris Blai, 1964
Bronze
Condition: Patina may indicate corrosion, and should be assessed by a conservator. Recommend moving onto the grassy area of the garden.

5  *Triad*, Ephraim Peleg, 1960s
Mayari-R steel
Condition: The top of one of the elements is damaged and has significant rusting. Elements no longer move. Remove altogether.


6  *Red Owl*, Beniamino Bufano, 1989
Red marble, black granite, brick column
Condition: Small pitting and cracking. Part of the Class of 1989 commemorative contribution. Leave in place and better integrate into the surrounding landscape.

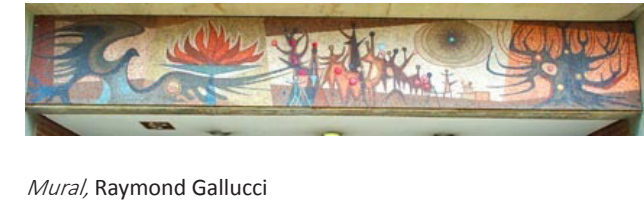
7  *Bust of Russell H. Conwell*, Boris Blai, 1951
Bronze
Condition: Fair to Good. Leave in place.

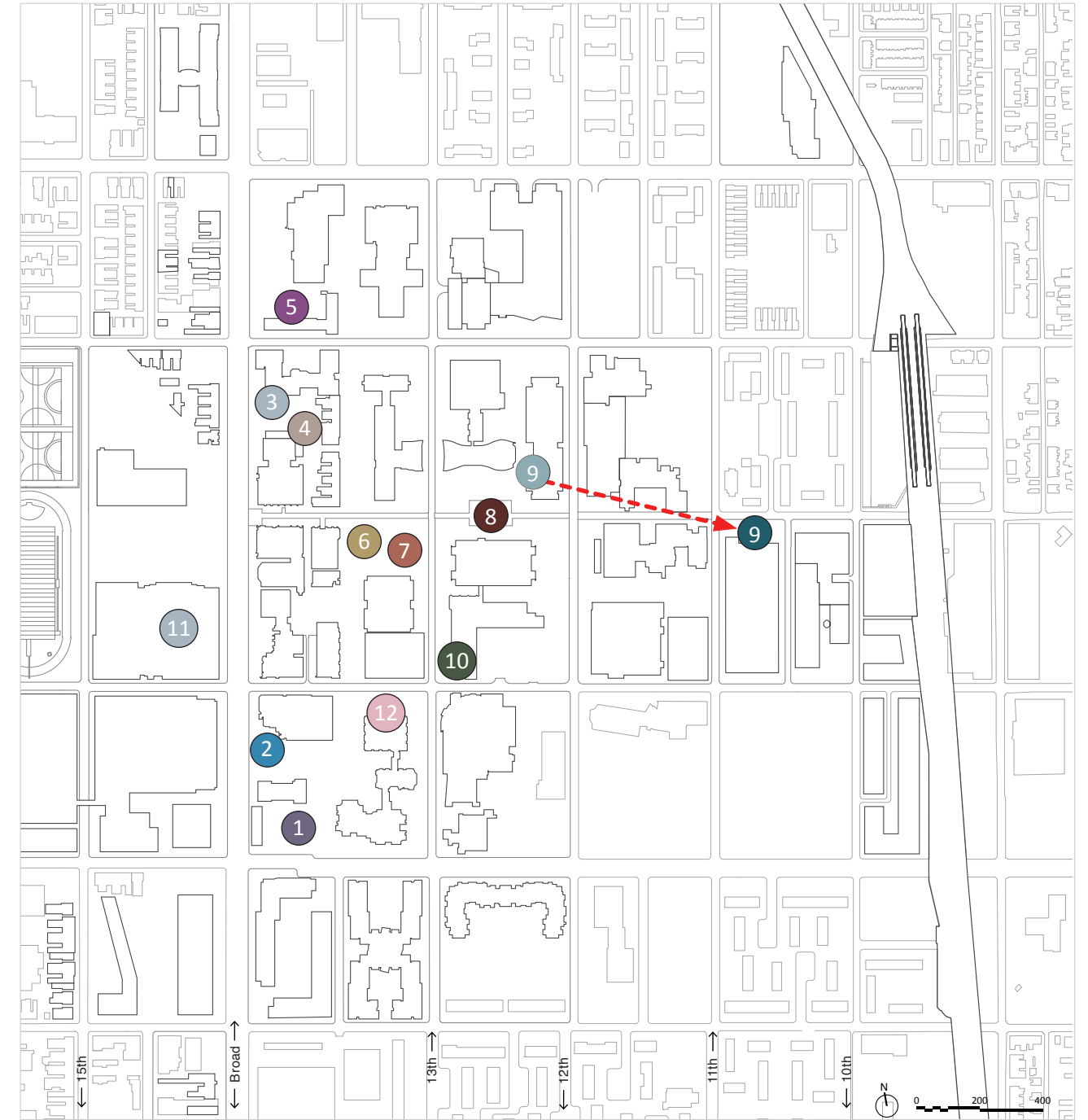
8  *Bell Tower*, Chard Webb, 1960s
Concrete and cast alloy
Condition: Deteriorating concrete rusting cross bars. Consider replacement or renovation.

9  *Hurry*, William Dickey King, 1981
Aluminum
Condition: Streaking on surface; otherwise fair condition. Relocate to grass area in front of garage on way to train station.

10  *Tubular Form*, Paul Sisko, 1980
Painted steel
Condition: Unknown. Currently not on view. Repaint and install at northeast corner of 13th and Montgomery Streets.

11  *Two Athletes*, Joseph Brown, 1969
Bronze
Condition: Unknown. Currently not on view. Reinstall inside lobby of McGonigle Hall.

12  *Mural*, Raymond Gallucci
Ceramic Tile
Condition: Fair. Remove from Ritter Hall and reinstall elsewhere, possibly somewhere along Liacouras or Polett Walk.



RECOMMENDATIONS: POTENTIAL SITES FOR PUBLIC ART

The map indicates with colored dots locations that show promise as strategic sites for public art. The intention of this graphic is not to imply a definite location for the art but to give a general idea of the areas that pieces could be placed. The actual placement choices will be decided by the public art committee and be refined according to the current stage of change in campus architecture and landscape architecture. Those changes will guide the committee to focus on particular places as buildings go up and as landscape changes happen around the campus.

Four categories of artwork are suggested: Iconic, Intimate Scale, Temporary/Ephemeral and Serial. These categories, as described below, capture the different scales and temporal aspects of a comprehensive public art program that could be a part of Temple University's cultural landscape.

Iconic Art

These artworks are monumental, can become a symbol of Temple itself, and are orientation devices and meeting places. Large in scale and bold in concept, an iconic piece draws a crowd and could potentially become a branding device for marketing and fundraising.

Intimate Scale

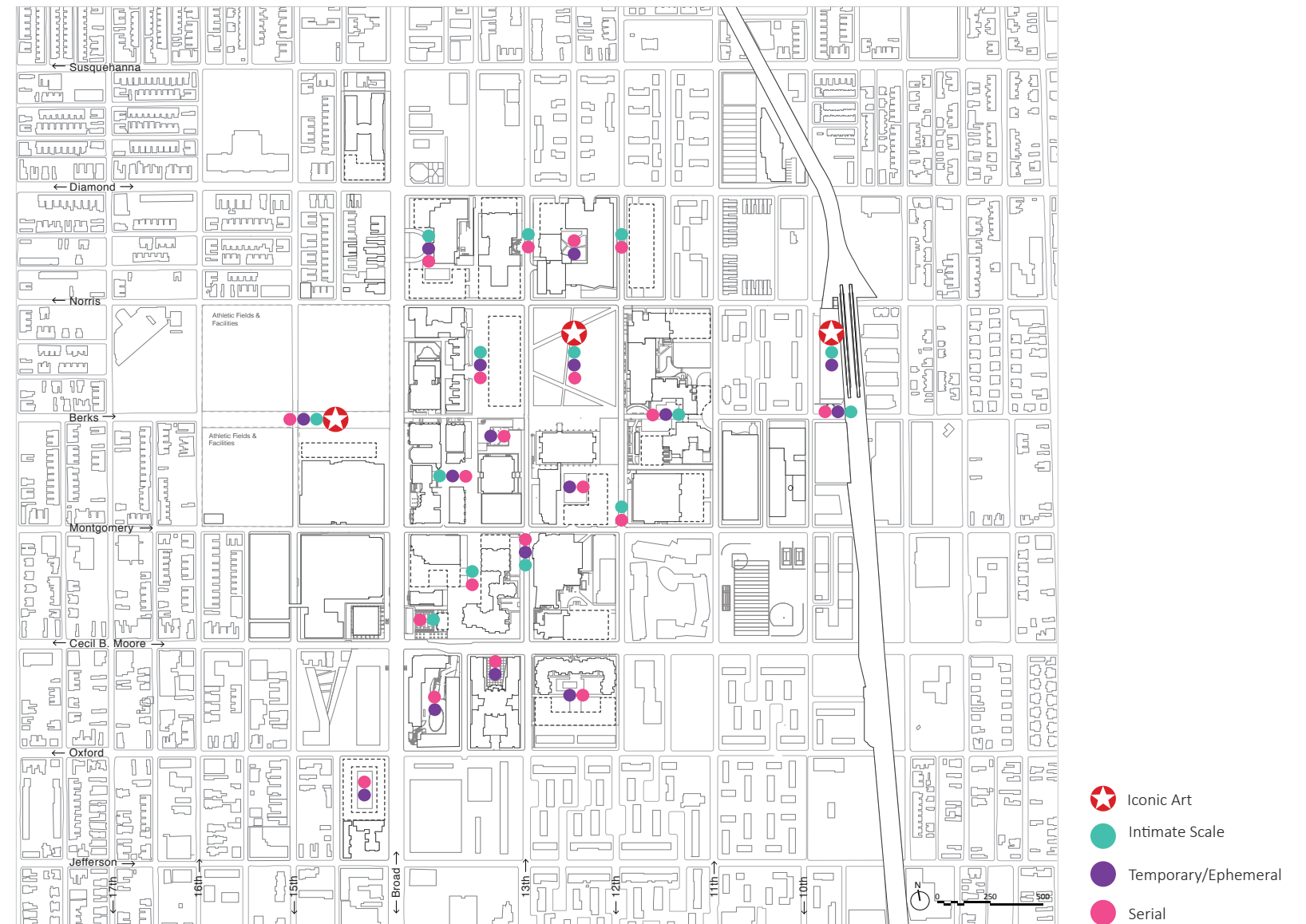
Inside courtyards, along secondary walks, and tucked into small nooks between buildings, intimate scale pieces engage a sense of discovery and wonder. They can turn a mundane walk to class into a journey of surprises.

Temporary/Ephemeral

As a part of a rotational program, temporary and ephemeral pieces can be part of the living and dynamic art dialogue on campus. Artworks could stay in the same location or move from place to place. Loaned individual artworks as well as exhibitions would expand the possibilities for types of artwork that could be seen on campus. Exhibitions might be on view for as little as a few months or as long as several years. Ephemeral pieces would be specifically designed to decompose or be destroyed at the end of their exhibition on campus. Temporary and ephemeral artworks have the advantage of enlivening the campus at less cost than more permanent pieces.

Serial

These artworks whether small, medium or large consist of a number of pieces that are formally or conceptually linked together. They may be placed near to one another or in more scattered locations yet will reference each other through their visual connections.



INSPIRATIONAL IMAGES

These images illustrate some of the possibilities for public art. There are many ways of working from using traditional materials such as metals and stone to works composed of light, sound, computers or landscape materials themselves. Works can be single objects, installations, monumental or smaller scale. Temporary installations and ephemeral events such as The Gates by Christo and Jeanne-Claude in New York City Central Park in 2005 have become sophisticated and memorable. Utilizing various spaces around campus, Temple's many arts schools and departments (visual arts, music, theatre, film and media, architecture, landscape architecture, dance) could plan performances and installations throughout the year. As plans develop for public art on campus these kinds of considerations will be part of the process.

Iconic Art



Bear, Tim Hawkinson



A Startling Whirlwind, Alice Aycock



Ogroma, Ursula von Rydingsvard



Falling Back to Earth, "Cai-Guo Qiang



Big Edge, Nancy Rubin



Some One, Do Ho Suh



Cloud Gate, Anish Kapoor

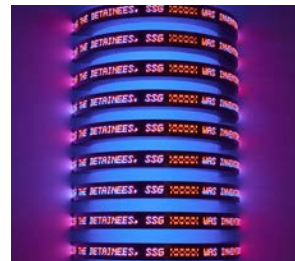
Intimate Scale



Triple Point, Sarah Sze



Head Checks, Jun Kaneko



Torso, Jenny Holzer



Turning Points, Jon Isherwood



Figures, Jaume Plensa



Without Words, Judith Shea



Caloosahatchee Manuscripts, Jim Sanborn

Temporary/Ephemeral



The Gates, Christo



Woven Branch Arch, Andy Goldsworthy



Sneakers, Jake Beckman



Call of the Wild, Patrick Dougherty



Red, Yellow and Blue, Orly Gender



The Reading Nest, Mark Reigelman



Straw Garden, Stacy Levy

Serial



Überfrau, Tom Otterness



Ten Seated Figures, Magdalena Abakanowicz



Radiant Site, Michele Oka Doner



Trinity Root, Steve Tobin



Sun, Sea and Sand, Yinka Shonibare



Stair Squares, Mark Reigelman



Shining Boulders, Jim Hodges

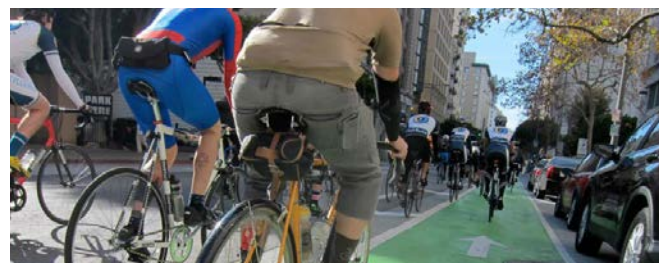
SYSTEM:
MOBILITY



Pedestrian



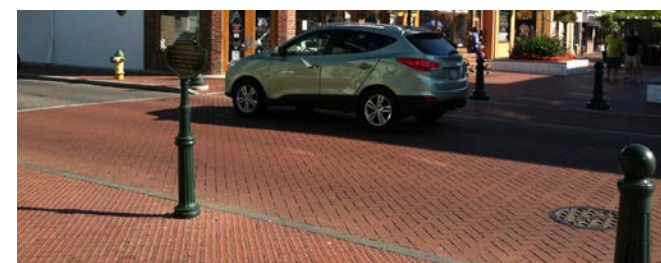
Bicycle



Public Transport



Motor Vehicle



Pedestrian

Bicycle

Public Transport

Motor Vehicle

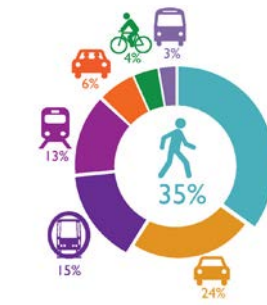
SYSTEM: MOBILITY

VERDANT TEMPLE's examination of Mobility on main campus focuses on improving the pedestrian experience and on bicycle access and infrastructure. Other aspects of Mobility including mass transit and vehicular systems were analyzed only with respect to their effect on the pedestrian experience. These systems are also addressed in Wayfinding (pp. 2.81- 2.134).

TEMPLE UNIVERSITY

By endorsing the American College & University Presidents Climate Commitment¹, Temple's leadership has committed to neutralizing greenhouse gas emissions through the University's Climate Action Plan. The Climate Action Plan identifies reducing motorized travel as the principal way to reduce one fifth of the campus' greenhouse gas emissions.

According to the *Temple University Transportation Survey & Sustainability Audit Report (2013)*, more than two-thirds of students, faculty and staff identify walking, bicycling or transit as their primary travel mode. Additionally six percent of the campus community carpools and the transit mode share is dominated by subway (15%) and regional rail services (13%). With increasing investment in campus housing and transit-oriented development the Temple community will depend on safe walking and bicycling for on- and off-campus trips by 2020.



Primary Mode Share

By prioritizing pedestrian and bicycle access, Temple can increase mobility to create a diverse and sustainable campus connected with complete streets². Additionally, pedestrian friendly streets, with comfortable walking environments, link people with the campus' popular transit services. Creating a complete street involves a rebalancing of the street to more closely align with the demand for walking, bicycling and transit.

¹ For complete reference information for reports, plans and handbooks referred to in this chapter, see p. 3.25.

² See p. 2.27 for Mobility Glossary of Terms.

PHILADELPHIA

The *Philadelphia Bicycle and Pedestrian Plan* and the *Philadelphia Complete Streets Design Handbook* provide a framework for increasing Temple's mobility through modal prioritization and complete streets design.

According to the *Philadelphia Bicycle and Pedestrian Plan*, Temple and the immediate area is a high pedestrian trip generator, both the campus and nearby SEPTA subway stations attract great numbers of pedestrians. The Temple campus is classified as a high pedestrian demand area, ranked as one of the highest in the city (51-96 pedestrian demand score). Additionally, with less than a quarter of the campus community traveling solely by car, Temple's main campus is a non-auto oriented trip generator.

Philadelphia Bicycle and Pedestrian Plan (2012)

The *Philadelphia Bicycle and Pedestrian Plan* defines the major thoroughfares through Temple's main campus as Civic Streets and Urban Arterials. Broad Street is described as a Civic Street, functioning as one of Philadelphia's few grand boulevards with generous sidewalks to accommodate significant pedestrian traffic. Diamond Street and Cecil B. Moore Avenue, east of Broad Street, are identified as Urban Arterials. Cecil B. Moore, west of Broad Street, is classified as a Walkable Commercial Corridor with pedestrian friendly commercial development. All other streets throughout the study area are defined as City Neighborhood Streets, meant to provide safe walking environments through mixed use and residential areas. Basic design standards are provided for pedestrian accommodations along these roadways. Many of the streets within Temple's main campus are underperforming on pedestrian design standards, and can be adapted to better suit pedestrian needs by increasing the sidewalk clear width for the walking zone, reducing excessive auto orientation and providing safe pedestrian crossings along Broad Street and Cecil B. Moore Avenue.

The planned bicycle network in and around Temple's main campus focuses on creating bicycle friendly streets along 15th, 13th and Diamond Streets and Cecil B. Moore Avenue west of Broad Street and east of 10th Street. This includes a shared bicycle and motor vehicle travel way (with curb extension and raised speed cushions to slow automobiles), bicycle lanes and cycle tracks

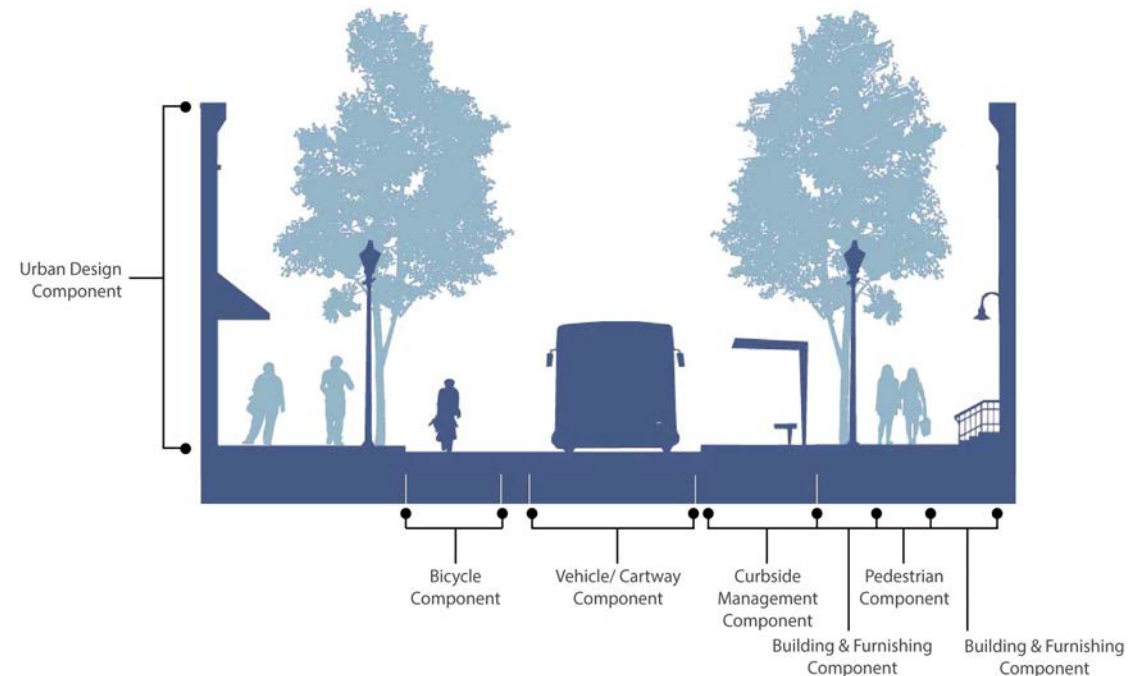
Philadelphia Complete Streets Design Handbook (2013)

The *Philadelphia Complete Streets Design Handbook* outlines the priority design elements to be integrated with the street types described in the *Philadelphia Bicycle and Pedestrian Plan*. The core elements of a complete street include:

- Pedestrian space.
- Bicycling space.
- Vehicle Travelway/Cartway.
- Street furnishings such as lighting, trees and benches.
- Urban design of buildings and facades.

Elements called for in the *Handbook* include:

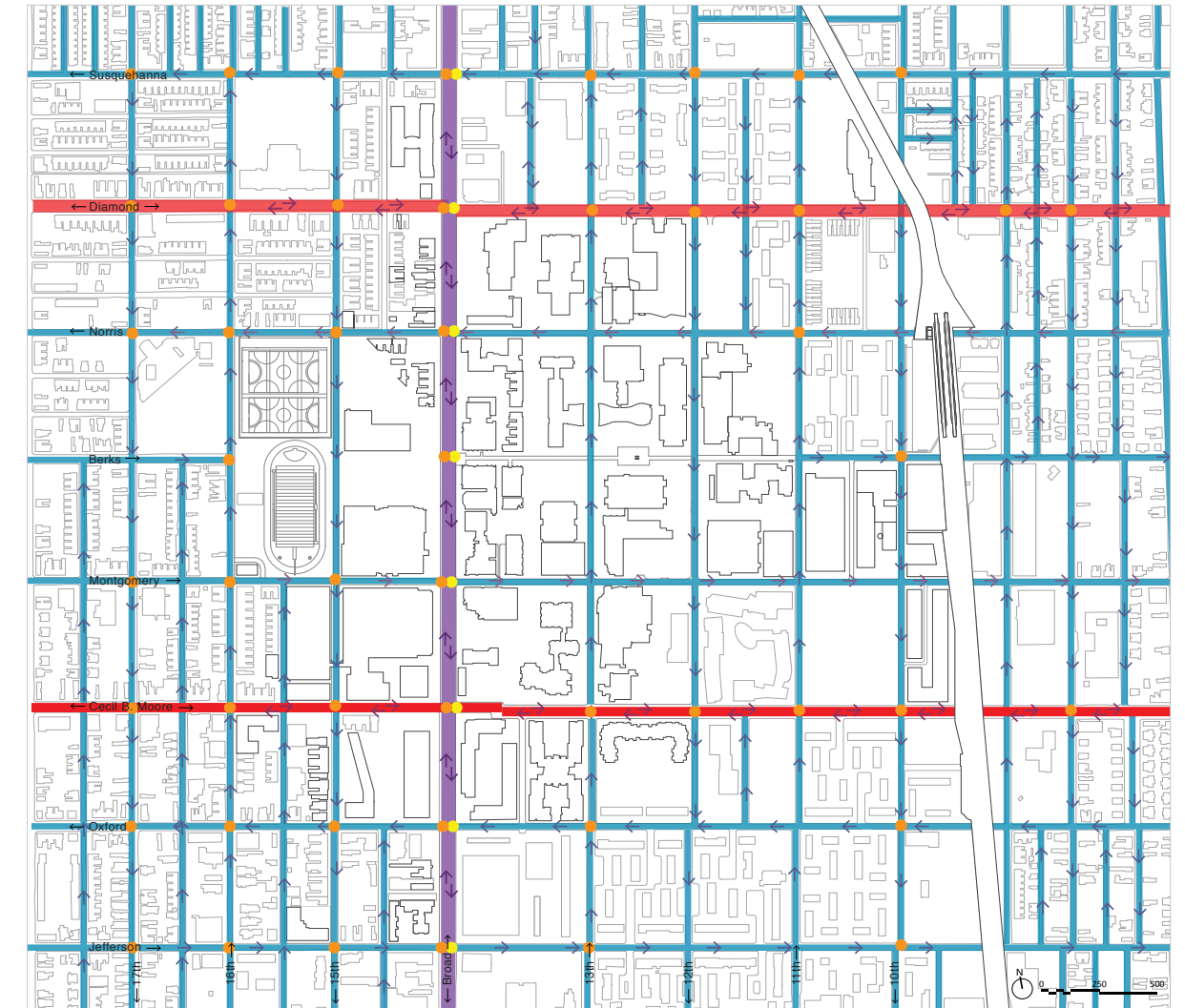
- Festival (Curbless) Streets
- Pedestrian Priority Shared Streets
- Alternative uses of curbside parking lanes
- Raised Speed Reducers
- Chicanes
- Medians
- Cycle Tracks
- Buffered Bicycle Lanes
- In-street Bike Parking
- Green colored paving for bike lanes and cycle tracks.



Components of a complete street

STREET HIERARCHY

Street	Street Type	Pedestrian Component		Bicycle Component		Curbside Management		Cartway / Vehicle Component	
		Required	Limited Circumstances	High Priority	Priority	High Priority	Priority	High Priority	Priority
Diamond Street	Urban Arterial	Curb Ramps Minimum 12' Sidewalk Minimum 6' Walk Zone	Festival (Curbless) Street	Conventional Bike Lane Bike Route Signs	Buffered Bike Lane Cycle Track Shared-Use Path Marked shared lane Green Colored Pavement	Transit Stops/Shelters	On-street parking Loading zones In-street bicycle parking	10'-11' Lane Width Median	Bus Lanes
Norris Street & Montgomery Avenue	City Neighborhood Street	Curb Ramps Minimum 12' Sidewalk Minimum 6' Walk Zone	Festival (Curbless) Street Shared/Pedestrian Priority Street	Bicycle Friendly Street Bike Route Signs	Buffered Bike Lane Conventional Bike Lane Marked Shared Lane Cycle Track Green Colored Pavement Bicycle Parking	On-street parking Loading Zones Transit Stops	In-Street Bicycle Parking Alternative Uses of Parking Lanes	10'-11' Lane	Raised Speed Reducers Medians Chicanes
Cecil B. Moore Avenue	Walkable Commercial Corridor & Urban Arterial	Curb Ramps Minimum 12' Sidewalk Minimum 6' Walk Zone	Festival (Curbless) Street	Conventional Bike Lane Bike Route Signs	Buffered Bike Lane Cycle Track Green Colored Pavement	On-street parking Loading zones Transit Stops	In-street bicycle parking	10'-11' Lane Median	Bus Lanes
17th Street / 16th Street	City Neighborhood Street	Curb Ramps Minimum 12' Sidewalk Minimum 6' Walk Zone	Festival (Curbless) Street Shared/Pedestrian Priority Street	Bicycle Friendly Street Bike Route Signs	Buffered Bike Lane Conventional Bike Lane Marked Shared Lane Cycle Track Green Colored Pavement Bicycle Parking	On-street parking Loading Zones Transit Stops	In-Street Bicycle Parking Alternative Uses of Parking Lanes	10'-11' Lane	Raised Speed Reducers Medians Chicanes
15th Street	City Neighborhood Street	Curb Ramps Minimum 12' Sidewalk Minimum 6' Walk Zone	Festival (Curbless) Street Shared/Pedestrian Priority Street	Bicycle Friendly Street Bike Route Signs	Buffered Bike Lane Conventional Bike Lane Marked Shared Lane Cycle Track Green Colored Pavement Bicycle Parking	On-street parking Loading Zones Transit Stops	In-Street Bicycle Parking Alternative Uses of Parking Lanes	10'-11' Lane	Raised Speed Reducers Medians Chicanes
Broad Street	Civic/Ceremonial Street	Curb Ramps Minimum 20' Sidewalk Minimum 10' Walk Zone		Conventional Bike Lane Bike Route Signs	Buffered Bike Lane Cycle Track Green Colored Pavement	On-street parking Loading zones Transit stops/shelters	In-street bicycle parking	10'-12' Lane	Median Bus Lanes
13th Street	City Neighborhood Street	Curb Ramps Minimum 12' Sidewalk Minimum 6' Walk Zone	Festival (Curbless) Street Shared/Pedestrian Priority Street	Bicycle Friendly Street Bike Route Signs	Buffered Bike Lane Conventional Bike Lane Marked Shared Lane Cycle Track Green Colored Pavement Bicycle Parking	On-street parking Loading Zones Transit Stops	In-Street Bicycle Parking Alternative Uses of Parking Lanes	10'-11' Lane	Raised Speed Reducers Medians Chicanes
12th Street & 11th Street	City Neighborhood Street	Curb Ramps Minimum 12' Sidewalk Minimum 6' Walk Zone	Festival (Curbless) Street Shared/Pedestrian Priority Street	Bicycle Friendly Street Bike Route Signs	Buffered Bike Lane Conventional Bike Lane Marked Shared Lane Cycle Track Green Colored Pavement Bicycle Parking	On-street parking Loading Zones Transit Stops	In-Street Bicycle Parking Alternative Uses of Parking Lanes	10'-11' Lane	Raised Speed Reducers Medians Chicanes
10th Street	City Neighborhood Street	Curb Ramps Minimum 12' Sidewalk Minimum 6' Walk Zone	Festival (Curbless) Street Shared/Pedestrian Priority Street	Bicycle Friendly Street Bike Route Signs	Buffered Bike Lane Conventional Bike Lane Marked Shared Lane Cycle Track Green Colored Pavement Bicycle Parking	On-street parking Loading Zones Transit Stops	In-Street Bicycle Parking Alternative Uses of Parking Lanes	10'-11' Lane	Raised Speed Reducers Medians Chicanes



The priority design elements of a complete street, focusing on the pedestrian, bicycle, curbside and vehicle/cartway components

Street Type	TU Campus Streets	Pedestrian Significance	Vehicle Significance	Sidewalk Width Standards		
				Total Width	Walking Zone	Furnishing Zone
Civic/Ceremonial Street	Broad Street	High	High	20' recommended	10' minimum	5'
Urban Arterial	Diamond Street & Cecil B. Moore Avenue (east of Broad Street)	Medium	High	12' minimum	6' minimum	4'
City Neighborhood Street	All Others	Medium	High	12' minimum	6' minimum	4'
Walkable Commercial Corridor	Cecil B. Moore Avenue (west of Broad Street)	High	Medium to High	12' minimum	6' minimum	4'

Street types and sidewalk widths

- City Neighborhood Street
- Urban Arterial
- Civic/Ceremonial Street
- Signalized Intersection
- Pedestrian Signal

BEST PRACTICES

Many universities embrace and promote sustainability principles similar to Temple's. The following four are highlighted for their actionable efforts in this regard. The design team referenced these efforts when developing recommendations.

Stanford University is ranked as one of the nation's leading sustainable universities and the nation's only platinum rated Bicycle Friendly University. Beginning in 1986, Stanford invested four million dollars to transform Serra Street into a non-motorized mall. The cost was less than a quarter of the amount that would have been spent to build parking for the 900 cyclists, pedestrians and transit riders who regularly use the street.



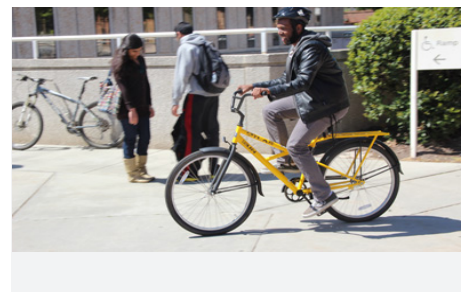
Stanford University

The University Of Wisconsin is one of the nation's top bicycle/pedestrian friendly schools. In addition to being a Silver ranked Bicycle Friendly University, the University has collaborated with the City of Madison to create pedestrian priority corridors leading to the campus and students get discounted memberships to the city's bike share program. The University was able to grow their bicycle mode share from 16 percent in 2006 to 22 percent in 2013 by investing in on-campus bicycle repair services and adding bicycle parking.



University of Wisconsin at Madison

Virginia Commonwealth University is a Silver Rated Bicycle Friendly University and maintains an A Grade in the College Sustainability Report Card. Bicyclists may ride on all parts of the campus, but can only park in designated racks. Bikes may be checked out from the library.



Virginia Commonwealth University

Emory University tackled the need for more sustainable transportation by launching an extensive bike to campus campaign, offering semester long bicycle rentals to students and providing bicycle parking along car-free paths and walkways. The campus provides a detailed and interactive map of the most accessible pedestrian routes for riders with disabilities.

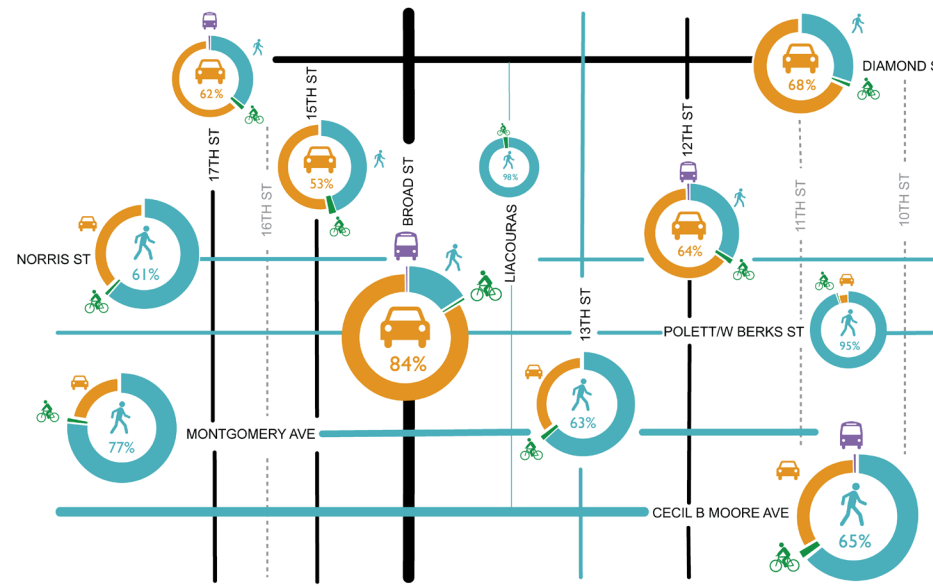


Emory University

MOBILITY ASSESSMENT

The following is an assessment of the existing physical conditions of each transportation mode and the proposed changes to the campus' modal network.

The campus street network serves varying levels of traffic by different modes depending on the street's design and adjacent buildings. By breaking down traffic volumes by mode for pedestrians, bicycles, buses and motor vehicles for each street, patterns in travel begin to emerge. While a street's traffic may be dominated by a specific mode it still must accommodate safe travel by all other modes to function as a complete street.



Campus Street Network: Share of Traffic Volumes by Mode

PEDESTRIAN

Existing Walking Network

Temple provides basic pedestrian access with sidewalks on both sides of all streets and two pedestrian walkways, Polett and Liacouras, that extend through most of the campus.

Beyond the two pedestrian walkways, several streets within the campus are pedestrian dominated. Norris Street, Montgomery Avenue, and Cecil B. Moore Avenue are significant east-west links in pedestrian circulation. In addition to Broad Street, where high volumes of auto travel masks the significant pedestrian traffic in the share of overall traffic volumes, 13th Street is a major north-south connection for pedestrians.

Diamond and Norris provide key examples of how an open pedestrian-friendly walking environment shifts behavior. Most of the walking along Diamond is along the south sidewalk and alternatively the majority of pedestrians prefer the north sidewalk of Norris. These conditions reflect the destinations along these corridors and the pedestrian conditions. The sidewalk is wider on the south side of Diamond than the north and there are large parking lots along the north side. Along Norris building entrances are greater along the north sidewalk with fewer fences and concrete walls than the south sidewalk.

Proposed Walking Network

Changes to walking infrastructure focus on expanding the walking zone, easing street crossings by minimizing crossing distances and improving the walking environment. Described later in the Street by Street Recommendations (pp.2.36-2.46).

12th Street will have a shared street design to prioritize the high volumes of pedestrians crossing between the proposed Campus Green and new academic buildings. It is anticipated that this route will become more attractive to pedestrians.

Curb Extensions And Pedestrian Visibility

Shortening pedestrian crossings, improving pedestrian visibility and calming traffic can be achieved with the addition of curb extensions. Key locations in the campus network where curb extensions and other traffic calming designs should be implemented to slow motorized traffic where travel lanes narrow, bicycle infrastructure changes or where driver visibility of pedestrians is limited is shown in Design Guidelines (p. 3.11).

Raised Crossings

Raised crossings provide a level surface for individuals with mobility issues and force drivers to reduce speed. The mid-block crossings of Liacouras Walk are key locations to add raised crossings.



Pedestrians on highly visible crosswalk

Accessibility

Accessible street design focuses on:

- Reducing crossing distances.
- Incorporating detectable warning materials where there is no curb.
- Providing unobstructed walking and travel routes.
- Minimizing cross-slope.
- Audible pedestrian signals to assist visually impaired individuals.

ADA parking on 13th Street can be reoriented to provide easier access to the Campus' Disability Services Office entrance on Cecil B. Moore Avenue.

MOBILITY GLOSSARY OF TERMS

Streets

COMPLETE STREETS DESIGN considers the interaction of many different roadway users, elements of street design, and surrounding land uses. The Philadelphia Complete Streets Design Handbook identifies seven conceptual complete street “components” that make up the public right-of-way: Pedestrian, Building & Furnishing, Bicycle, Curbside Management, Vehicle/Cartway, Urban Design, and Intersections & Crossings.¹

CIVIC/CEREMONIAL STREETS include some of the first mapped streets in the city (e.g., Broad Street, Market Street). These streets have great symbolic importance, house major ceremonial functions, and play a unique role in the life of the City (e.g., the Parkway). Sidewalks on Civic/Ceremonial streets operate as generous pedestrian promenades. As major arterials, these streets also have high vehicle significance.¹

FESTIVAL STREETS are streets with a single surface shared by pedestrians, bicyclists, and low-speed vehicles. These streets create a very low-speed pedestrian-oriented street that maintains bicycle, local vehicle, and delivery access on most days and can easily be closed for community events or festivals.¹

URBAN ARTERIALS, major and minor, carry high through traffic volumes. These streets usually have surface transit routes and must provide adequate pedestrian facilities to allow safe and comfortable access and waiting areas for transit users. Urban Arterials generally have more travel lanes and higher speeds, compared to City Neighborhood Streets. They may have commercial uses, but are not as pedestrian-friendly as Walkable Commercial Corridors.¹

CITY NEIGHBORHOOD STREETS include the majority of the grid streets in older sections of Philadelphia. These streets serve an equally important role for local vehicle and pedestrian traffic. The fronts of buildings on these streets typically meet the street line (edge of sidewalk), unlike Lower Density Residential Streets where dwellings are set back from the sidewalk.¹

WALKABLE COMMERCIAL CORRIDORS are active commercial corridors with pedestrian-friendly physical development patterns (e.g., commercial sections of Germantown and Girard Aves.) On these streets, parking and access needs of local businesses often compete for limited right-of-way with pedestrian and bicycle facility needs. These streets have lower pedestrian volumes than High-volume Pedestrian Streets, but are more pedestrian friendly than Auto-oriented Commercial areas.¹

Street Elements

CURB EXTENSIONS, also known as “bumpouts” or “bulbouts”) extend the sidewalk out into the street, usually to the edge of the on-street parking lane. Curb extensions at intersections reduce pedestrian crossing distance, encourage slower vehicle speeds through roadway narrowing, and improve visibility for pedestrians and drivers. Curb extensions can also provide additional sidewalk space at busy intersections and space for ADA curb ramps.¹

CHICANES are staggered curb extensions used to narrow the roadway and create an “s”-curving roadway alignment. By making it difficult for vehicles to travel in a straight line, chicanes can calm traffic on roadway segments or midblock locations.¹

RAISED SPEED REDUCERS/CUSHIONS are raised areas of the roadway that deflect the wheels and frame of a traveling vehicle to reduce vehicle speeds. Speed humps are 10-12’ long raised sections, while speed tables are longer (approx. 22’) with a flat section in the middle that can accommodate raised crosswalks or large vehicle passage. Speed bumps are from 1 to 3’ from front to back and are usually only appropriate for parking lots and private roads.¹

Bikes

CYCLE TRACKS are exclusive bike facilities separated from motor traffic and distinct from the sidewalk. Cycle tracks may be one-way or two-way and at street level, sidewalk level, or in between. They combine the user experience of a separated path with the on-street infrastructure of a conventional bike lane.¹

BUFFERED BIKE LANES are conventional bike lanes with a designated buffer space separating the bicycle lane from adjacent lanes for motor vehicles or parking. They can be used to create a larger space for bicyclists without potentially causing the bike lane to look like a travel lane or parking lane for motor vehicles.¹

IN-STREET BIKE PARKING can be provided in the parking lane in areas where there is not enough room to fit a car, for example, in between driveways. On-street vehicle parking spaces may also be converted to provide in-street bicycle parking. One standard 20’ vehicle parking space can provide parking for up to 12 bicycles on 6 standard U-racks. In-street bike parking also has the benefit of not intruding onto adjacent sidewalks.¹

BIKE SHARE is an innovative transportation program, whereby system subscribers have access to bicycles through self-service kiosk locations around the community. Bike share is ideal for short distance point-to-point trips providing subscribers access to bicycles at any self-serve bike station to use and return to any bike station within the system’s service area. Typically, people can sign up for an annual or monthly registered membership online, or can become a short-term or “casual” member by swiping their credit card at an on-street kiosk.²

CONTRAFLOW LANES are often used on one-way streets when bicycles are permitted to travel in marked lanes, in the opposite direction of vehicular traffic, typically protected by a raised median or flexible bollards.

SHARROW is a street marking placed in the center of a travel lane to indicate that a cyclist is permitted to share the entire travel lane with vehicular traffic. Travel lanes are typically narrowed to about 10 feet wide to restrict flow so that vehicles do not attempt to pass cyclists.

References:

¹ Philadelphia Mayor’s Office of Transportation and Utilities. (2013). *Philadelphia Complete Streets Design Handbook*. http://www.philadelphiestreets.com/images/uploads/resource_library/cs-handbook.pdf

² Pennsylvania Environmental Council. (2013). *Philadelphia Bike Share Strategic Business Plan*. <http://bikesharephiladelphia.org/PhilaStudy/CompleteBusinessPlan.pdf>

BICYCLE NETWORK

EXISTING

Temple’s main campus is a 15-20 minute bike ride to a number of important destinations in Philadelphia. Five percent of the campus community reports commuting by bicycle, totally 2,500 riders.

Marked bike lanes exist along Cecil B. Moore Avenue, 12th Street and Berks Street, east of 11th Street. According to the *Philadelphia Bicycle and Pedestrian Plan*, the City has plans to:

- Extend the Cecil B. Moore bicycle lane eastward and create a shared bicycle and car lane west of Broad.
- Extend the existing bicycle lanes on 13th and 12th Streets, north and through the campus.
- Implement bicycle friendly street design along 15th Street.

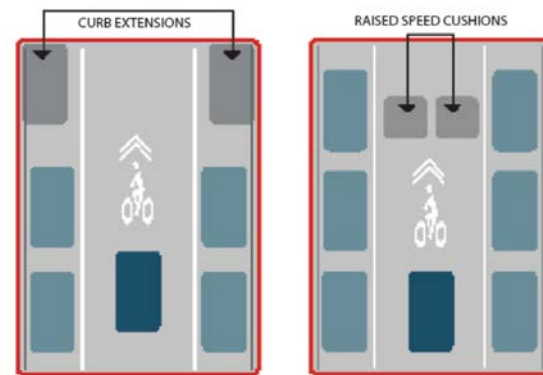
PROPOSED

The design team incorporated the proposed bicycle network and expanded it within the campus to provide more direct bicycle travel between campus destinations.

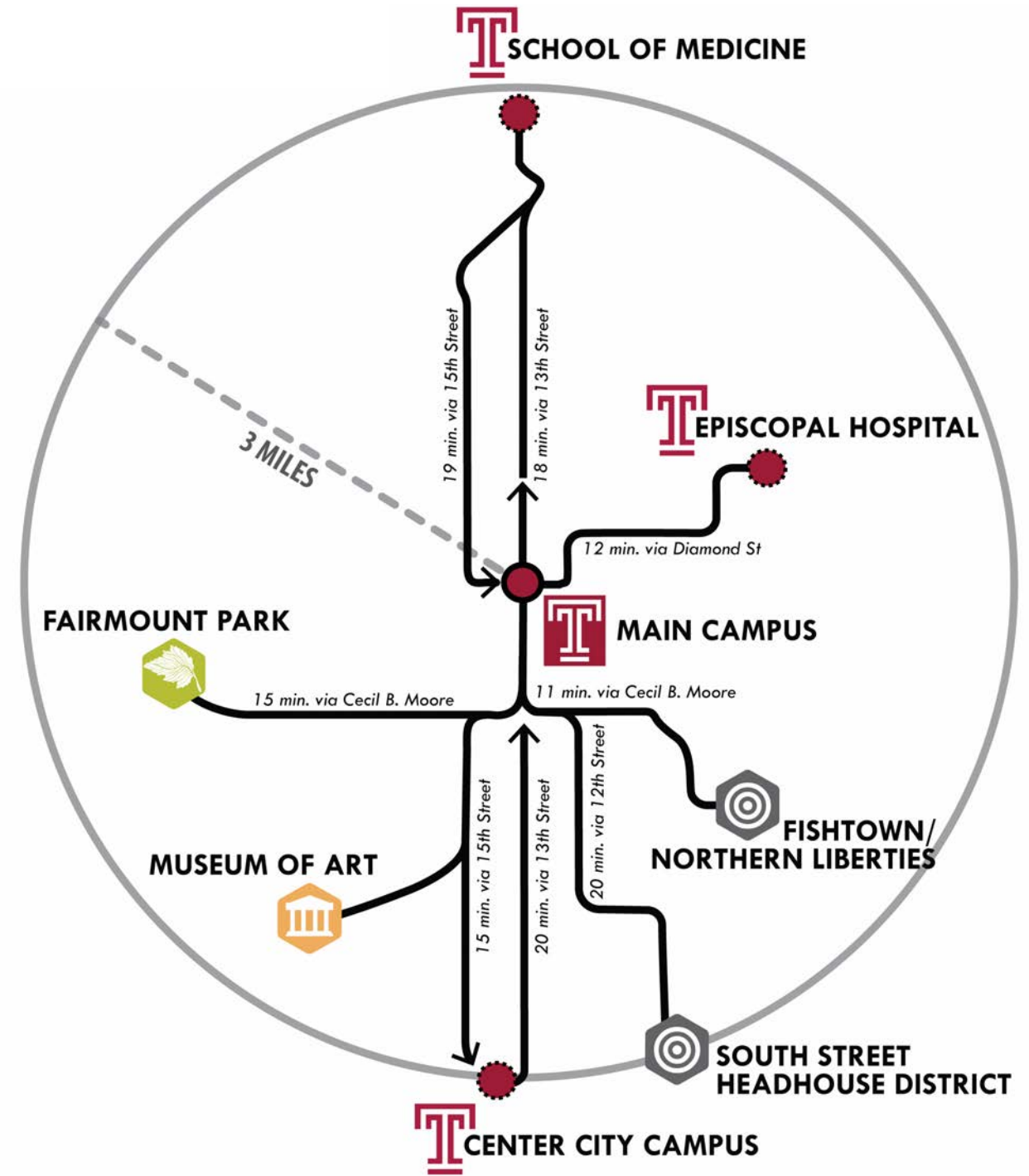
Bicycle network improvements include the addition of the following features:

Contraflow Lane- often used on one-way streets when bicycles are permitted to travel in marked lanes, in the opposite direction of vehicular traffic, typically protected by a raised median or flexible bollards.

Sharrow- a street marking placed in the center of a travel lane to indicate that a cyclist is permitted to share the entire travel lane with vehicular traffic. Travel lanes are typically narrowed to about 10 feet wide to restrict flow so that vehicles do not attempt to pass cyclists.



Bicycle Friendly Street Design with Sharrow



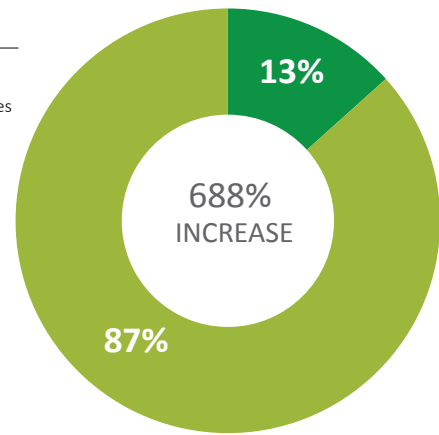
20 Minute Bicycle Network along Temple’s Existing and Proposed Bicycle Facilities

BICYCLE LANES

The diagram to the right illustrates the bike lane network proposed by VERDANT TEMPLE (VT), which intends to create a highly connected campus system that links into the growing city and regional network.

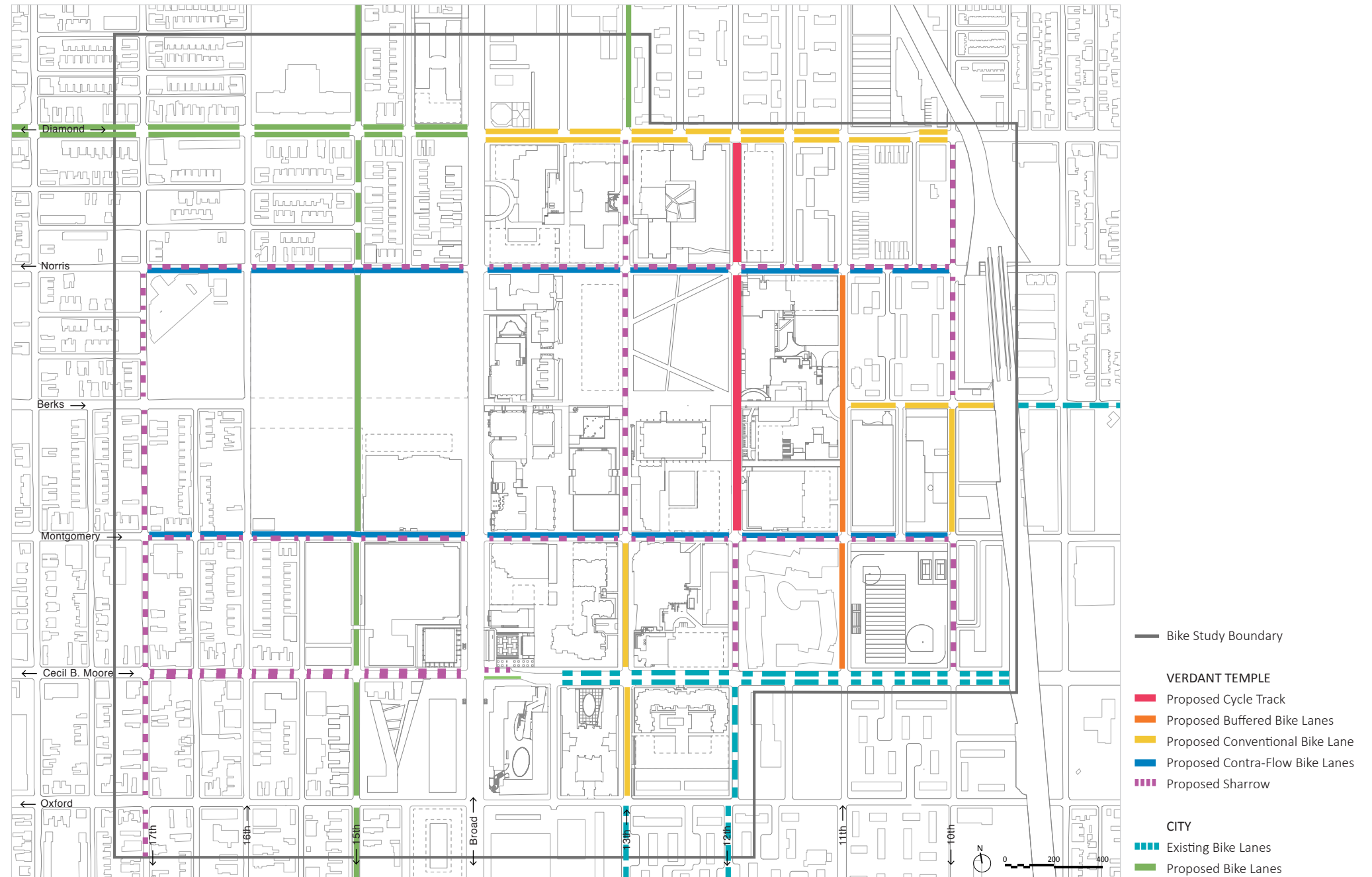
EXISTING VS. PROPOSED DISTANCE

- 5,299 LF Total Existing Bike Lanes
- 36,496 LF Total Proposed Bike Lanes (VT and City)



DISTANCE BY TYPE

- 1,597 LF Proposed VT Cycle Track
- 2,173 LF Proposed VT Buffered Bike Lanes
- 4,704 LF Proposed VT Conventional Bike Lanes
- 5,128 LF Proposed City Bike Lanes
- 5,299 LF Existing City Bike Lanes
- 5,802 LF Proposed VT Contra-Flow Bike Lanes
- 17,092 LF Proposed VT Sharrows



BICYCLE PARKING

EXISTING

The current bicycle parking capacity on campus is approximately 1,950 spaces, somewhat less than the 2,500 regular cyclists. 1,725 spaces are available for short term use, with the balance of parking located inside residential halls, office and academic buildings. There are 1,549 rack spaces located outside throughout campus, and 176 racks in sheltered locations such as parking lots and garages. 100 rental racks are located in monitored campus parking lots and garages and may be rented for \$15 annually.



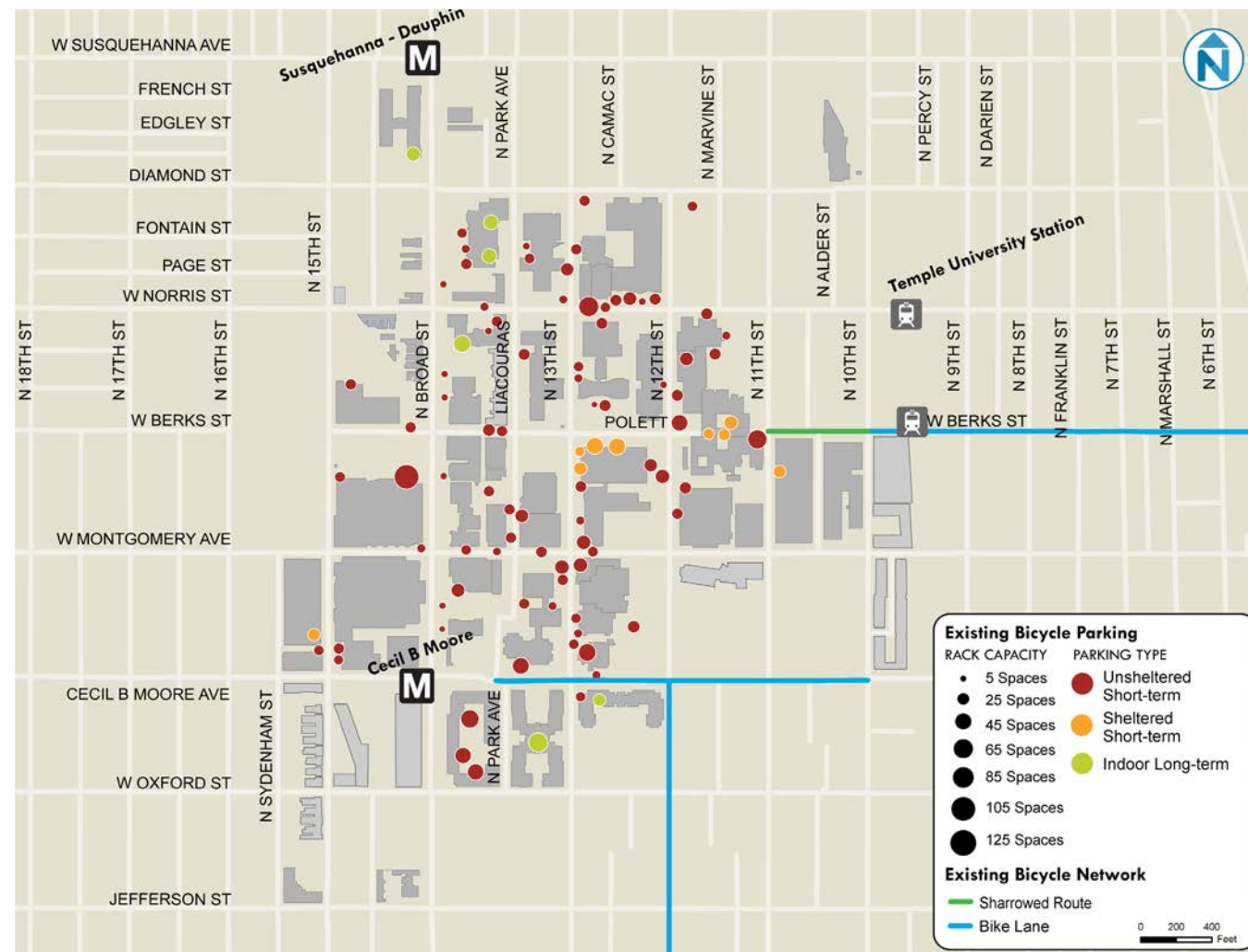
Over capacity parking. Cyclist searching for bicycle parking in front of Tyler School of Art



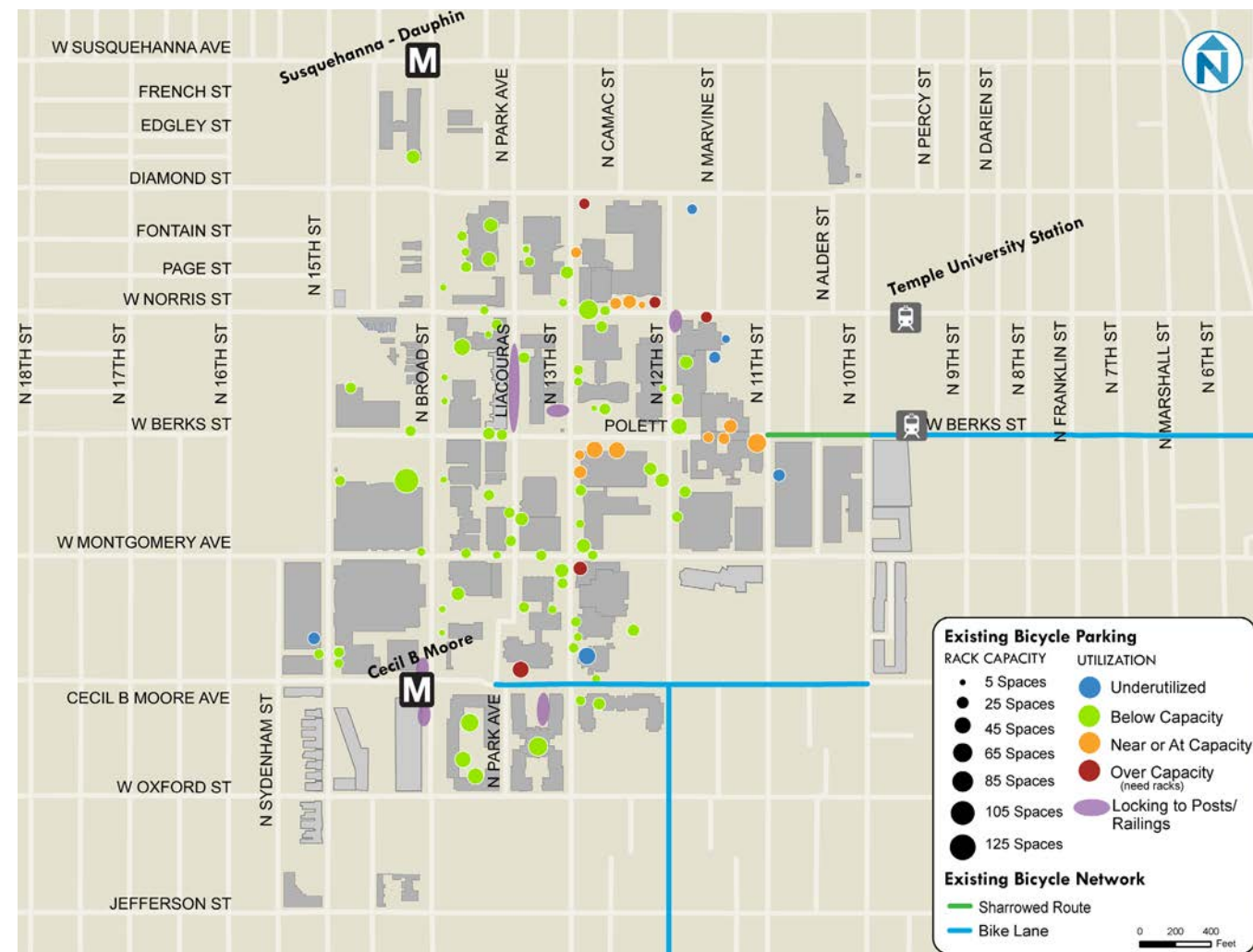
Unused bicycle racks in Liacouras Garage

Type	Existing Supply	Recommended Supply	Additional Supply	Potential Locations
Short-Term	1725	3000 <i>120% of the campus commuter share</i>	1275	
• Unsheltered Short-Term	1549	2250 <i>75% of short-term</i>	701	<ul style="list-style-type: none"> Relocate underutilized racks Additional parking within 50 feet of building entrances Curb extensions
• Sheltered Short-Term	176	750 <i>25% of short-term</i>	626	<ul style="list-style-type: none"> Curb extensions Add shelters to existing short-term bicycle parking Add bicycle parking in garages
Long-Term	255	Academic/Mixed Use: 10% of building occupancy Office: 80% of building occupancy Residential: 90% of building occupancy	TBD	<ul style="list-style-type: none"> Incorporate into dormitory design Allow parking in all staff/faculty offices Add basic indoor office parking

Temple main campus bicycle parking supply



Bicycle parking on Temple campus by number and type



Bicycle parking survey fall 2013: underutilized or overcrowded bike parking

PROPOSED

To accommodate future growth in cycling on campus, the design team recommends the following bicycle parking:

- Short term parking equivalent to 120 percent of current commuting rates.
- Long term parking based on building type.
 - Academic/Mixed Use: 10% of building occupancy.
 - Office: 80% of building occupancy.
 - Residential: 90% of building occupancy.

In sum, 1,275 new short-term bicycle racks would be installed, with the number of long term racks to be determined.

Unsheltered short-term bicycle parking should be located within 50 feet of a building’s main entrance. Sheltered bicycle parking contributes to maintaining a high bike mode share during inclement weather. Note more than 60 bike racks that are currently covered will no longer be so when the overhangs along the eastern edge of Polett walk are removed. The current practice of charging for bicycle parking at parking facilities should be discontinued because it deters the use of sheltered bicycle parking.

Opportunities for additional parking include:

- Curb extensions.
- 13th Street Corridor.
 - The Virginia Commonwealth University and Emory University place bicycle parking prominently along pedestrian and bicycle paths.
- Indoor parking in staff and administrative buildings or offices.
 - Parking can be compact, in a small office corner. An 8 x 10 foot space provides parking for 7 bicycles.

Additional bicycling facilities can be incorporated along with parking. Washington University provides bicycle pumps next to their short-term parking.



Bicycle parking relocations and additional parking needed

Create Bicycle Service Center at Montgomery Garage

The large bicycle parking and shower facility in Montgomery Garage is presently underutilized. The design team suggests that it be enhanced with a repair facility to become the campus bicycle service center. The resultant facility could spur even more bicycle commuting.

Bicycle service centers in general feature:

- Attendants.
- Secure indoor bicycle parking (valet, self-serve lockers, daily, overnight, long-term).
- Showers, changing rooms, day-use lockers.
- DIY tools and pumps.
- Bicycle repairs (while you are in class).
- Bicycle rentals and sales.
- Trip planning information, including connections to transit.

In addition, a bicycle service center at the Montgomery Garage could feature:

- Operating agreement with a local bike shop.
- Weekly repair classes with Breakaway Bikes as an expansion of their weekly mobile bike shop.
- A home for existing partnerships with Neighborhood Bike Works and Fuji Bicycles.
- Semester bike safety classes as a continuation of the Office of Sustainability’s programming.



Example: Air pump next to bicycle parking

BIKE SHARE

Integration with Bike Share Philadelphia

The City of Philadelphia intends to begin a bike share program in 2015. Temple University is on the northern border of the initial core service area and two stations are slotted for the campus. The design team recommends that Temple actively partner with the city's program, as it will contribute the goals of the university's Climate Action Plan.

Best Practices

The Bike Share Planning Guide by the Institute for Transportation and Development Policy (ITDP) recommends between 25 and 42 stations per square mile with stations every 450 to 900 feet. This is roughly equal to the station density outlined for the High Scenario in the *Philadelphia Bike Share Strategic Business Plan*.

The ratio of bicycles per docks within the bike share system varies based on the expectations of rebalancing bicycles and the distance between stations in the system. ITDP's guidelines recommend a 1 bike: 1.7 dock ratio, the Philadelphia plan outlines a 1:2 ratio, while other systems utilize a 1:1.9 ratio.

Recommendations

The Temple campus is roughly one-quarter square mile in size, therefore 6 to 10 stations are recommended. Ten potential stations in priority order (stations one through six would be the minimal investment) are noted on the table and shown on the map. The table totals 119 bikes and 221 docks for a 1:1.86 ratio. The main considerations for these locations are: proximity to transit hubs, major campus destinations, residential development, proposed bicycle network and crowd-sourced recommendations from the Bike Share Philly Map.



Proposed bike share station locations on Temple campus



Bike share docking station on wide sidewalk (Washington, DC)



Bike share docking station in curbside parking spot (Minneapolis, MN)

#	Location	Location Detail / Key Destination	Station Size
1	Cecil B. Moore and Broad	South eastern corner in front of Morgan Hall on new curb extension/SEPTA Subway Station	Large (15 bikes, 29 docks)
2	10 th and Berks VERDANT TEMPLE	Southwest corner of intersection in roadway at no parking zone south of the crosswalk/Temple Station	Large (15 bikes, 29 docks)
3	13 th and Montgomery	Student Union Building	Large (15 bikes, 29 docks)
4	15 th and Montgomery	Major sporting events or events at the Liacouras Center	Special (20 bikes, 38 docks)
5	Diamond at Broad	East of Harwick and Johnson Halls	Medium (10 bikes, 19 docks)
6	Norris between 12 th and 11 th	Adjacent to the Tyler School of Art	Medium (10 bikes, 19 docks)
7	Cecil B. Moore and 10 th	Southeast campus/ University Village residential buildings	Medium (10 bikes, 19 docks)
8	Cecil B. Moore between 17 th and 16 th	Connecting to restaurants/shopping along commercial corridor	Medium (10 bikes, 19 docks)
9	9 th and Norris	Paseo Verde development	Small (7 bikes, 10 docks)
10	Norris and 15 th	North of the athletic fields	Small (7 bikes, 10 docks)

Proposed bike share stations and station sizing

TRANSIT NETWORK

EXISTING MOTOR VEHICLE

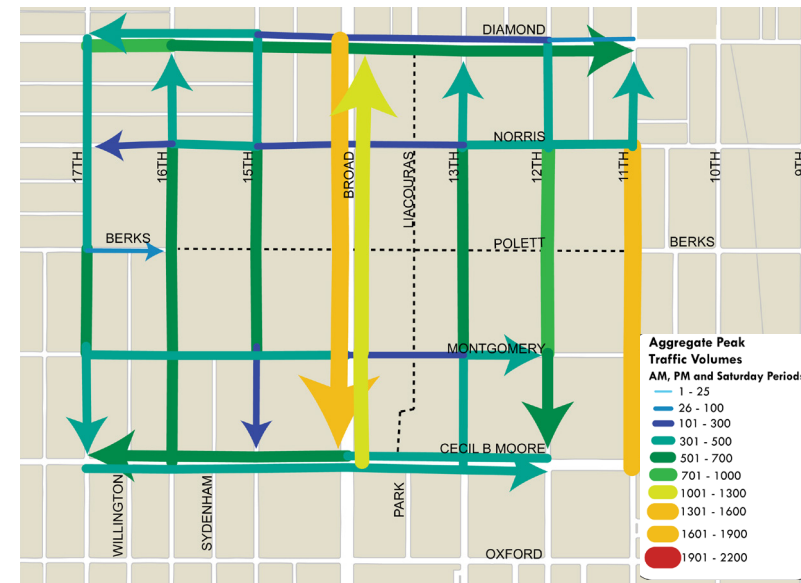
Temple’s main campus is situated within the greater street grid of North Philadelphia, with Broad Street handling the most through traffic.

As part of the *Visualize Temple* project, a model was created to analyze the impact of reducing lanes on North 13th and North 15th Streets to make safer environments for pedestrians. Both streets are relatively narrow with low traffic volumes (1,300 and 3,500 vehicles per day, respectively). Neither street is a snow or evacuation route, and both are designated as “local streets” by PennDOT. Campus security currently closes 13th Street to through traffic at Cecil B. Moore when there are high numbers of people walking (such as during class changes). There is a gate at the intersection used for this purpose.

The transportation industry uses two factors to evaluate the performance of an intersection:

- Delay is the time that a motorist waits at a signalized intersection for a green signal. Overall delay is the average delay for all of the motorists at the intersection. In general, delay of 55 seconds or less is acceptable in cities, whereas delay of 80 seconds or more is considered “failing”- although it should also be noted that some of the most robust shopping and event-related streets in cities regularly perform at this level.
- Volume-to-capacity is the percentage that a signalized intersection is “full”. It considers the number of lanes and the amount of signal time per direction. Maximum volume-to-capacity calculates the entire intersection.

None of the intersections have excessive delay in the PM rush hour, but three intersections along North Broad Street (Cecil B. Moore, Norris and Diamond Streets) have excessive traffic to capacity.



Existing motor vehicle circulation

V/C	Traffic Conditions
< 50%	Minimal delay
50 - 75%	Travel speed still at or near free flow, but ability to maneuver within the traffic stream is noticeably restricted
75 - 90%	Travel speeds begin to decline with increasing flows; minor incidents expected to cause queuing
> 90%	Operation at or near capacity and therefore volatile because there are virtually no usable gaps in traffic stream; maneuverability is extremely limited

Volume to Capacity General Interpretations

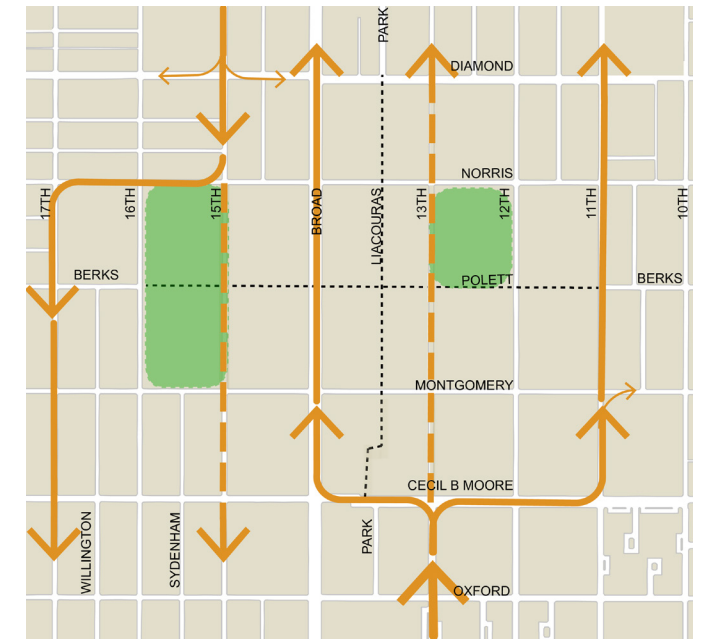
		17 St	16 St	15 St	Broad	13th	12th	11 St
Diamond	delay (sec.)	14	12	23	78	15	10	11
	vol/cap	58%	59%	88%	143%	63%	52%	41%
Norris	delay (sec.)	10	20	15	15	-	-	11
	vol/cap	37%	49%	60%	109%	-	-	42%
Berks	delay (sec.)	-	4	-	4.5	-	-	-
	vol/cap	-	32%	-	68%	-	-	-
Montgomery	delay (sec.)	10	11	11	19	-	-	8
	vol/cap	36%	55%	51%	79%	-	-	36%
C.B. Moore	delay (sec.)	10	12	15	28	11	13	13
	vol/cap	40%	51%	65%	94%	32%	59%	56%

Existing Congestion

PROPOSED MOTOR VEHICLE

North 15th Street is proposed to be a shared street between Montgomery and Norris creating a safer environment for pedestrians (refer to Visualize Temple for details). North 13th Street between Cecil B. Moore and Diamond is envisioned to be primarily for walking and cycling (see Street by Street Recommendations pp. 2.36-2.46) with auto traffic maintained.

The same traffic model described previously was used to develop the chart below. It shows that the surrounding streets will suffer little by creating shared streets at 13th and 15th. Some spot congestion on Broad Street would occur, but this can largely be mitigated through the installation of new, optimized, actuated and coordinated traffic signals. These signals would be computer-controlled and be able to react in real time or according to a program to variations in traffic flow, i.e. they would stay green longer or shorter.



Traffic flow with 13th and 15th as shared streets

		17 St	16 St	15 St	Broad	13 St	12 St	11 St
Diamond	delay (sec.)	14	12	23	89	13	10	11
	vol/cap	58%	59%	88%	143%	49%	52%	41%
Norris	delay (sec.)	7	20	6	17	-	-	11
	vol/cap	52%	60%	37%	109%	-	-	42%
Berks	delay (sec.)	-	4	-	-	-	-	-
	vol/cap	-	32%	-	77%	-	-	-
Montgomery	delay (sec.)	10	11	0	21	-	-	9
	vol/cap	36%	55%	18%	79%	-	-	36%
C.B. Moore	delay (sec.)	10	12	16	44	11	14	12
	vol/cap	40%	51%	65%	126%	59%	59%	56%

Potential Congestion: 13th and 15th Street

EXISTING PUBLIC TRANSIT

Temple’s Main Campus is highly accessible by public transit – 31 percent of students, faculty and staff use public transit as their primary travel mode (equivalent to about 13,000 riders in a typical week).

- The Temple University Station is the fourth busiest in the SEPTA commuter rail network. Twelve lines provide service and approximately 7,000 passengers use the station on a typical weekday. West Berks Street is the main pedestrian connection from the station to campus. Limited access is from the northern entrance on Norris Street.
- The Broad Street Subway stops at the Cecil B. Moore and Susquehanna/Dauphin Stations. The former is a significant contributor of the high volume of pedestrians crossing at the Broad/Cecil B. Moore and Broad/Montgomery intersections.
- Several bus routes cross the campus, serving neighborhoods to the north and south. Routes 23 and 39 have the highest ridership with about 24,000 daily riders each. All run between four and 10 buses per hour during the morning and evening peaks; however, all routes have an on-time performance of 78 percent or less.

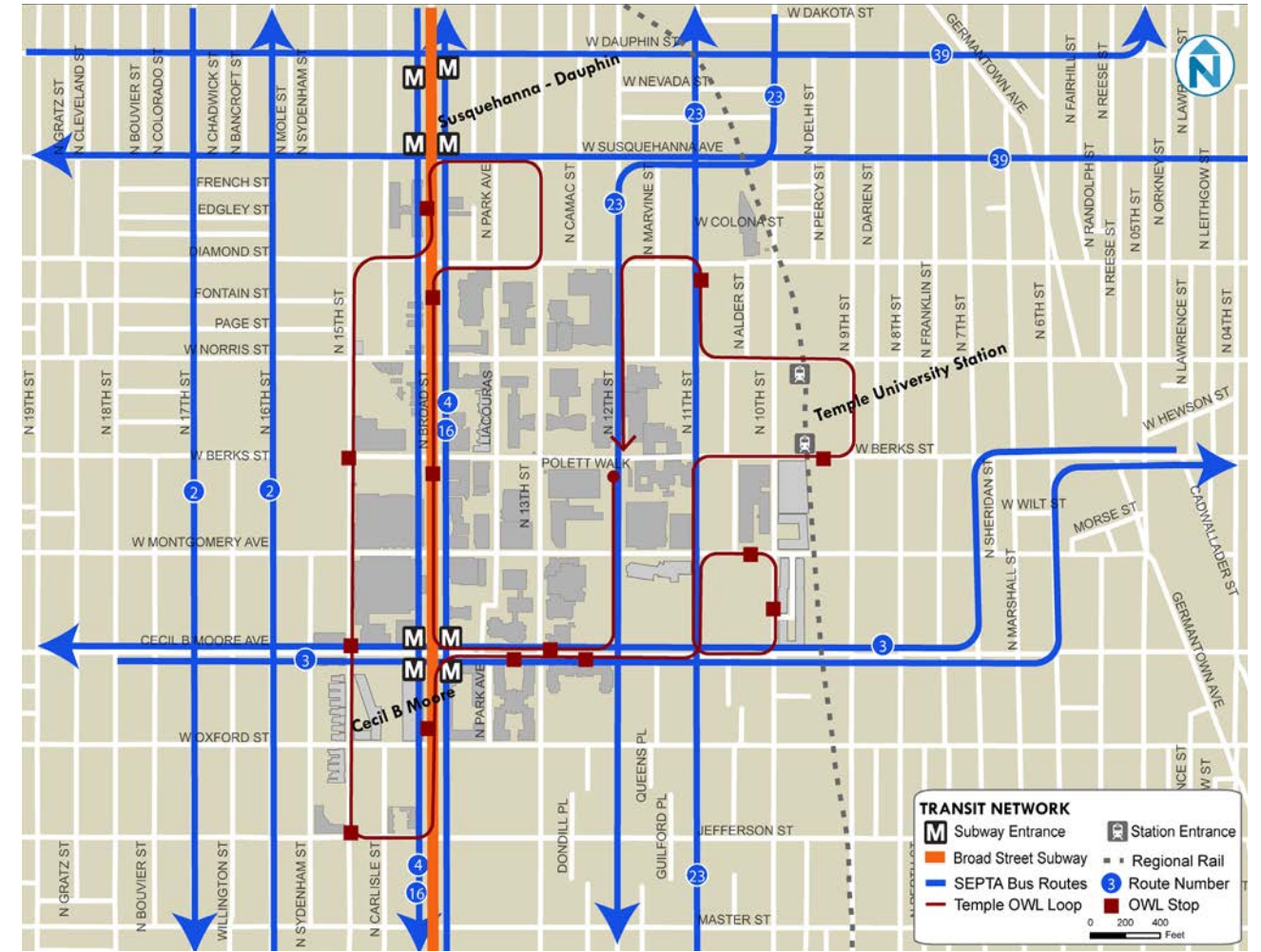
EXISTING UNIVERSITY TRANSIT

Temple University operates the following shuttles:

- Two shuttles nightly (5:30 PM to 6:00 AM, 7 days a week) on the main campus:
 - The OWL Shuttle has a fixed route every half hour with designated stops.
 - The TUr Door Shuttle departs every half hour from the transit hub at 12th Street and Polett Walk and drops students off at off-campus housing between 20th Street and 5th Street and from Cumberland Street to Girard Avenue.
- Intercampus shuttles provide service to the Ambler Campus and Auxiliary Services Building.

Route #	Streets on Route	Serves Neighborhoods	Weekday Peak Frequency	Service Hours	Average Weekday Ridership	On-Time Performance
2	16th Street (NB) 17th Street (SB)	South Philadelphia Center City North Philadelphia	10-12 min.	5:00 AM - 2:30 AM 7 days a week	6,951	74%
3	Cecil B Moore Avenue	Strawberry Mansion North Philadelphia	9-10 min.	Weekdays: 4:30 AM - 2:30 AM Saturdays: 5:00 AM - 2:30 AM Sundays: 5:30 AM - 2:30 AM	10,008	78%
4	Broad Street	Fern Rock North Philadelphia Center City South Philadelphia	12-16 min.	Weekdays: 5:00 AM - 2:30 AM Sat/Sun: 5:30 AM - 2:30 AM	6,280	72%
16	Broad Street	Olney North Philadelphia Center City	6 min.	Weekdays: 4:30 AM - 2:30 AM Sat/Sun: 5:30 AM - 2:30 AM	7,759	69%
23	11th Street (NB) 12th Street (SB)	South Philadelphia Center City North Philadelphia Chestnut Hill	6-7 min.	24 hours 7 days a week	23,756	72%
39	Dauphin Avenue (EB) Susquehanna Avenue (WB)	Kensington Fishtown North Philadelphia Strawberry Mansion	15-20 min.	Weekdays: 5:00 AM - 1:30 AM Sat/Sun: 5:30 AM - 1:30 AM	24,273	75%

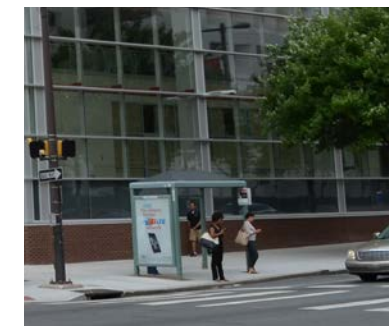
SEPTA bus routes serving Temple



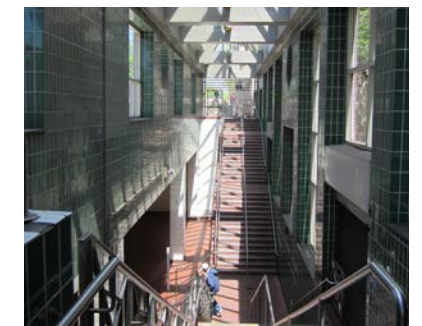
Temple University existing campus transit access network



Temple University Regional Rail Station



Bus shelter on Broad Street



SEPTA station at Columbia Plaza

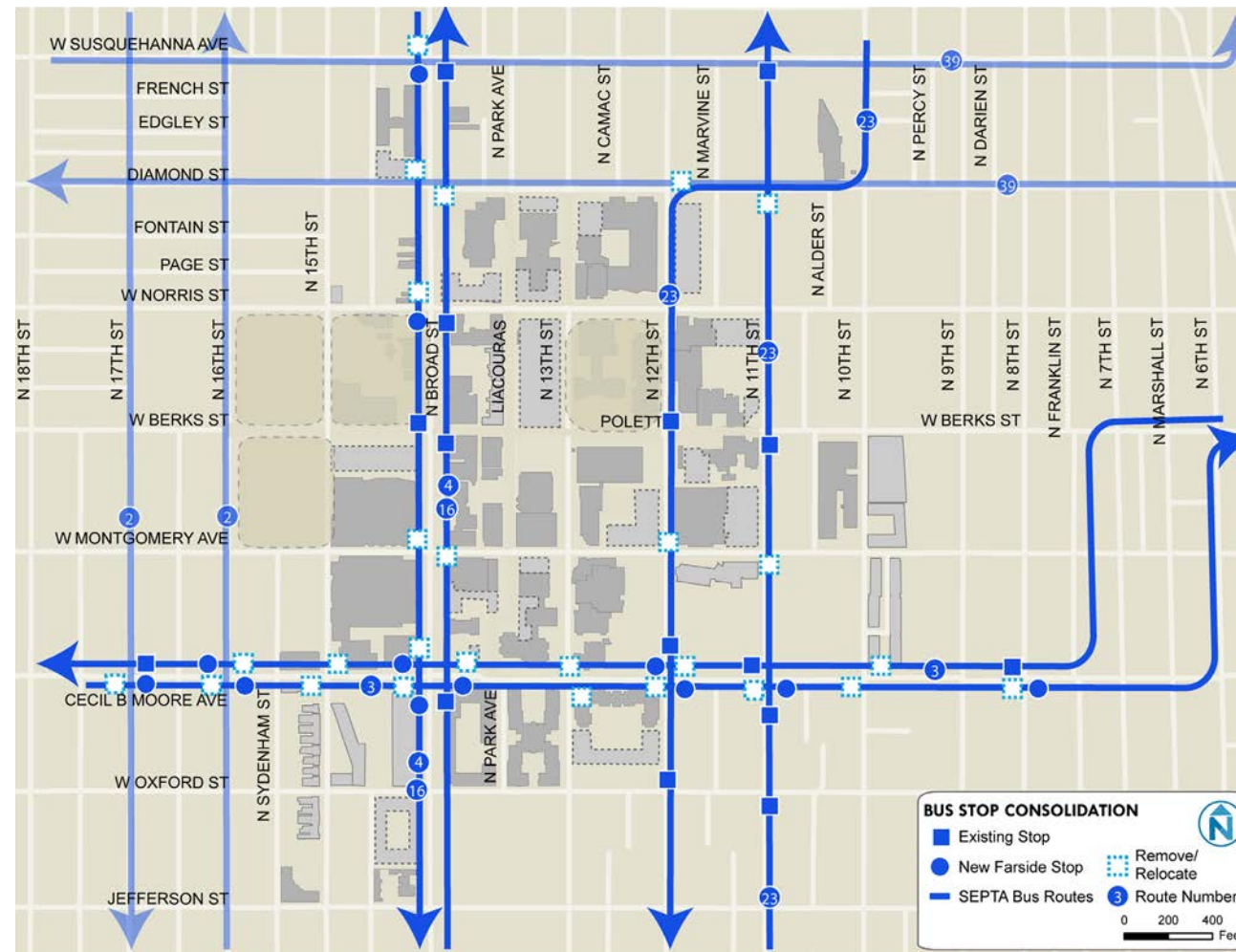
PROPOSED TRANSIT FACILITIES

In that the main campus is well served by transit, the design team focused on bus stop consolidation and far-side bus stops, in an effort to speed service.

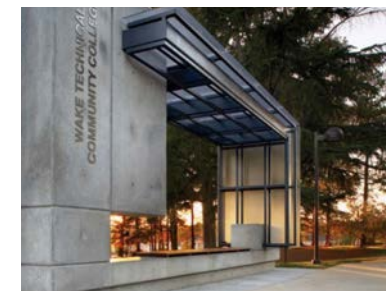
Stop consolidation and far-side bus stop relocation can reduce bus run-times, increase on-time performance, and improve pedestrian safety. According to the Delaware Valley Regional Planning Commission's (DVRPC) *Speeding Up SEPTA* report, a 71.4 percent reduction in the number of stops is associated with an 18.5 percent reduction in running time. Providing stops every other block on each of the routes through the campus would sufficiently serve bus riders and improve their travel time, potentially attracting ridership.

According to the National Association of City Transportation Officials (NACTO) *Urban Streets Design Guide*, far-side bus stops, "allow pedestrians to cross behind the bus, which is safer than crossing in front of the bus. On multi-lane roadways, they also increase the visibility of crossing pedestrians for drivers waiting at the signal." Far-side intersection stop placement reduces bus stop delay times slightly, by about 0.4 seconds per stop.

SEPTA Bus Stop Design Guidelines provides detailed dimensions for stop relocation and curb extensions (bus bulbs) and served as a guide for the recommended street design changes described in the Street by Street Recommendations (pp.2.36-2.46).



Bus stop relocation and consolidation plan for Temple University campus



Inspirational images: Transit shelters

STREET BY STREET RECOMMENDATIONS

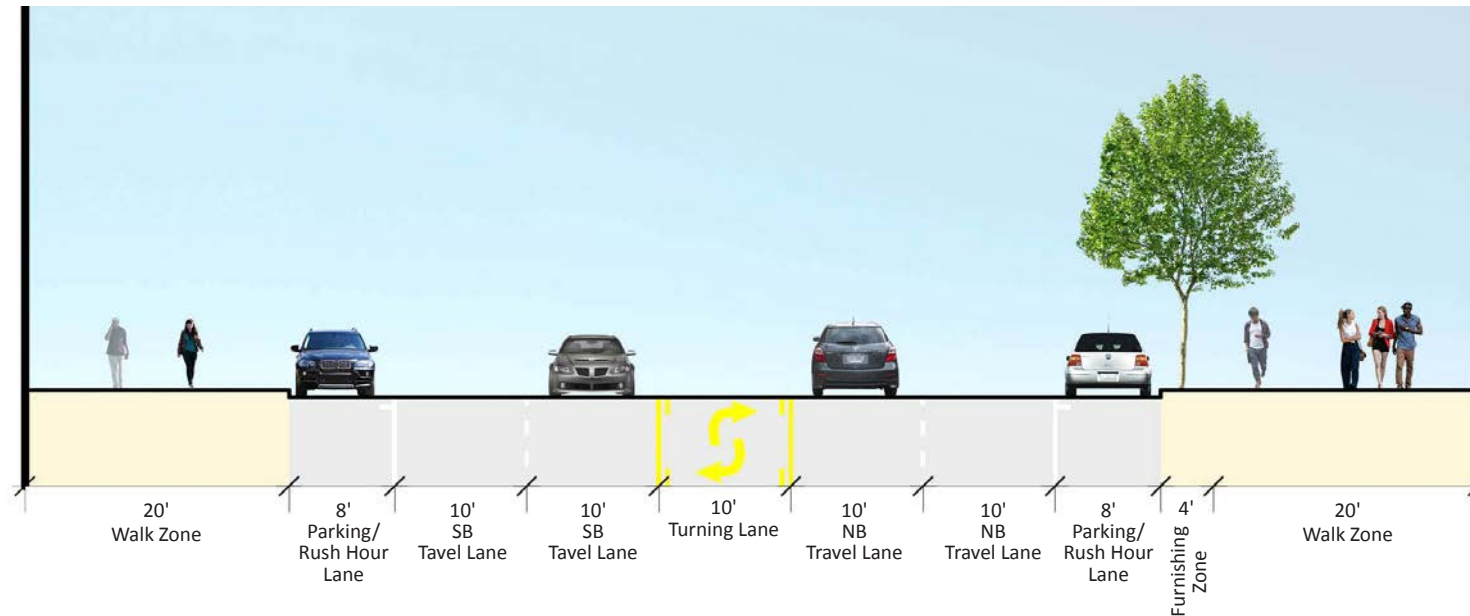
This section describes and makes recommendations for each street in and around Temple's main campus.

BROAD STREET

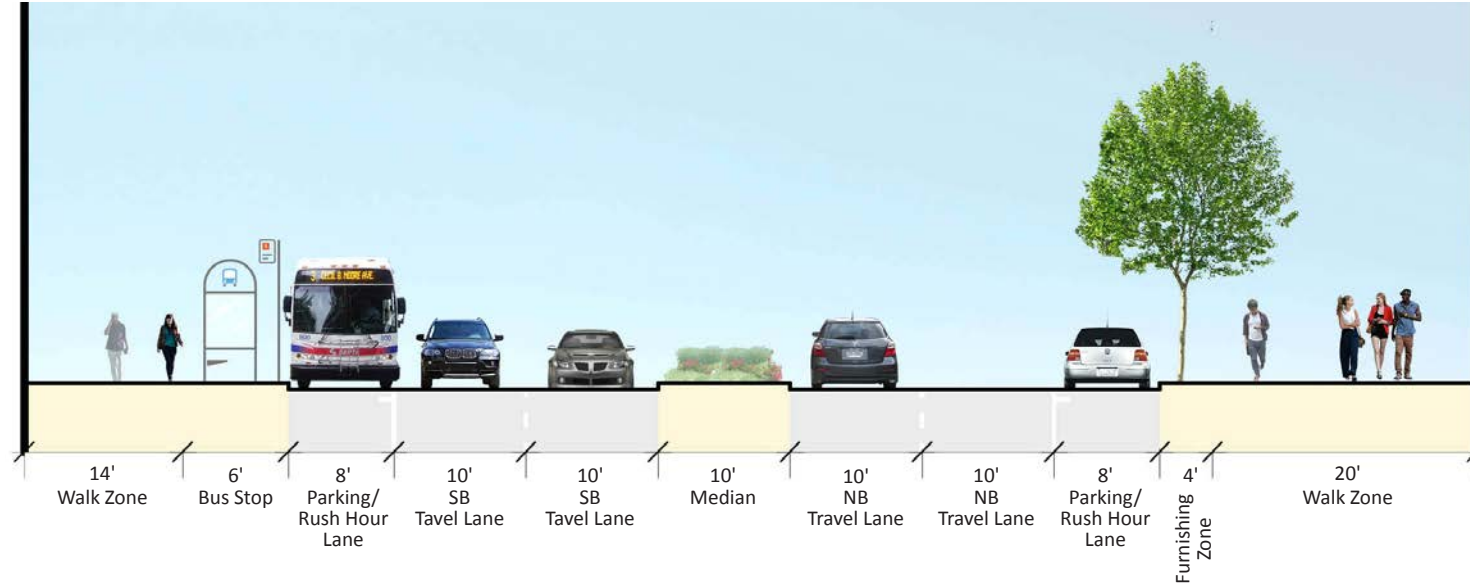


North Broad Street is an important axis in North Philadelphia, extending directly from City Hall, and bisecting Temple's campus. While it can appear to be auto-dominated (replete with rush hour lanes), there are substantial numbers of pedestrians crossing the street, walking along the street, waiting for the bus, accessing the subway (2,000 people in the peak hours) or simply talking to friends. To make the street more complete VERDANT TEMPLE proposes:

- A raised median instead of the current two-way-left-turn-lane. This will create a safe pedestrian refuge for people crossing the street.
- Far-side bus stops to speed up buses, increase pedestrian visibility and minimize auto congestion at the intersection.
- High visibility crosswalk markings at Polett Walk.



Broad Street - Existing



Broad Street - Proposed



Photo simulation of Polett Crossing

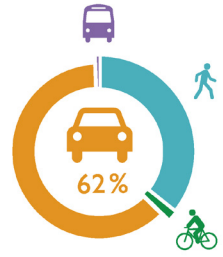


Extremely wide crosswalk leading to campus (MIT)

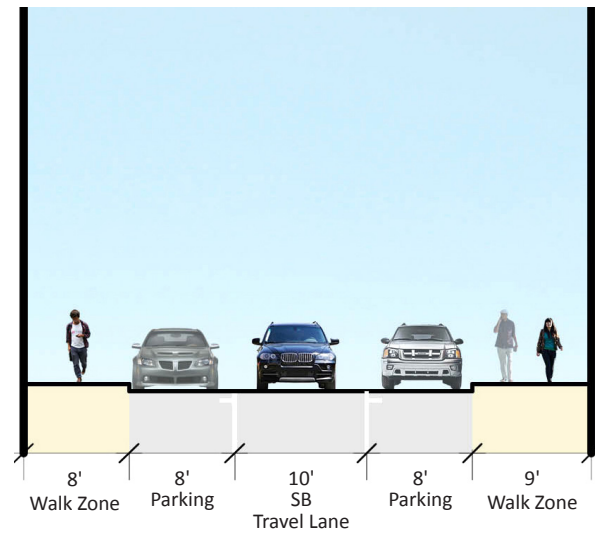


Large crosswalk connecting two halves of campus (University of Ottawa)

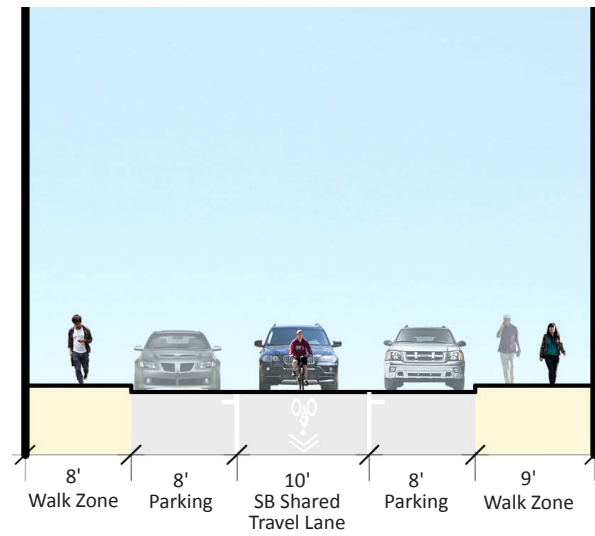
17th STREET



North 17th Street is west of campus and is primarily residential. No changes are proposed to the existing cross-section other than a sharrow in the travel lane. Curb extensions are proposed at the intersections with Diamond and Cecil B. Moore.



17th Street - Existing

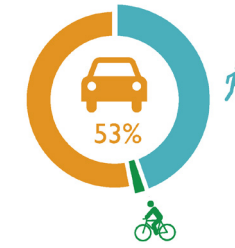


17th Street - Proposed

16th STREET

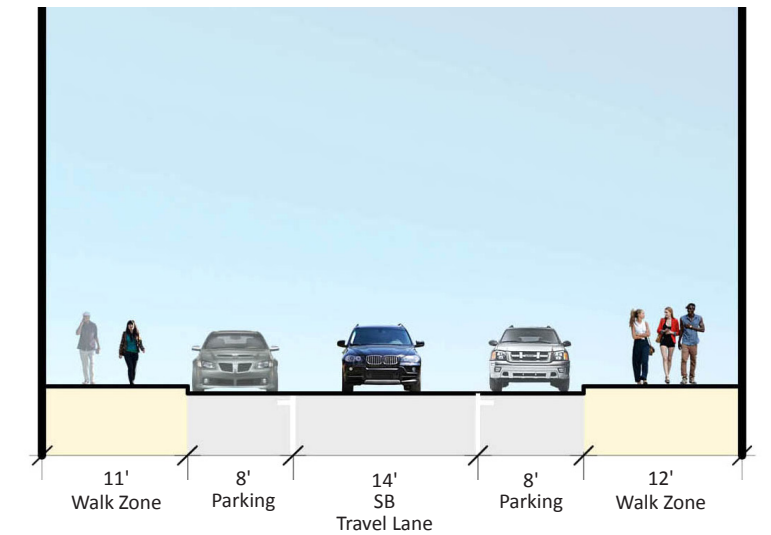
At the intersection with West Berks curb extensions are proposed to increase visibility of pedestrians accessing the western entrance of Polett Walk.

15th STREET

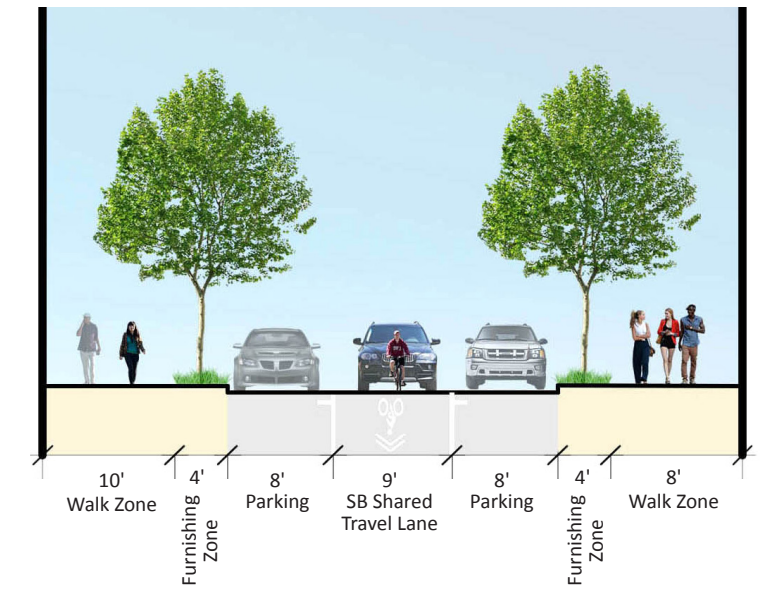


15th Street travels through the campus athletic facilities west of Broad. The following recommendations apply to the portion of 15th Street between Diamond and Cecil B. Moore:

- Narrower roadway and wider landscaped areas on the sidewalks.
- Sharrows in the roadway.
- Speed humps per the Philadelphia Bike Plan.
- Curb extensions at the intersections.



15th Street - Existing



15th Street - Proposed

13th STREET



North 13th Street passes through the heart of campus, and will become more integral to the campus with the creation on the Green and library. Although it is open to autos, almost two-thirds of the volume on the street is pedestrian and cycling. Through auto traffic is restricted during peak pedestrian times.

To complement the proposed library and Green, VERDANT TEMPLE proposes to emphasize the non-motorized nature of 13th Street from Cecil B. Moore to Diamond. This “shared” street will become an important walkway through campus, taking pressure off Liacouras Walk. A cycle lane would be demarcated down the center of the street.

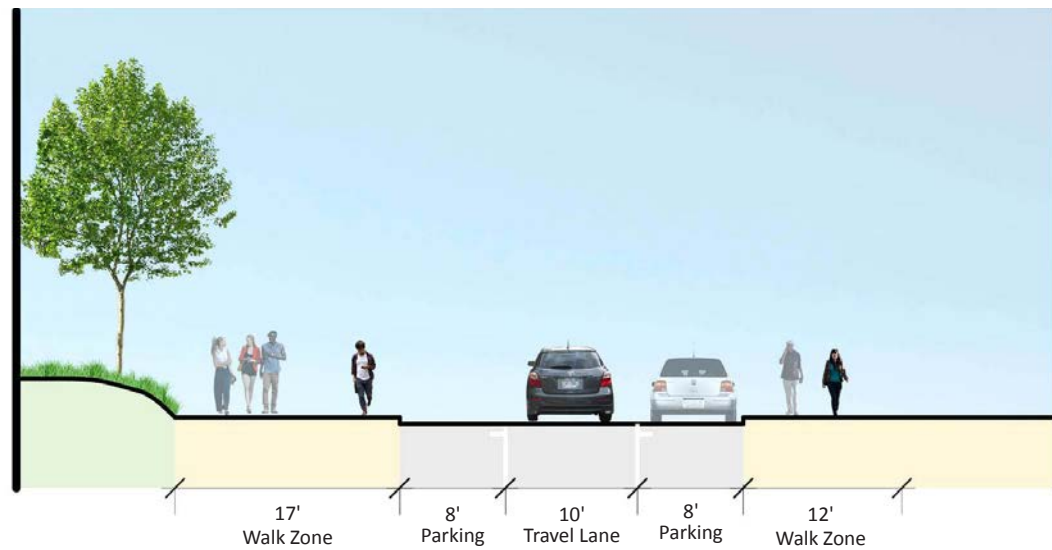
ADA accessible parking is provided on 13th Street south of Montgomery. This parking is currently located at the rear of Ritter Hall and the Disability Resources and Services Office. Relocating the parking to the front entrance of the Office on Cecil B. Moore will provide easier access for those needing accessible parking.



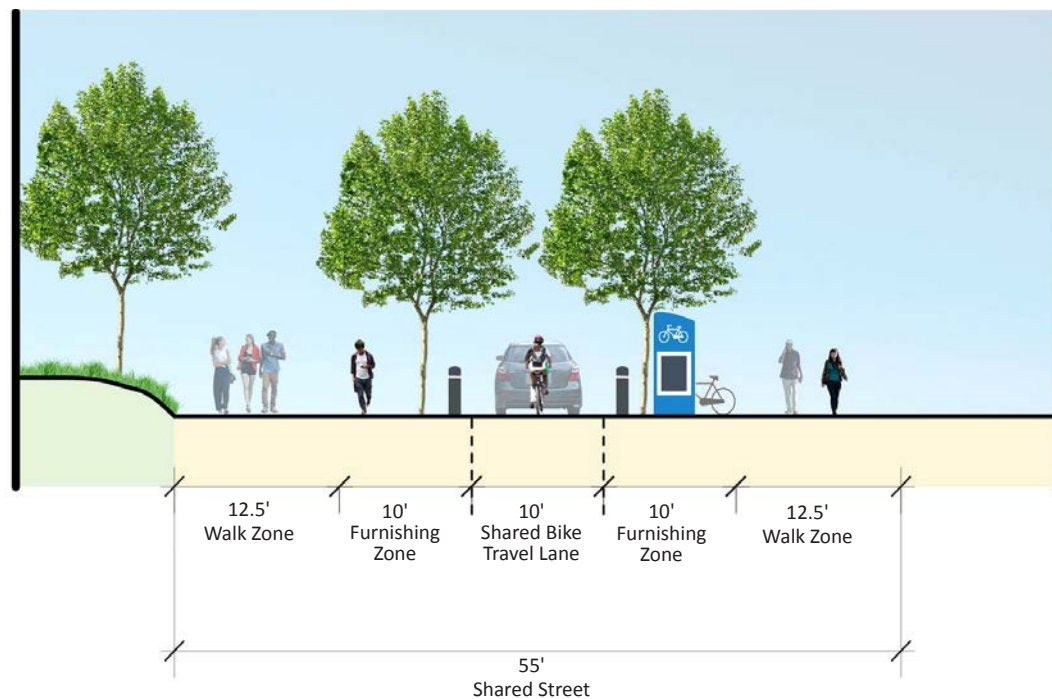
Bicycle route medallions (Brooklyn Bridge)



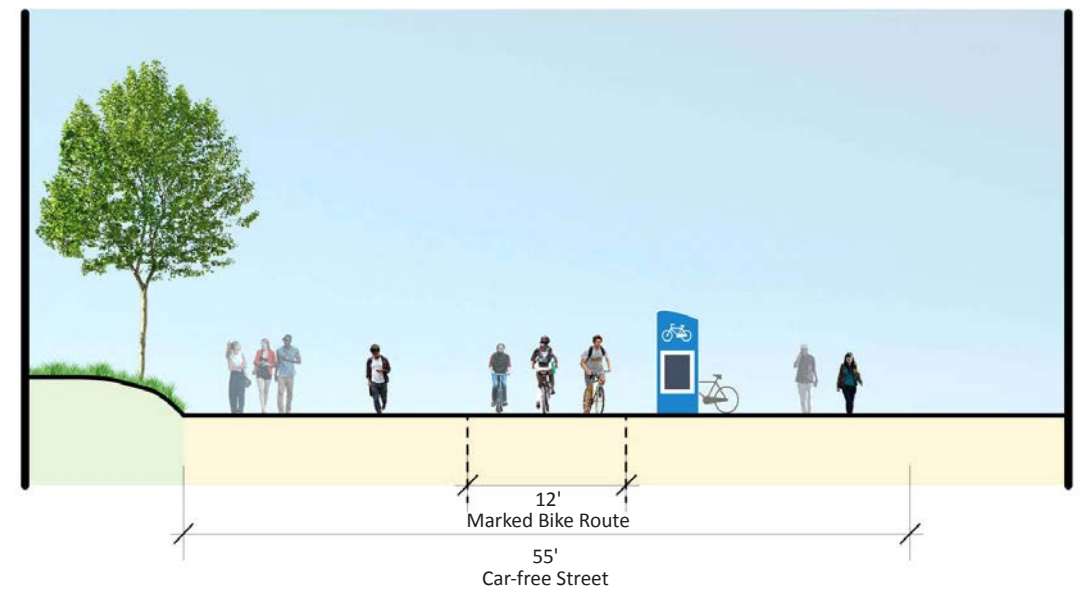
Yield to pedestrians sign (New York City Greenway)



13th Street - Existing



13th Street - Option A: Proposed shared street design



13th Street - Option B: Proposed pedestrian and bicycle corridor



East Campus Mall (University of Wisconsin)



Library Mall and food vendors (University of Wisconsin)



Bicycle-only section of street (University of California Davis)



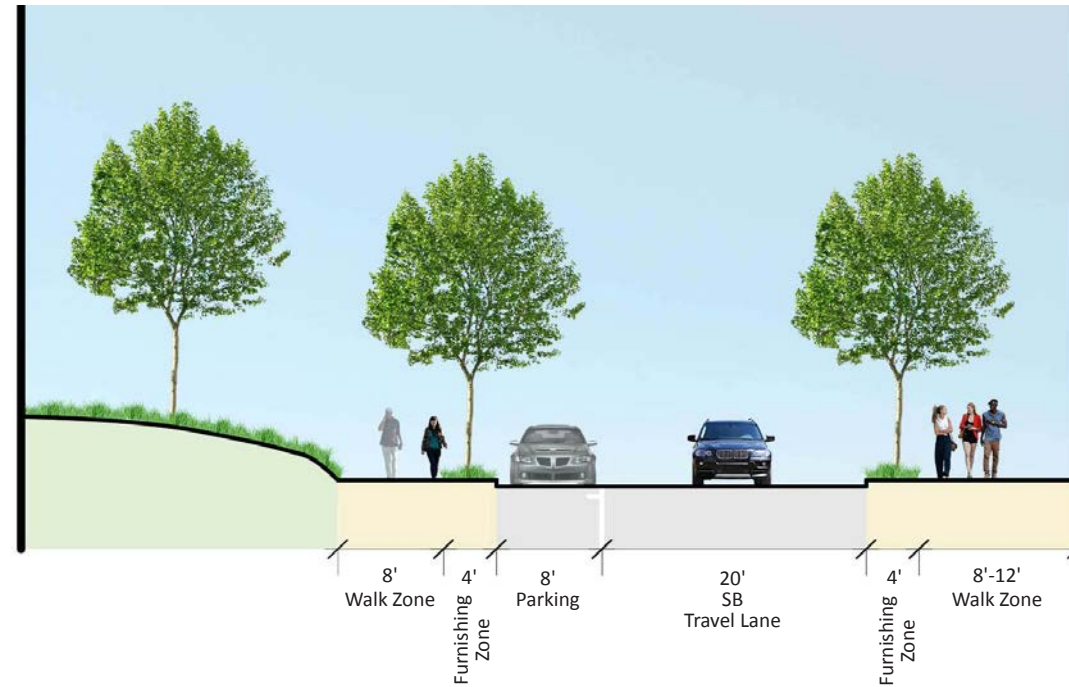
Cyclists mix with pedestrians along busy paths (Virginia Commonwealth University)

12th STREET

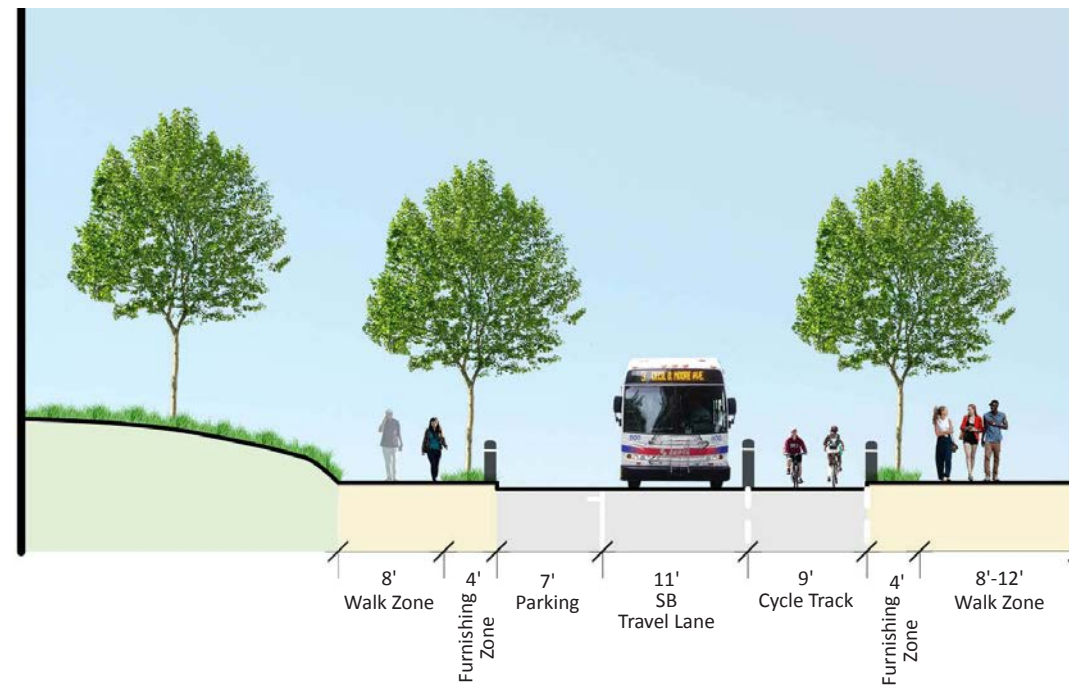


North 12th Street will become the eastern boundary of the Green. VERDANT TEMPLE proposes that the street maintain a mobility function for SEPTA buses and limited through auto traffic, but in a “shared street” concept. This will feature:

- Bollards instead of curbs, which will provide pedestrian priority and level crossings to move between academic buildings on both sides of the street.
- Separate two-way bike lane, a continuation of the bike lane to the south.
- Limited on street parking, primarily for deliveries.



12th Street -Existing



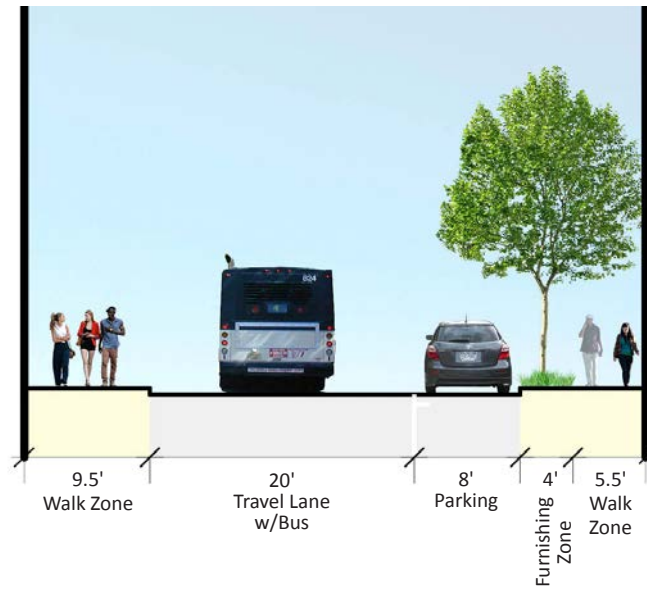
12th Street - Proposed



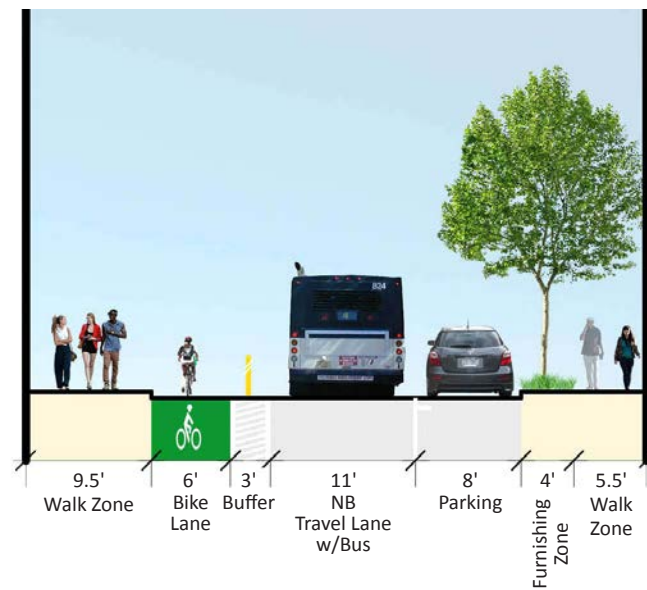
Example: State Street adjacent to the University of Wisconsin in Madison. The street was converted into a shared street, prioritizing pedestrians and bicycles. The design maintained the existing curb and bus access but added significant bicycle parking, sidewalk cafes and benches and restricted curbside parking to commercial unloading during the early morning.

11th STREET

North 11th Street roughly defines the eastern edge of the main campus. There are various land uses along the street as well as a SEPTA bus route. There is on street parking on one side, with the other side ill-defined. VERDANT TEMPLE proposes the installation of a separated bike lane.



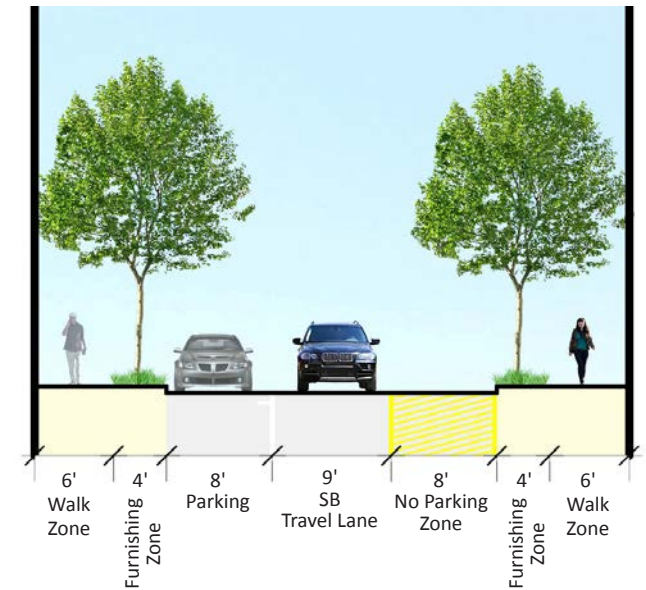
11th Street - Existing



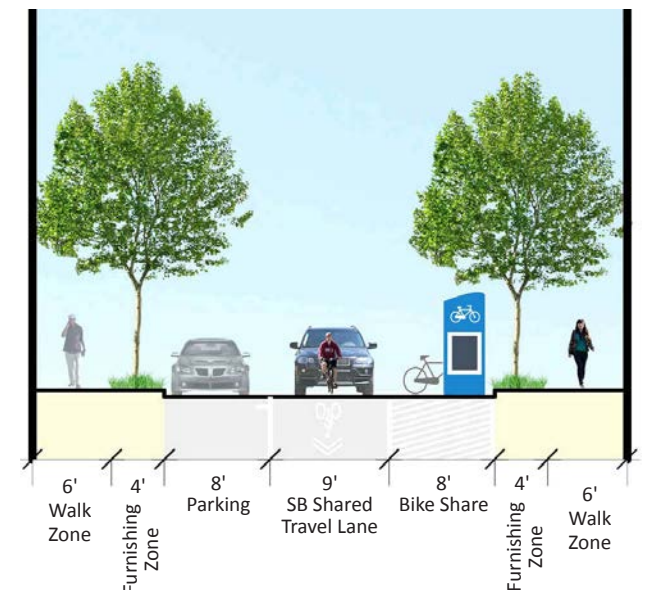
11th Street - Proposed

10th STREET

North 10th Street runs between the campus and the SEPTA Regional Rail tracks. The only modification proposed in VERDANT TEMPLE is a bike share station in the No Parking Zone.



10th Street - Existing

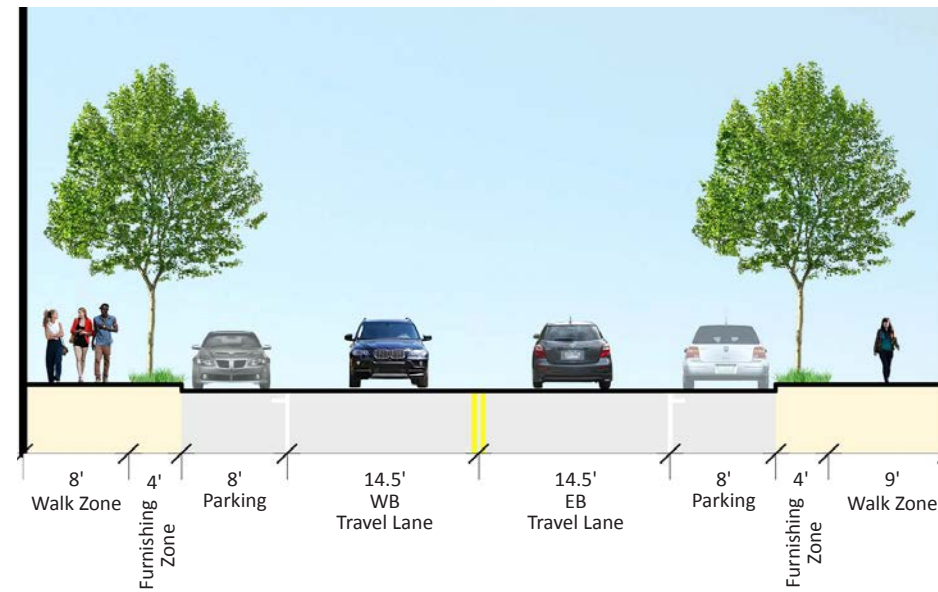


10th Street - Proposed

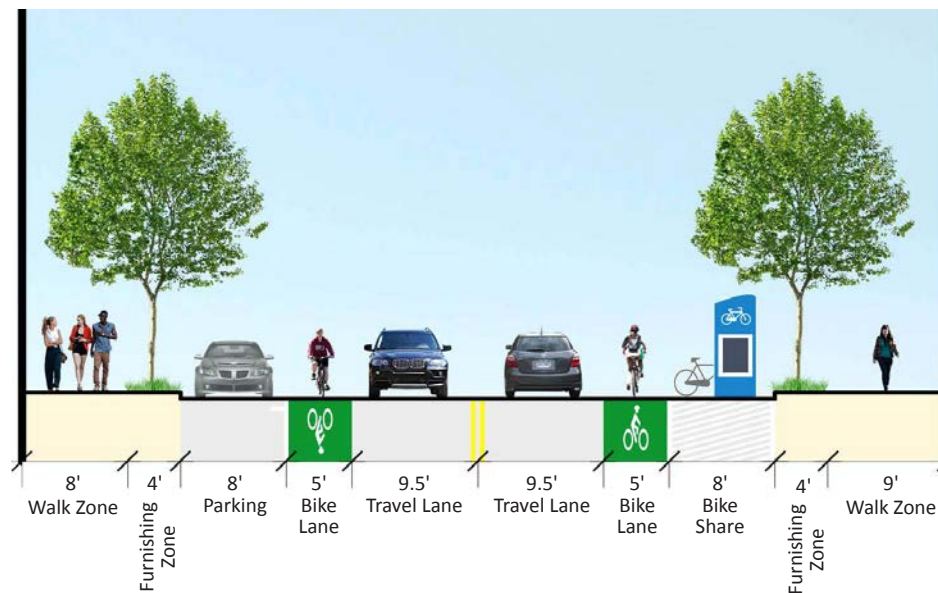
DIAMOND STREET



West Diamond Street forms the northern boundary of campus and serves an important mobility function. VERDANT TEMPLE proposes to narrow the travel lanes and add bike lanes, connecting to proposed bike lanes to the east and west.



Diamond Street - Existing



Diamond Street - Proposed

CECIL B. MOORE AVENUE

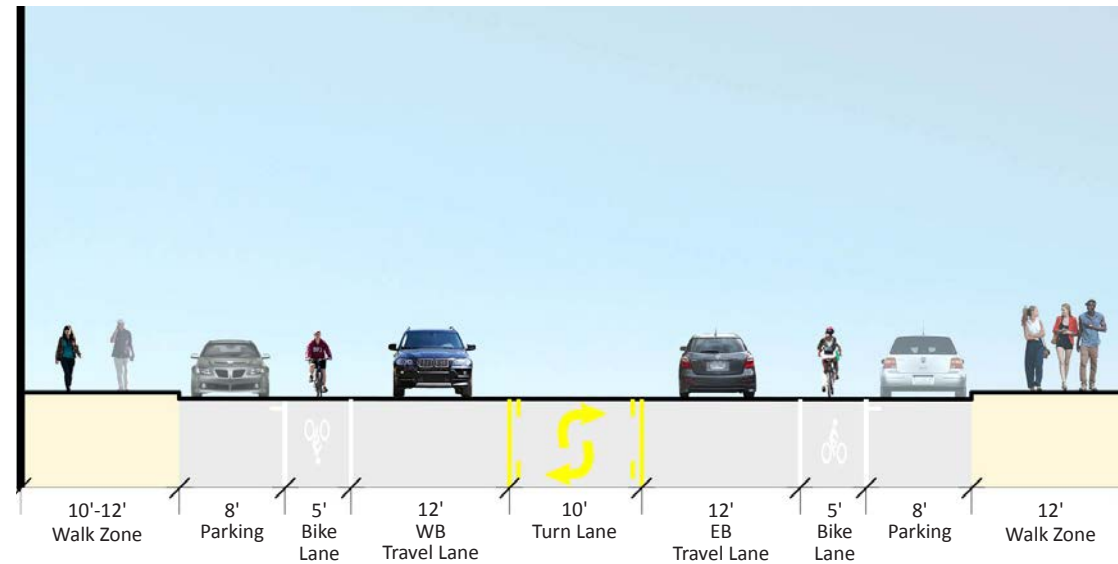


Cecil B. Moore Avenue forms the southern edge of campus and bridges between it and housing to the south. It is essentially oriented to automobiles. VERDANT TEMPLE proposes to make it a more complete street, especially with regard to pedestrian crossings.

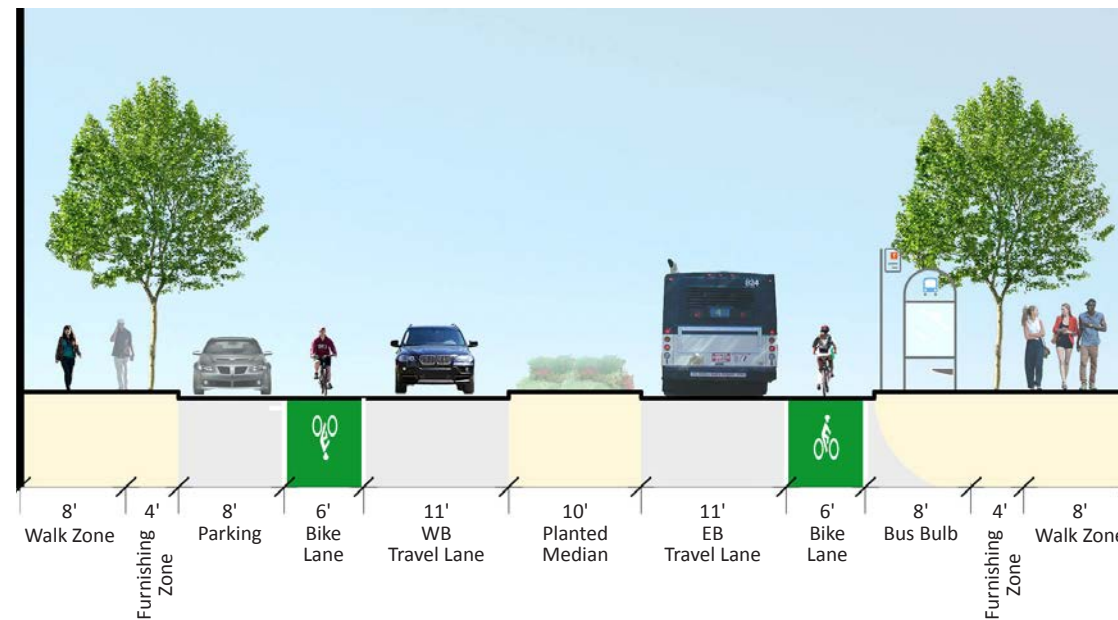
East Of Broad

East of Broad the street will feature:

- A raised median instead of the current two-way-left-turn-lane. This creates a safe pedestrian refuge for people crossing the street. It will slow traffic, eliminate unsafe turning movements and provide a pedestrian refuge for crossing pedestrians.
- Far-side bus stops to increase pedestrian visibility and minimize auto congestion at the intersection.
- Bus bulbs to speed up buses by reducing merges into traffic.
- Painted bike lanes.



Cecil B. Moore Avenue - Existing east of Broad Street



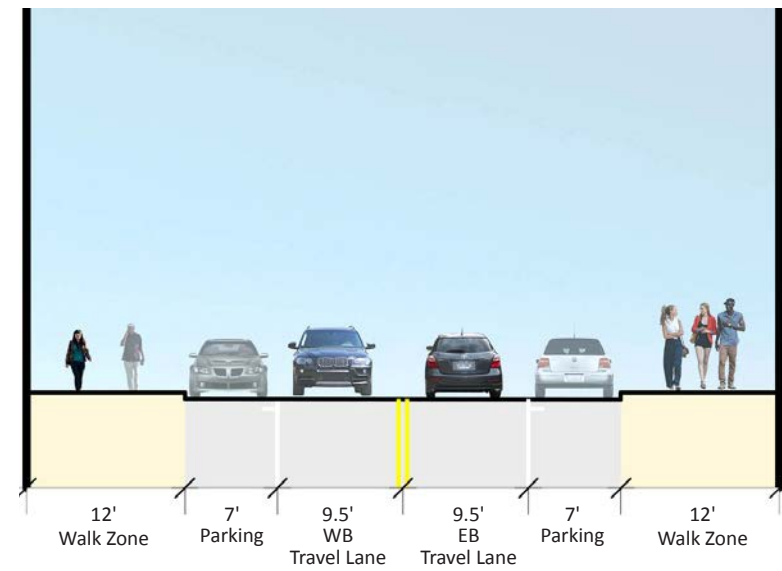
Cecil B. Moore Avenue - Proposed east of Broad Street

West Of Broad

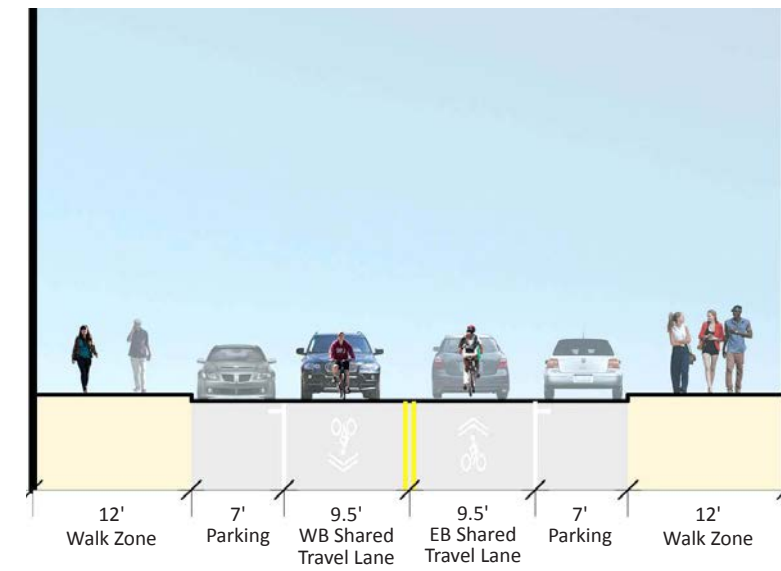
West of Broad Street, the street narrows significantly. A shared bicycle and auto lane is proposed for the existing cross-section.

Between North Park Avenue (Liacouras Walk) and North Broad Street, Cecil B. Moore Avenue shifts alignment and narrows from 60 to 33 feet (curb to curb). This location is where many riders access the SEPTA Broad Street subway and is a high pedestrian injury and fatality intersection. VERDANT TEMPLE developed a layout for this location to:

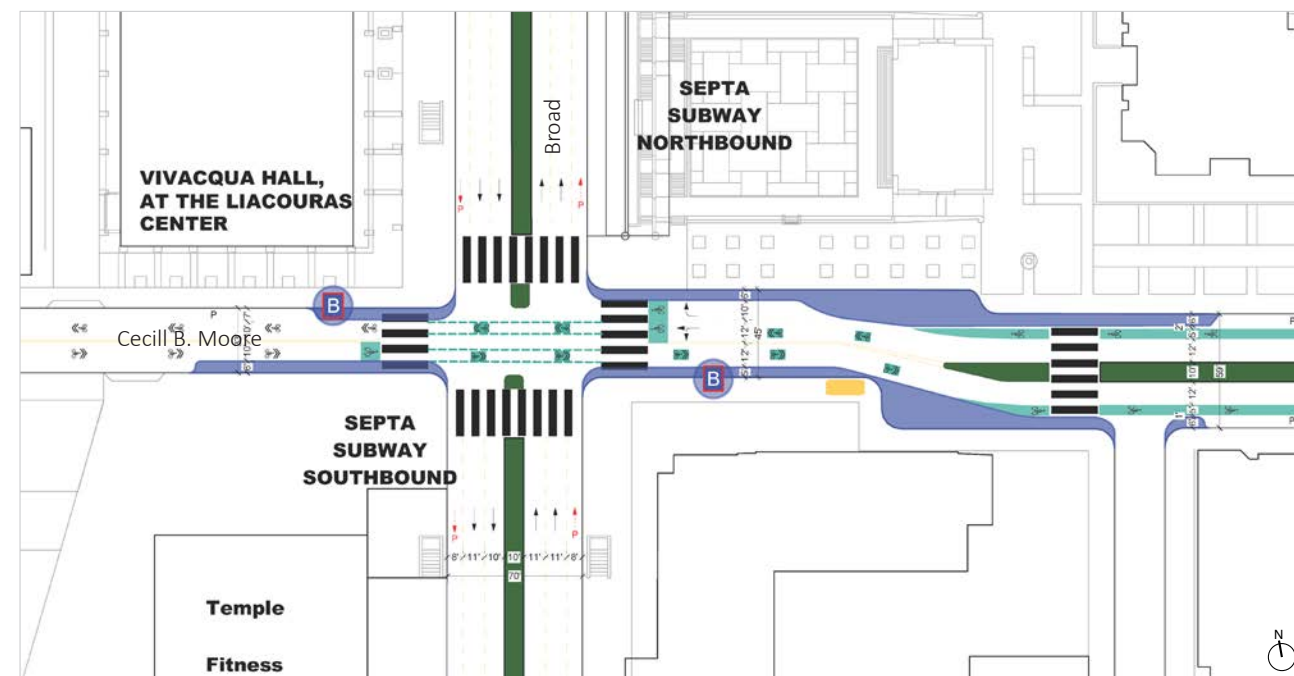
- Prioritize pedestrian crossings, especially that at Liacouras Walk.
- Align travel lanes so that drivers have clear direction.
- Convert unnecessary pavement into wider sidewalks.
- Clearly articulate routes for cyclists.



Cecil B. Moore Avenue - Existing west of Broad Street



Cecil B. Moore Avenue - Proposed west of Broad Street



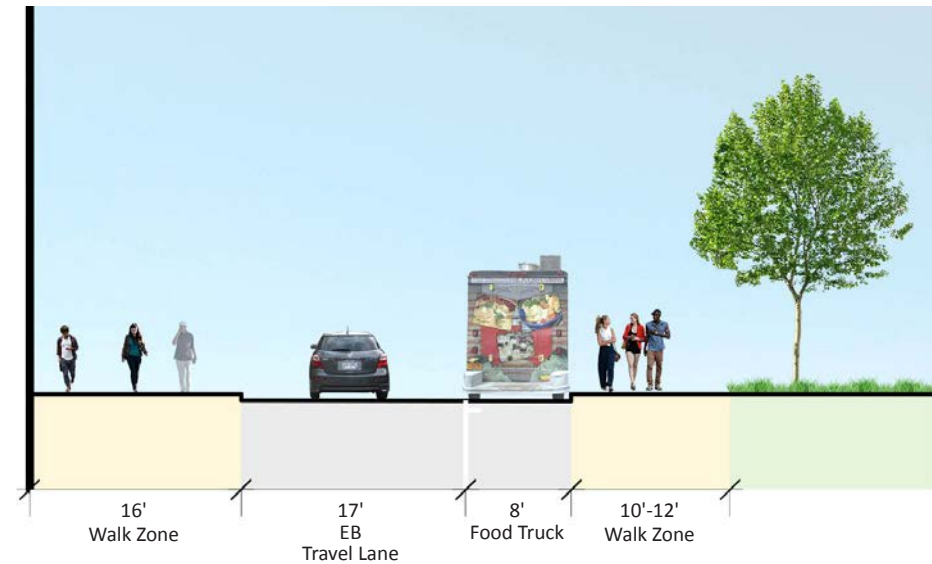
Intersection of Cecil B. Moore Avenue and Broad Street

MONTGOMERY AVENUE



Montgomery Avenue runs through the southern half of campus and is an important vehicle access way to the Liacouras and Montgomery Garages. Food trucks are a fixture on the south side of the street. VERDANT TEMPLE proposes converting the on street parking on the north side to a contraflow bike lane with sharrows placed in the main travel lane. Together with Norris Street, these two bicycle priority corridors will form important links for cyclists traveling east and west, reducing the bicycle traffic on Polett Walk.

The University has explored relocating food trucks from streets to a food truck park at the corner of 12th and Montgomery to reduce the traffic congestion at this intersection and to increase pedestrian safety. A Food truck park will improve the vending experience for vendors by adding services and for customers by adding lighting, seating and other amenities.



Montgomery Avenue - Existing



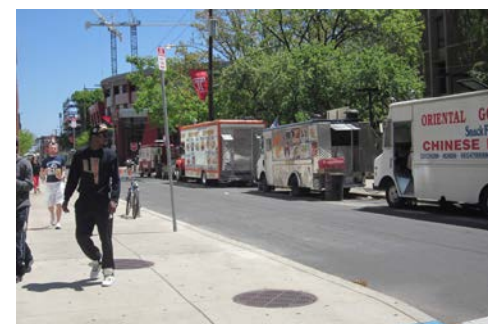
Montgomery Avenue - Proposed A



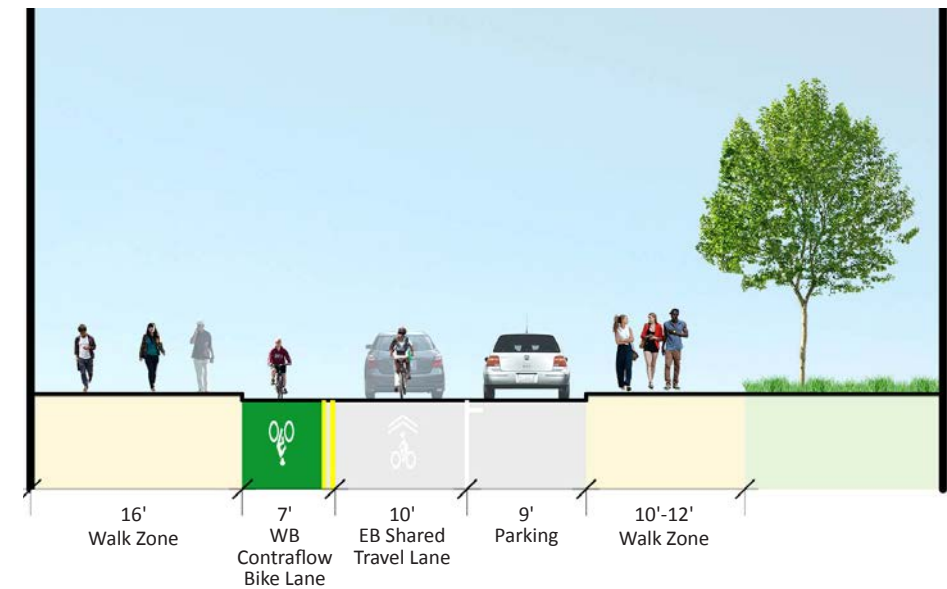
Food Truck Vending on Montgomery Avenue



Mid-block crossing: Montgomery at Liacouras Walk



Food Trucks Parked on Montgomery Avenue



Montgomery Avenue - Proposed B

LIACOURAS WALK



Liacouras Walk is the main north-south walkway through campus. It is a primary route from the Cecil B. Moore subway station and to numerous residential buildings. About two percent of users are cyclists. The main changes for Liacouras Walk pertain to its crossing of east-west streets:

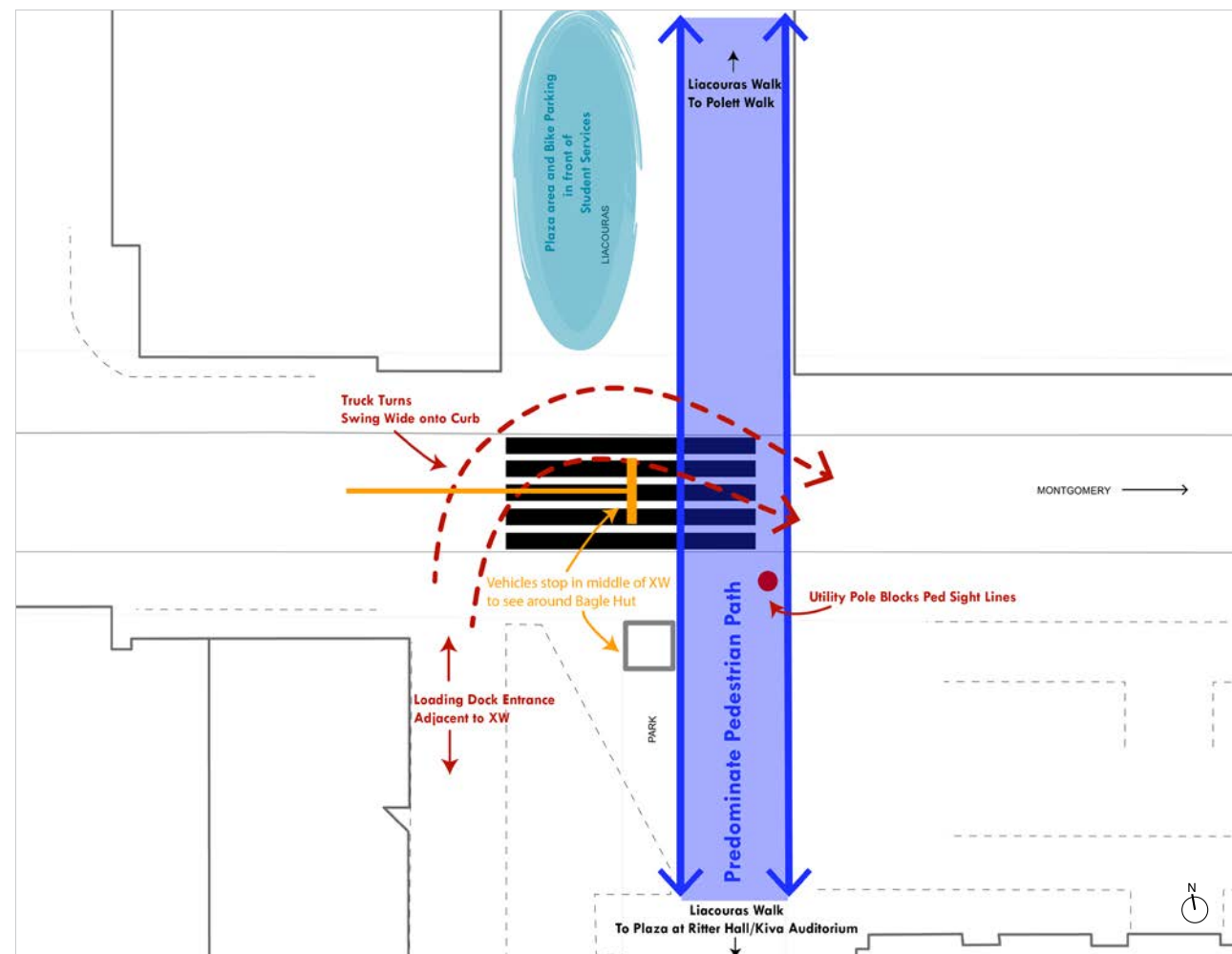
- Add raised crosswalks at Montgomery Avenue and Norris Street; locate to better align with pedestrian desire lines; design to discourage delivery trucks and personal vehicles from loading and unloading in the crosswalks.
- Remove/relocate obstructions (utility poles, walls, fences) at and near crosswalks.
- Remove structures which block visibility between drivers, cyclists and pedestrians.
- Relocate loading dock at Montgomery Avenue.



Liacouras Walk at Montgomery Avenue (looking south). Yellow lines indicate primary pedestrian path. Note utility pole obstructs path, Bagel Hut blocks a portion of the walkway, and the striped crosswalk is not in line with the pedestrian path.



Example: Traffic calming features (raised crosswalk) in the neighborhoods surrounding Harvard and MIT in Cambridge, MA.



Liacouras walk design issues at Montgomery Avenue

POLETT WALK AND WEST BERKS STREET



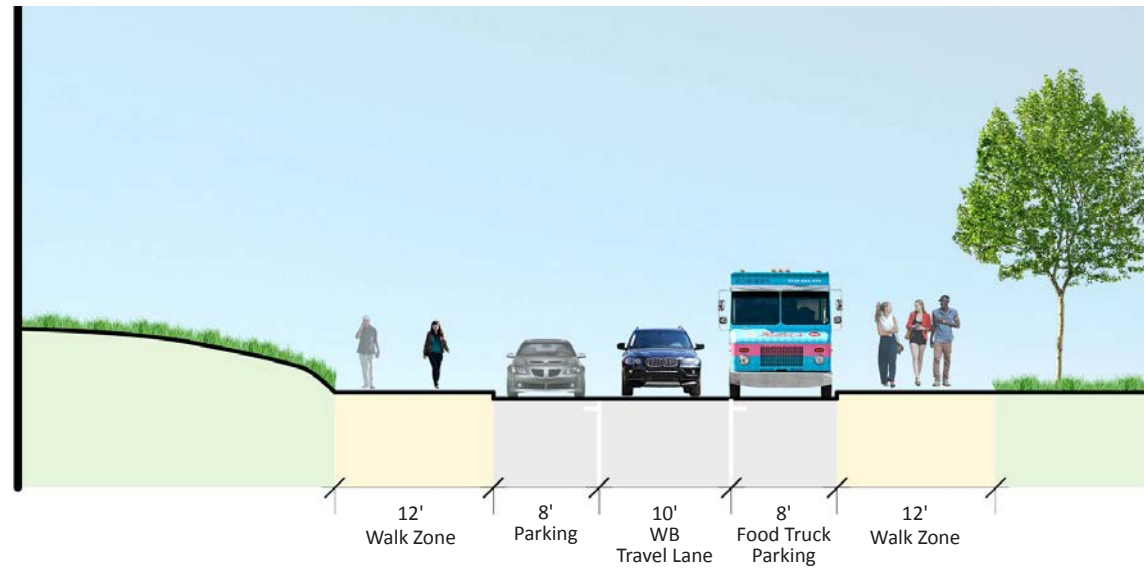
Polett Walk is the main east-west pedestrian spine of campus. It feeds into West Berks Street; to the east it is a crucial pedestrian connection to the Temple Regional Rail station. Similar to Liacouras Walk, bicycle access is proposed to be maintained on Polett Walk via in-pavement markers and Yield to Pedestrian signage.

NORRIS STREET

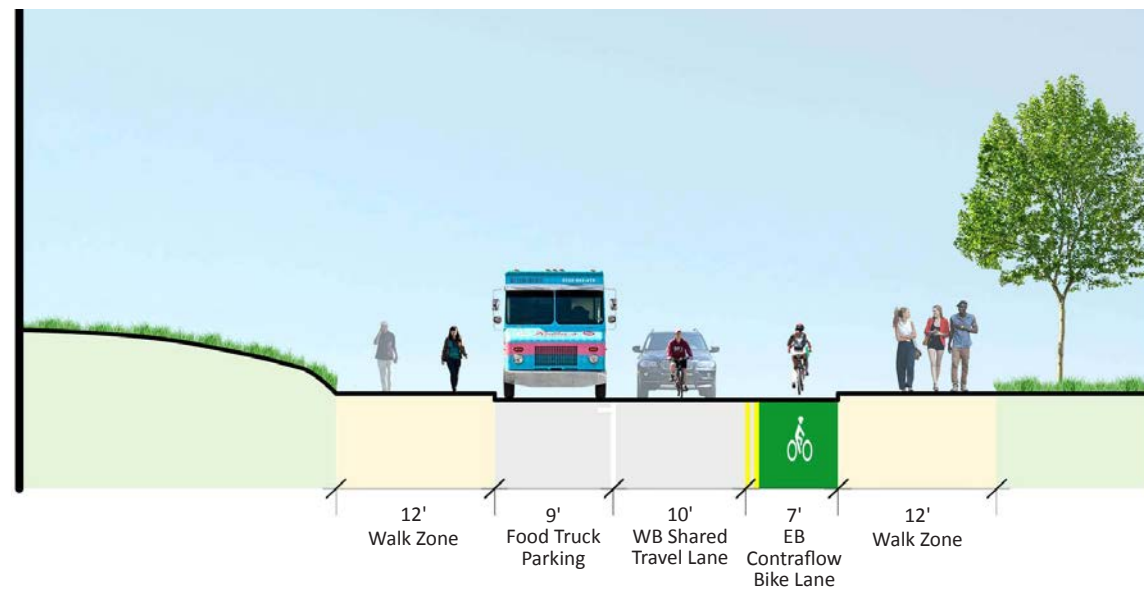


West Norris Street divides the upper half of the campus and will form the northern edge of the Green. Food trucks are located on the north side of the street where they pose serious safety problems, cause congestion and limit visibility of on-coming traffic for pedestrians.

VERDANT TEMPLE proposes replacing the on street parking on the south side with an eastbound (contraflow) bike lane. Sharrows would be placed in the travel lane for westbound cyclists. Bicycle lanes along Norris will provide a more direct bicycle access to both the east and west sides of the campus. Over 40% of the campus community cited more direct bike lanes as key to encouraging more cycling.



Norris Street - Existing



Norris Street - Proposed



Food Trucks on Norris Street



Food Truck Vending on Norris Street

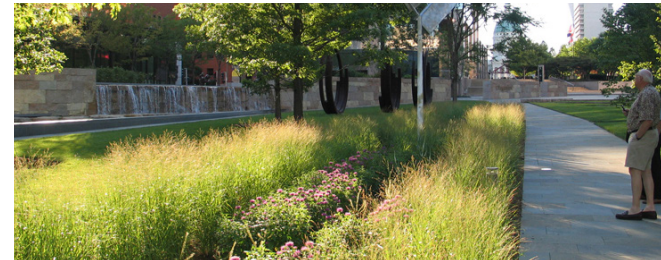


Tyler School of Art on Norris Street

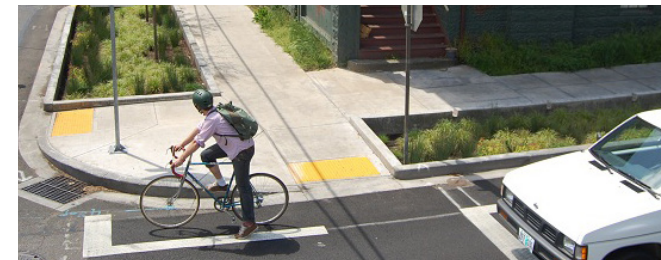
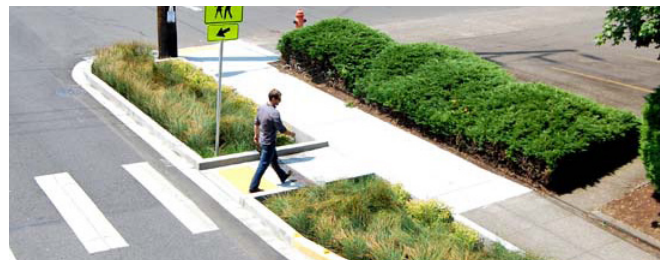
SYSTEM:
STORMWATER



Bioretention



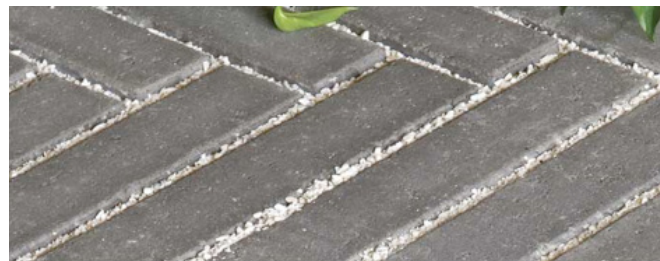
*Tree Trench/
Bumpout*



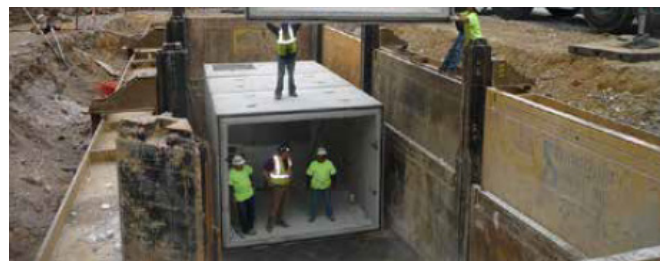
Green/ Blue Roof



Pervious Paving



*Subsurface
Collection*



Bioretention

Tree Trench/ Bumpout

Green/ Blue Roof

Pervious Paving

Subsurface Collection

SYSTEM: STORMWATER MANAGEMENT

Background

An analysis of Temple’s main campus was performed to evaluate the potential for regional and localized stormwater management practices that may accommodate present and future campus development. VERDANT TEMPLE describes and illustrates how to integrate recommendations based on these practices with proposed campus building and landscape changes, new public spaces and pedestrian and vehicle circulation modifications.

In identifying potential opportunities for stormwater infrastructure, a focus was placed on green stormwater infrastructure (GSI) improvements. GSI incorporates vegetation and soil to manage stormwater runoff and reduces the volume of runoff from impervious surfaces by utilizing infiltration, evaporation, transpiration and reuse. Among the list of potential GSI systems are green roofs, porous pavements, bioretention areas, tree trenches and curb extensions. These opportunities will contribute to Temple’s goals for increased environmental sustainability, increased green space and reduced utility costs associated with stormwater runoff.

The VERDANT TEMPLE stormwater plan also identifies potential public/private partnership opportunities, where the University might invest in stormwater practices that manage runoff from the public streets and sidewalks. The costs of these joint projects might be shared with the City of Philadelphia or the University might get stormwater fee credit towards unmanaged impervious areas on their campus.

Existing Conditions

Stormwater runoff from the vast majority of the campus property and city streets that cross through the campus is drained via city-owned combined storm/sanitary sewers to water pollution control plants (WPCP). During rainfall events, the capacity of the WPCP may be overwhelmed and a combination of polluted stormwater and raw sewage is discharged directly to the Delaware River. Such an event is referred to as a combined sewer overflow (CSO).

Stormwater runoff from Temple’s campus is regulated by the Philadelphia Water Department (PWD). In addition to providing drinking water for the City of Philadelphia, one of PWD’s primary goals is to reduce the frequency of CSOs, for which the City is fined by the Pennsylvania Department of Environmental Protection (PADEP). In

2006, PWD enacted Stormwater Management Regulations that require private and public land development and redevelopment projects to provide management of stormwater quality and quantity meeting specific criteria. Projects in Philadelphia that cause greater than 15,000 square feet of earth disturbance are subject to PWD’s Stormwater Management Regulations.

Currently the stormwater regulations require that the first inch of runoff from impervious surfaces (building roofs and ground-level pavements) be managed, preferably via infiltration into the ground. If infiltration is not possible due to poor soil conditions, utility conflicts or other constraints, then the runoff must be captured, detained and released at a specified rate. It is anticipated that the 1 inch requirement will be increased to 1.5 inches in 2015. This section of VERDANT TEMPLE focuses on the area of land being managed. In this way, the plan tracks the existing and proposed areas being managed, regardless of the amount of runoff capture required by the regulations. For portions of this section where stormwater facilities are sized for volume (e.g., the green regional system), the 1.5 inch requirement is used to conform to the anticipated 2015 increase.

In addition to compliance with the stormwater regulations, Temple’s campus is located within a known flooding area and is therefore subject to meeting additional Public Health and Safety (PH&S) rates. The existing infrastructure in the PH&S area is undersized for the amount of storm and sanitary sewage flow generated by the contributing drainage area. As a result, flooding may occur during large rain events and/or capacity of the WPCP may be exceeded, causing pollution of the Delaware River.

Temple’s main campus comprises approximately 10 percent of the PH&S area, so increased management of stormwater runoff from University properties could provide substantial improvements to the PH&S problem. Projects located within PH&S areas are required to comply with a maximum release rate for 1- through 10-year storm events. This rate is determined by PWD based on analysis of the available capacity for the affected sewershed of a project. PWD has provided a required PH&S rate of 0.35 cubic feet per second per acre of project earth disturbance for Temple projects.

In June 2011, PWD signed a Consent Order and Agreement with the PADEP for implementation of their

landmark 25-year control plan titled *Green City, Clean Waters*. One of the performance standards included within this plan involves the development of GSI across the City to manage public rights-of-way. Incorporating GSI processes within an urbanized environment reduces flow to the combined sewer system, thereby aiding in the reduction of CSOs.

In February 2013, Temple University and the Philadelphia Water Department signed a Memorandum of Understanding (MOU) to create a collaboration called the Temple-PWD Green Campus Initiative. The initiative seeks to foster the integration of sustainable stormwater management designs into the ongoing development and redevelopment of Temple’s campus. The MOU expired in February 2014, though the University remains committed to working with PWD to improve stormwater runoff conditions from the campus.

In 2009, to fund the implementation of the *Green City, Clean Waters* control plan, PWD instituted a monthly parcel-based stormwater fee program for all non-residential properties within city limits. Under this program, PWD has determined the impervious area and parcel area for each property in Philadelphia using aerial photography and City tax record information. Fees are assessed at a rate per 500 square feet of impervious area and parcel area. For properties with existing impervious areas, owners can reduce their stormwater fee by voluntarily implementing stormwater management controls that meet PWD requirements and then applying for fee credits. Newly constructed projects that incorporate required stormwater management facilities must also apply for fee credits for the new systems.



City owned combined storm and sanitary sewer

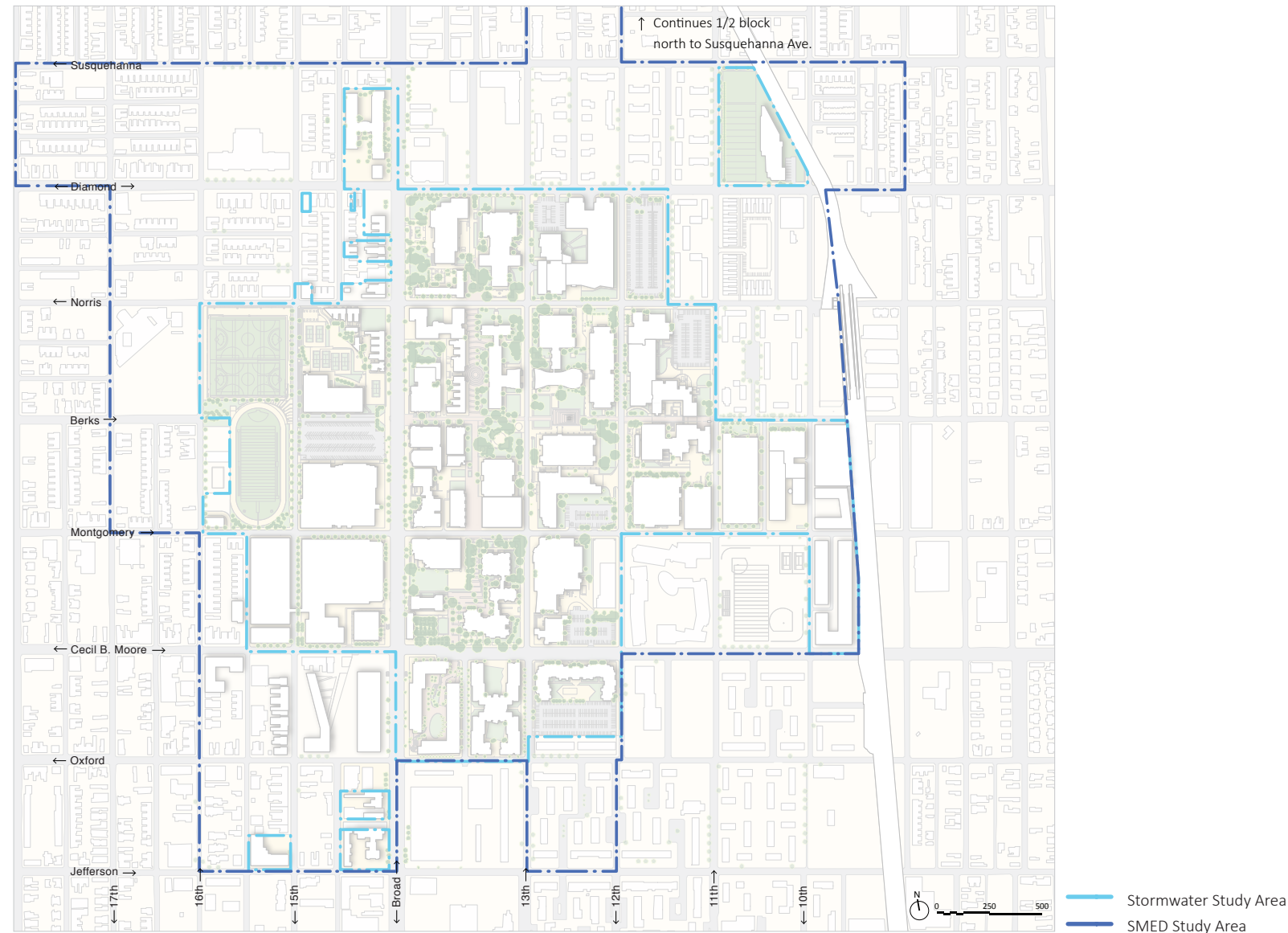


Examples of GSI: Newly installed tree trenches on Temple's campus

SMED AND STORMWATER STUDY AREAS

Concurrent with the development of VERDANT TEMPLE, PWD undertook the study of a Stormwater Management Enhancement District (SMED) which encompasses the entirety of Temple’s main campus. That study looked at ways that green stormwater infrastructure could be incorporated into the residential and commercial neighborhoods surrounding the Temple campus.

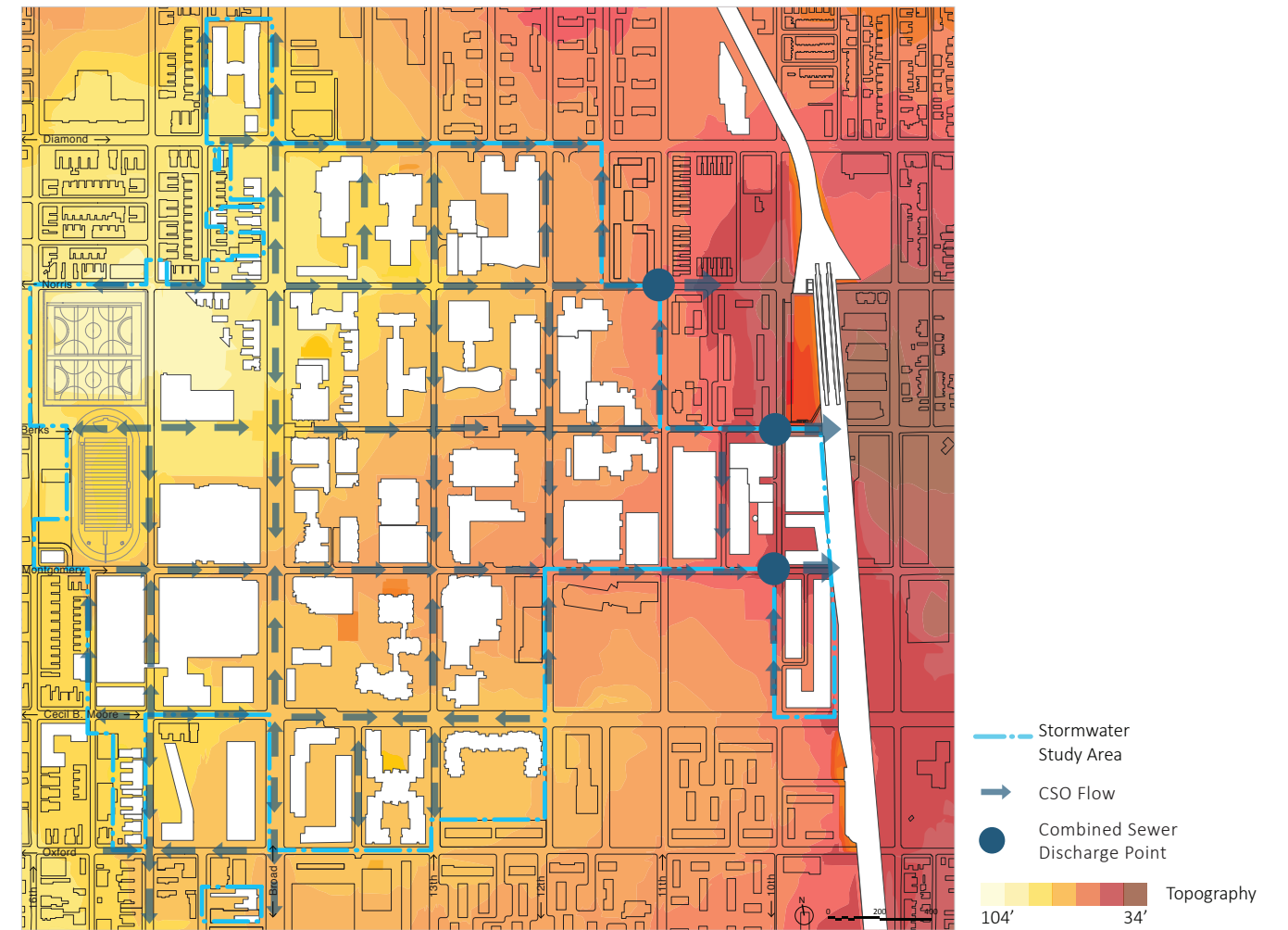
The SMED encompasses 276 acres. VERDANT TEMPLE’s Stormwater Study Area encompasses 131 acres, or 47% of the SMED. With almost half of the SMED being occupied by Temple’s property and interior rights-of-way, the importance of Temple’s role in improving stormwater management conditions in this area of the City should be apparent.



EXISTING STORMWATER MANAGEMENT

Observations

- The majority of Temple’s Philadelphia campus is not managed by stormwater management facilities that reduce the rate or volume of runoff.
- Most campus buildings have their roof downspouts directly connected to the City’s combined sewer system via underground pipes.
- Impervious surfaces at ground level typically drain to storm inlets located on campus property or in City streets which are directly connected to the public combined sewer system.
- Generally, the City’s combined sewer system drains from west to east across the campus, with a few small areas draining beyond the campus limits to the north and south.



CONSTRUCTED PROJECTS

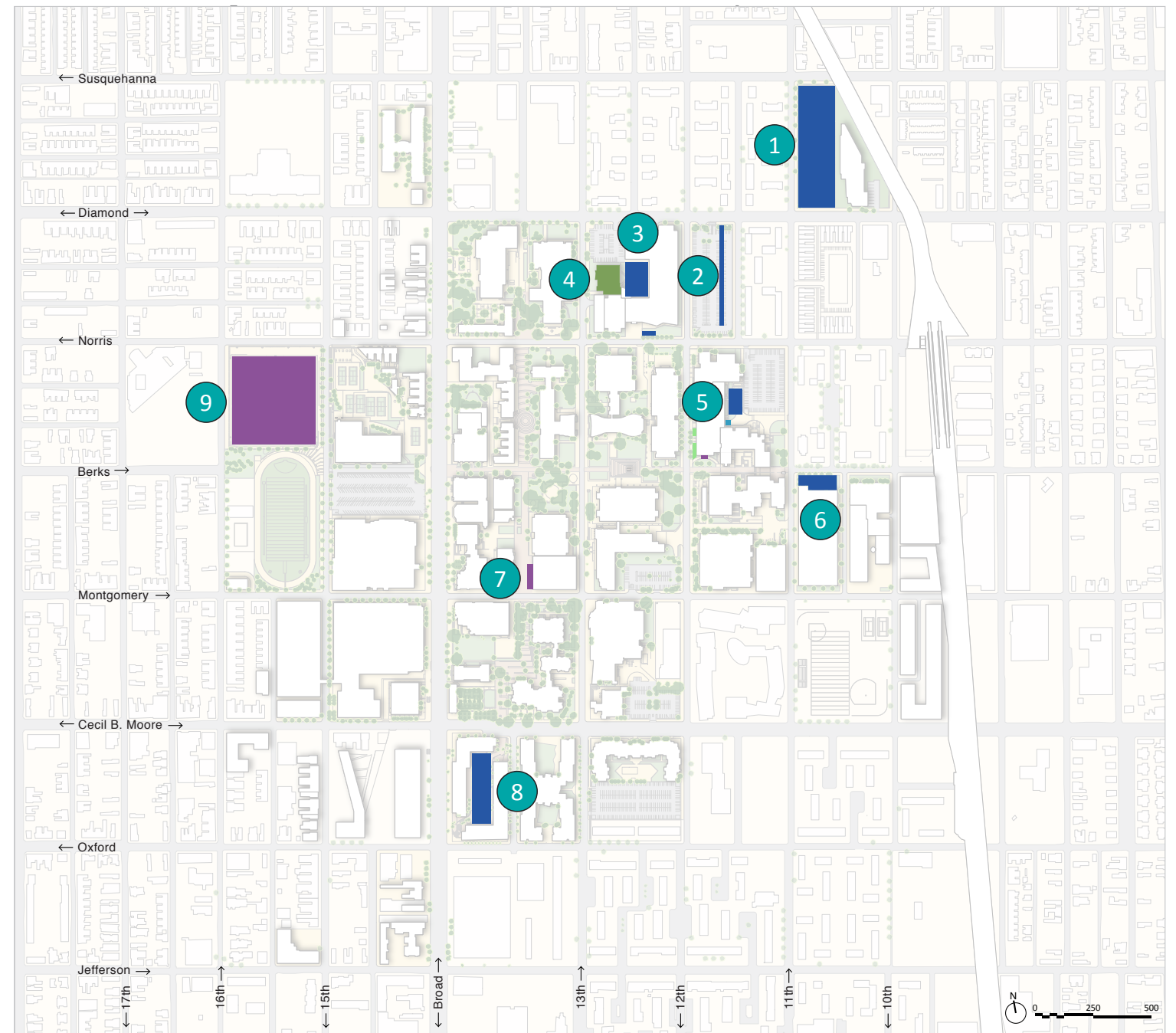
For the Stormwater Study Area, including both Temple-owned property and the public rights-of-way, 82% of the area is impervious. When only the Temple-owned property is considered, 78% of the property is impervious. This is typical for an urban university campus.

Based on the existing impervious area (108 acres) within the Stormwater Study Area (131 acres), 1.5 inches of runoff produces 588,060 cubic feet, or 4.4 million gallons, of stormwater. The Temple-owned impervious area (81 acres) produces 441,045 cubic feet, or 3.3 million gallons of stormwater. To form a mental image of these volumes, consider that 10 feet of water covering a football field would represent 480,000 cubic feet of water.

A portion of this runoff volume is being captured and managed by existing stormwater management practices that have been constructed on campus since the adoption of PWD's Stormwater Management Regulations in 2006. A list of these projects, compiled using information provided by Temple and PWD, are described below:

- 1 Edberg-Olsen Field** June 2014
Artificial turf field located at the northeast corner of Diamond and N. 11th Streets. Field is underlain by a drainage system consisting of perforated pipes and stone, which functions as a subsurface infiltration system. In addition, the infiltration system manages approximately 19,576 square feet of public right-of-way and is designed to manage future building roof area. A small bioretention area to manage a portion of the roof of the existing Edberg-Olsen Hall is included. Approved stormwater management practices: bioretention area (managing 2,215 sf), subsurface infiltration system (managing 146,658 sf).
Total Impervious Area Managed = 148,873 sf
(including 19,576 sf, right-of-way) 129,297 sf Temple only
- 2 Lot # 10** March 2006
New parking lot, located within the block bounded by Diamond, Norris, 12th and Marvine Streets. Approved stormwater management practices: a subsurface infiltration system.
Impervious Area Managed = 83,635 sf.
- 3 Tyler School Of Art Building** March 2007
New building, located within the block bounded by 12th, 13th, Diamond and Norris Streets. Approved stormwater management practices: two subsurface infiltration systems that manage the new roof, concrete entrance and walkway.
Impervious Area Managed = 105,769 sf.

- 4 Architecture Building** March 2012
New classroom building located on the east side of 13th Street, between Diamond and Norris Streets. Approved stormwater management practices: green roof (9,397 sf) and impervious roof disconnections (4,610 sf).
Impervious Area Managed = 14,087 sf.
- 5 Science Engineering And Research Center (Serc)** June 2014
New building, along the east side of 12th Street, between Norris Street and Polett Walk. Approved stormwater management practices: pervious pavement (2,586 sf), 15,000 gallon cistern (managing 20,150 sf of impervious area), two bioretention areas (743 sf), subsurface infiltration system (managing 24,234 sf), and subsurface detention system (196 sf).
Impervious Area Managed = 47,909 sf.
- 6 Montgomery Garage** May 2012
New parking garage located between 11th and Warnock Streets and Berks Street and Montgomery Avenue. Approved stormwater management practices: subsurface infiltration system consisting of perforated pipes and stone.
Impervious Area Managed = 78,020 sf.
- 7 Alter Hall** November 2006
New building, located at the northwest corner of the intersection of Montgomery Avenue and 13th Street. Approved stormwater management practices: subsurface detention system (managing 29,911 sf of impervious area).
Impervious Area Managed = 29,911 sf.
- 8 Morgan Hall** August 2013
New dormitory/retail/office and parking facility. The project is bounded by Cecil B. Moore Avenue, North Broad and West Oxford Streets, and North Park Avenue. Approved stormwater management practices: tree credits (1,600 sf), 20,000 gallon cistern (managing 19,121 sf of impervious area), and subsurface infiltration system (managing 72,854 sf).
Impervious Area Managed = 93,575 sf.
- 9 Geasey Field** July 2009
Resurfacing the artificial turf field located south of Norris Street, between 15th and 16th Streets. The field is underlain by a drainage system consisting of perforated pipes and stone, which functions as a subsurface detention system.
Impervious Area Managed = 169,758 sf.

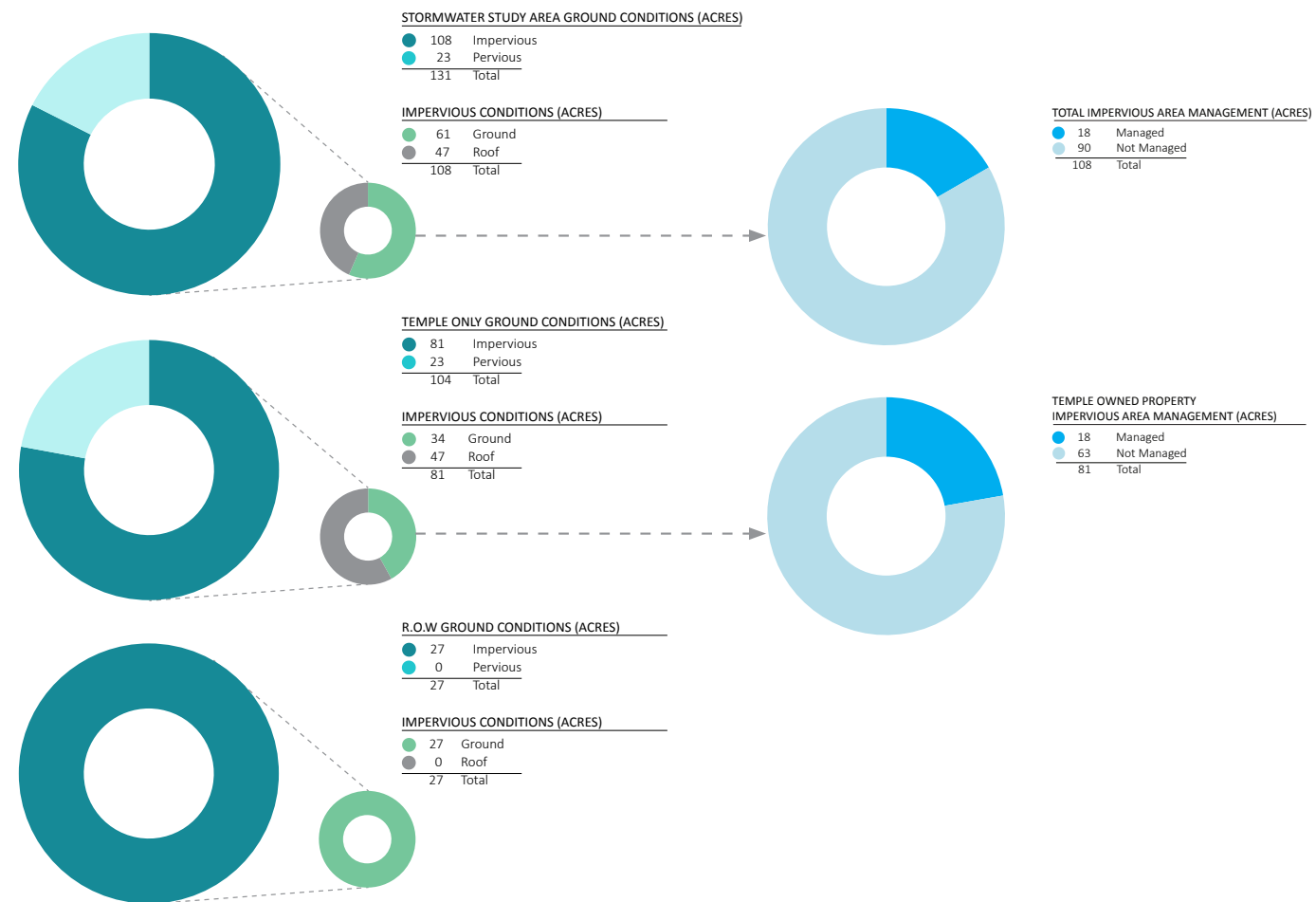


- Existing Bio Retention
- Existing Cistern
- Existing Green Roof
- Existing Subsurface Detention
- Existing Subsurface Infiltration

To get an overall understanding of the magnitude of stormwater runoff generated from 1.5 inches of runoff from all campus impervious areas, an inventory of all impervious surface areas within VERDANT TEMPLE's study area was performed and a resulting runoff volume was determined.

The following table is a summary of the different stormwater management practices being utilized and the corresponding impervious area that each system type is managing. The diagrams indicate the impervious area currently being managed (and not managed) on campus.

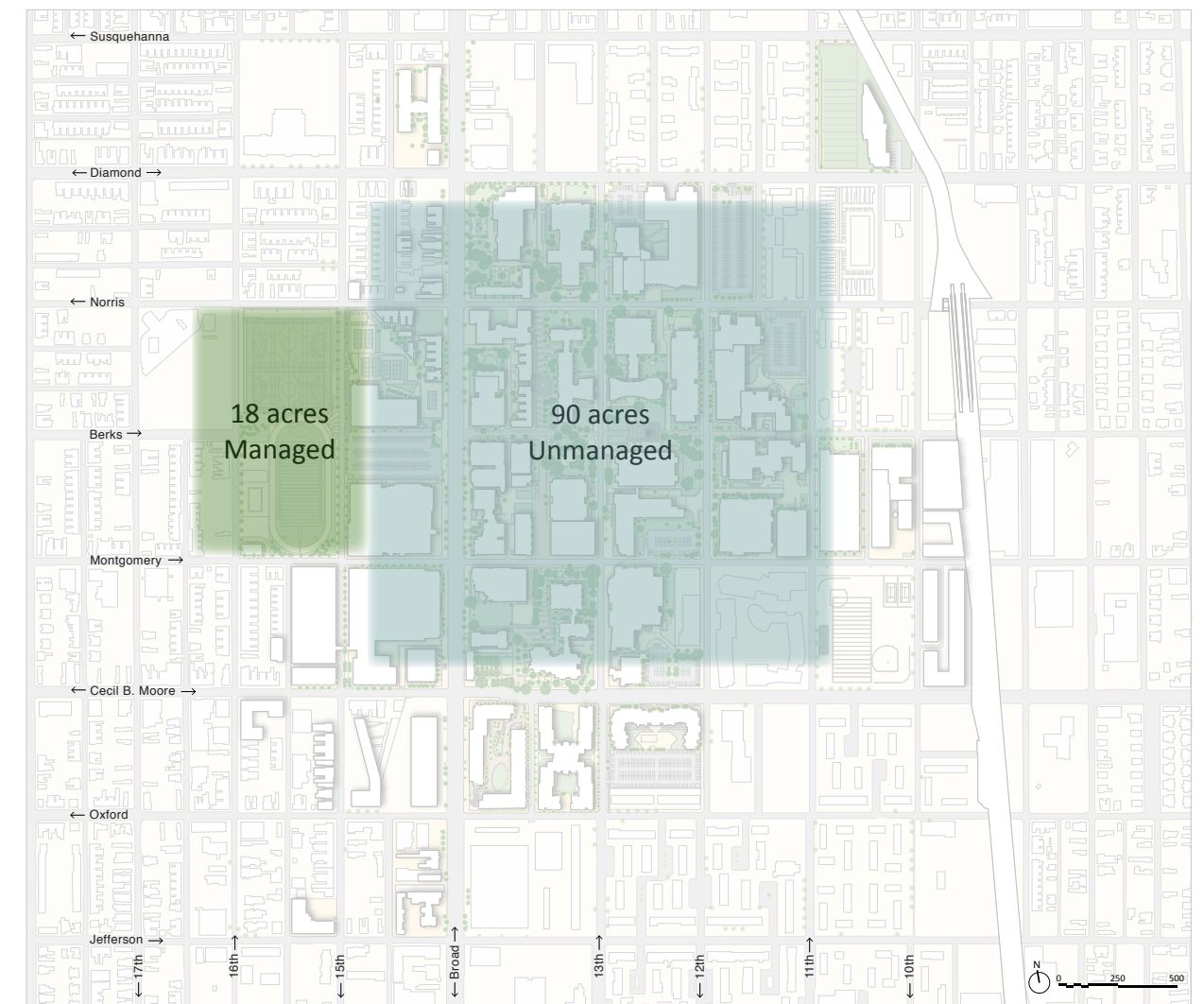
Stormwater Management Practice	Impervious Area Managed
Green roofs	14,087 sf
Porous Pavement	2,586 sf
Bioretention Areas	2,958 sf
Subsurface Infiltration	511,170 sf
Subsurface Detention	199,865 sf
Tree Credits	1,600 sf
Cisterns	39,271 sf
Total Impervious Area Managed	771,537 sf (18 acres)



MANAGEMENT AREA

A Stormwater Study Area was delineated to encompass all Temple main campus property. For public streets located at the interior of the campus, the entire public rights-of-way, typically comprising the full street width and the adjoining sidewalks, are included in the Stormwater Study Area. For public streets located at the edge of campus, public rights-of-way to the middle of the public street are included. These public areas are included to reflect the potential for Temple to manage the street runoff, either by conveying it onto University property and into University-owned stormwater systems, or by contributing to the construction of green stormwater infrastructure systems within the rights-of-way which would provide both stormwater management and aesthetic landscape benefits.

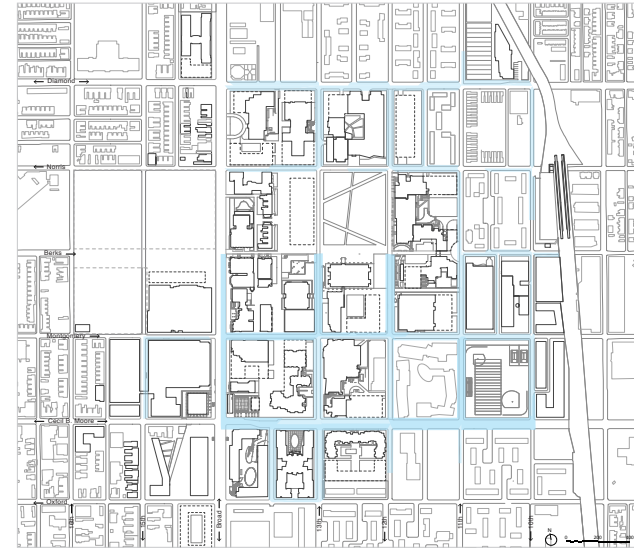
The Stormwater Study Area comprises 131 acres, with 104 acres of Temple-owned property and 27 acres of public rights-of-way. The Study Area includes 108 acres of total impervious, including both Temple-owned and public right-of-way areas. Existing stormwater management facilities on campus are currently managing runoff from 18 acres of impervious area. Therefore, within the Stormwater Study Area, 90 acres of impervious area are **not** being managed, representing a huge opportunity for increased stormwater management coupled with the greening of campus.



PUBLIC-PRIVATE PARTNERSHIP SCENARIOS

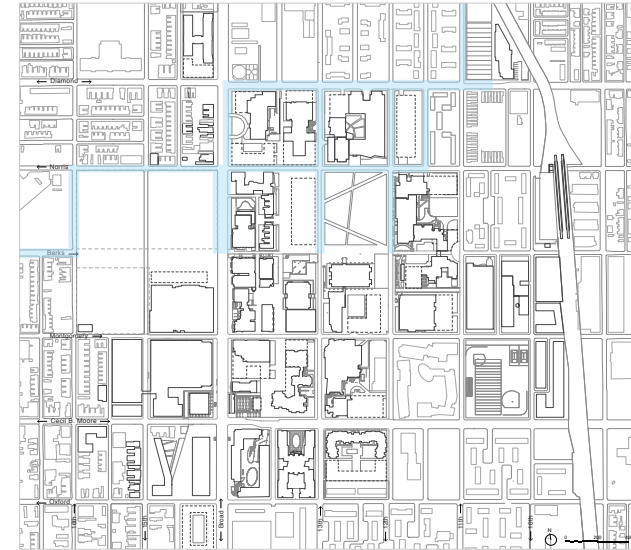
As an outcome with the University's partnership with PWD the following opportunities for stormwater management have been identified and should be explored moving forward.

Approximately 21 percent of the Stormwater Study Area consists of public rights-of-way. Rights-of-way, consisting of city streets and sidewalks, are 100 percent impervious presenting an enormous opportunity for a Temple/City of Philadelphia private-public partnership. Several scenarios under which this partnership could take place are illustrated. A potential agreement between Temple and PWD under one of these scenarios would be based on the concept of "credit trading", described on the following page.



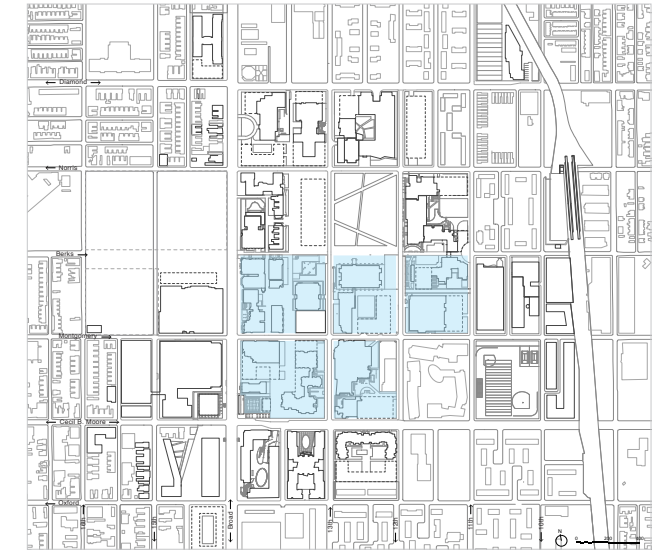
Public In Public- the management of runoff from public impervious area in systems located in the public rights-of-way.

While it would seem that Temple might not realize any benefits from this scenario, Temple could pay for the construction of stormwater bumpouts and tree trenches to obtain aesthetic landscape benefits. These practices would manage a certain amount of public impervious area, and Temple might then be eligible for stormwater fee credit from PWD for an equivalent area of their private unmanaged impervious area. Since this arrangement is not specifically allowed under current stormwater regulations; an agreement to proceed would have to be reached between Temple and PWD.



Public In Temple- the diversion of city street and sidewalk stormwater runoff into stormwater management facilities located on Temple's private property.

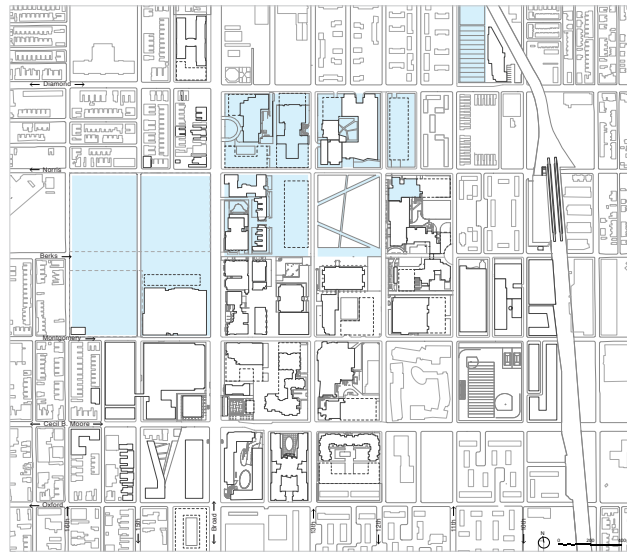
An example of this arrangement is the proposed Campus Green Regional System (p. 2.55). Two potential partnership opportunities exist: 1) Temple could pay all construction costs for a localized or regional system that accepts runoff from some area of public land and then get a PWD stormwater fee credit for an equivalent area of unmanaged impervious area on Temple's property, or 2) Temple and PWD could share the construction costs of a localized or regional system that accepts runoff from both public land and Temple's private property. In the second scenario, Temple would obtain a reduced stormwater fee for the private impervious area being managed by the jointly-constructed system.



Temple In Public- the contribution by Temple to the cost of a public stormwater system and receipt of PWD credit.

This scenario has limited options for the Temple campus. The best example is the construction of a stormwater system on the Columbia Park public property, into which runoff from nearby Temple impervious areas could be diverted and managed. Temple could contribute to the construction costs of the system on public land and then receive PWD stormwater fee credits for the private impervious area being managed by the jointly-constructed system.

CREDIT BANKING AND TRADING/FEE: A POTENTIAL FOR MAJOR LONG TERM COST SAVING



Temple In Temple- the construction and management of stormwater systems for and by Temple.

This scenario does not involve partnering but is included for completeness. In this scenario, Temple constructs stormwater management systems on their property which manage only their impervious area. Temple pays all construction costs and obtains PWD stormwater fee credits for the private impervious area being managed by these systems.

PWD supports the implementation of stormwater credit “banking” and “trading” on large multi-building parcels, such as college campuses and business parks, as an incentive for property owners to maximize the management of stormwater runoff from their properties. These mechanisms can provide financial savings by finding stormwater management solutions that fit within the campus landscape and can be timed to coincide with projected land development. These two concepts are explained along with how Temple might implement them on campus.

As an example of “trading”, suppose Temple proposes construction of a new building but is not able to provide stormwater management for the structure due to space limitations or because a green roof is not feasible for the proposed building. To meet the required stormwater management, Temple could retrofit an existing impervious area within the same sewershed as the new project. An existing building might be retrofitted with a green roof of the same area as the proposed unmanaged building, or an existing parking lot might be converted to porous pavement such that the new porous pavement area matches the area of the proposed building. Under this scenario, Temple has not increased its overall campus runoff as a result of the proposed construction.

As an example of “banking”, suppose Temple has two projects planned within the same block or within a few blocks of each other: one project is a new building and the second project is the reconstruction of a large existing parking area as part of a scheduled repaving operation. To provide stormwater management for the new building, Temple can propose to “trade” impervious area by reconstructing a portion of the existing parking area as porous pavement, with an area of porous pavement equal to the new building’s impervious area. Temple can also take the project to the next “banking” level by repaving additional areas of the existing lot with porous pavement. This pavement area now exceeds the PWD stormwater management requirements and can be “banked” for future projects to be constructed at a later date (e.g., other new buildings or parking areas in the vicinity of the project).

These trading/banking projects need to be fully vetted with PWD to make sure the proposed scenario will be approved. Typically, PWD wants the various sites of a trading/banking project to be located within the same sewershed so that projects result in no net increase to any specific sewer. Also, PWD may place restrictions on how long the additional stormwater management may be banked.

The financial incentive for credit banking is that it may be less expensive to design and construct an oversized stormwater management system at one time that will be able to manage additional anticipated future land development without the need for construction of a separate management system when the future project is constructed. For Temple’s campus, this opportunity may exist for one or more of the proposed regional systems (see following page). A regional system could be oversized to accommodate the existing impervious area draining to it, but also to manage the runoff from anticipated future construction. While the exact configuration of a future project may not be known with certainty, it should be possible to make an accurate estimate of future impervious area and oversize a management system accordingly.

Credit trading may present greater financial incentives for the University in the form of partnerships with PWD. Examples were presented on the previous page, where Temple might construct systems that manage runoff from public impervious areas and “trade” these credits for unmanaged impervious areas on their private property, thereby reducing their PWD stormwater fees.

As another example of credit trading, Temple might construct a system to manage an existing impervious area in one location to “trade” for a new project that has no available ground area to construct a new management system for a new impervious area. In other words, the new project is left unmanaged, but an equal area of nearby existing impervious area is managed to compensate for the new project.

The opportunities for credit banking and trading exist anywhere on Temple’s campus when a new project is being developed. This stage of project development is the time to evaluate the campus area surrounding a new project to determine if there is potential for trading the new project for management of nearby existing impervious areas that might be better configured for surface or subsurface management systems. Similarly, as a new project is planned, the University should evaluate the potential for oversizing a new management system for two possible applications: 1) capturing and managing the runoff from additional existing impervious areas and reducing PWD stormwater fees for doing so, or 2) banking the additional system storage volume for future anticipated projects that can drain to the new system. Lastly, as a new project is in its early planning stages, opportunities for managing runoff should be evaluated to assess the potential for partnership agreements with PWD.

RECOMMENDATIONS: REGIONAL SYSTEMS

Implementing regional systems is one method for managing stormwater runoff on Temple’s main campus. Regional systems are large systems that can manage stormwater runoff from multiple buildings and ground-level impervious area on campus, in addition to runoff from city rights-of-way, perhaps over several blocks. In Philadelphia, any land development project resulting in greater than 15,000 square feet of earth disturbance is required to meet Philadelphia Stormwater Regulations. Currently, Temple’s approach for meeting these regulations has been on a project-by-project basis where an individual stormwater management system is designed and constructed to manage only the runoff produced by new construction. A regional system would offer flexibility for Temple to not only provide for stormwater management of future development, but also to trade the management of existing impervious areas as credit towards future development located outside of the drainage area in the regional system.

Once a potential location for a regional stormwater management system is identified, Temple and PWD would need to come to an agreement on cost sharing for the design and construction of the system on Temple property. Temple and PWD could also share the responsibility of performing the long-term operation and maintenance, as well as monitoring of the system. In addition to the stormwater management benefits described below, this type of shared system would also be beneficial to Temple since PWD would contribute to its costs and maintenance. Also in this scenario, PWD would benefit from having a large area of impervious right-of-way managed which would provide a significant contribution to meeting the goals of PWD’s Green City, Clean Waters agreement with PADEP.

With a regional system, there are two scenarios for stormwater management of Temple property. First, the management of future development within the drainage area to the regional system can be included in the design of the system. The size of the regional system can be maximized so that it can accommodate future development within the drainage area. For example, one potential location for a regional system is the Edberg-Olsen practice field. Within the potential drainage area to this system, six new buildings are planned for future construction. The total area of these buildings can be accounted for in the design of

the regional system. This area would be “banked” (e.g., reserved for future use) until each of the projects is constructed.

The second scenario is the management of existing buildings and impervious ground. For existing buildings and ground-level impervious area, Temple might receive an impervious area credit from PWD equivalent to the existing impervious area being managed. For example, if an existing building footprint of 50,000 square feet will be managed by the regional system, then this 50,000 square feet will be “banked” as a credit with PWD’s Stormwater Plan Review Unit toward future development on campus. In this scenario, if for example, in 5 years Temple proposes construction of a new building of 25,000 square feet, the building will not require a new stormwater management system, but instead will utilize 25,000 square feet of the 50,000 square foot credit. This will allow for a further 25,000 square feet of credit “banked” toward another future construction project. This scenario allows some flexibility for Temple when there are limited options for management of a project due to constraints such as inadequate space or the presence of extensive utilities. In addition, Temple can apply to PWD to receive stormwater billing credit for the existing impervious area that is managed by the system.

To achieve the greatest cost benefit for a regional system, it should be implemented as soon as possible. Typically, stormwater management construction and maintenance costs are lower for a single large system than for numerous small systems. If a project is constructed within a potential regional system drainage area before the regional system is constructed, that new project will require its own stormwater management system. Thus, the required size of the regional system will be reduced and the cost efficiency of the regional system may be lessened.

It is worth noting that in some scenarios the size of the stormwater management system allowed by available land area will dictate the drainage and impervious area that can be captured. In other instances where there is a larger available space for a management system, the system size will be dictated by the maximum potential drainage and impervious area.

For all regional systems, the next step in planning would be to determine the most practical and cost-efficient way

to collect and convey runoff to potential regional systems. This would involve determining the best locations for inlets and storm sewer piping for a new separate storm sewer system to be constructed in city streets, as well as assessing existing buildings for the feasibility of directing roof drainage piping to the system. Site soil suitability for infiltration and the potential constraints caused by utility conflicts would also require evaluation.



Regional systems can be placed under areas of recreation

Four potential regional system opportunities have been identified on Temple’s main campus. The system locations and their potential drainage areas are described and depicted below.

1 Edberg-Olsen Regional System

Based on the existing topography, a total drainage area of approximately 18.5 acres could be managed by a large subsurface stormwater management system constructed at the Edberg-Olsen practice field. This system would require the construction of a separate storm sewer system to convey runoff from both Temple property and public rights-of-way. The roof drainage systems of existing buildings adjacent to the streets would require evaluation to determine if the roof runoff could be diverted to the new storm sewer system.

Total drainage area:	18.5 acres
Temple property:	7.8 acres impervious area (2.9 acres existing roof area, 3.9 acres existing ground impervious area, 1.0 acres proposed building area)
Public property:	5.8 acres impervious area
Potential impervious managed:	13.6 acres (13% of Stormwater Study Area impervious)

2 Campus Green Regional System

Based on the existing topography, a total drainage area of approximately 18.3 acres could be managed with a potential regional system on the proposed Campus Green. This system would require the construction of a separate storm sewer system to convey runoff from both Temple property and public rights-of-way. The roof drainage systems of existing buildings adjacent to the streets would require evaluation to determine if the roof runoff could be diverted to the new storm sewer system.

Total drainage area:	18.3 acres
Temple property:	9.8 acres impervious area (3.1 acres existing roof area, 2.9 acres existing ground impervious area, 3.8 acres proposed building area)
Public property:	3.1 acres impervious area
Potential impervious managed:	12.9 acres (12% of Stormwater Study Area impervious)

3 Athletic Regional System

Although the exact configuration of this area is currently unknown, the proposed Athletic Area located west of Broad Street is projected to have an estimated drainage area of 23.3 acres and be largely impervious. This system would require the construction of a separate storm sewer system to convey runoff from both Temple property and public rights-of-way. The roof drainage systems of existing buildings adjacent to the streets would require evaluation to determine if the roof runoff could be diverted to the new storm sewer system.

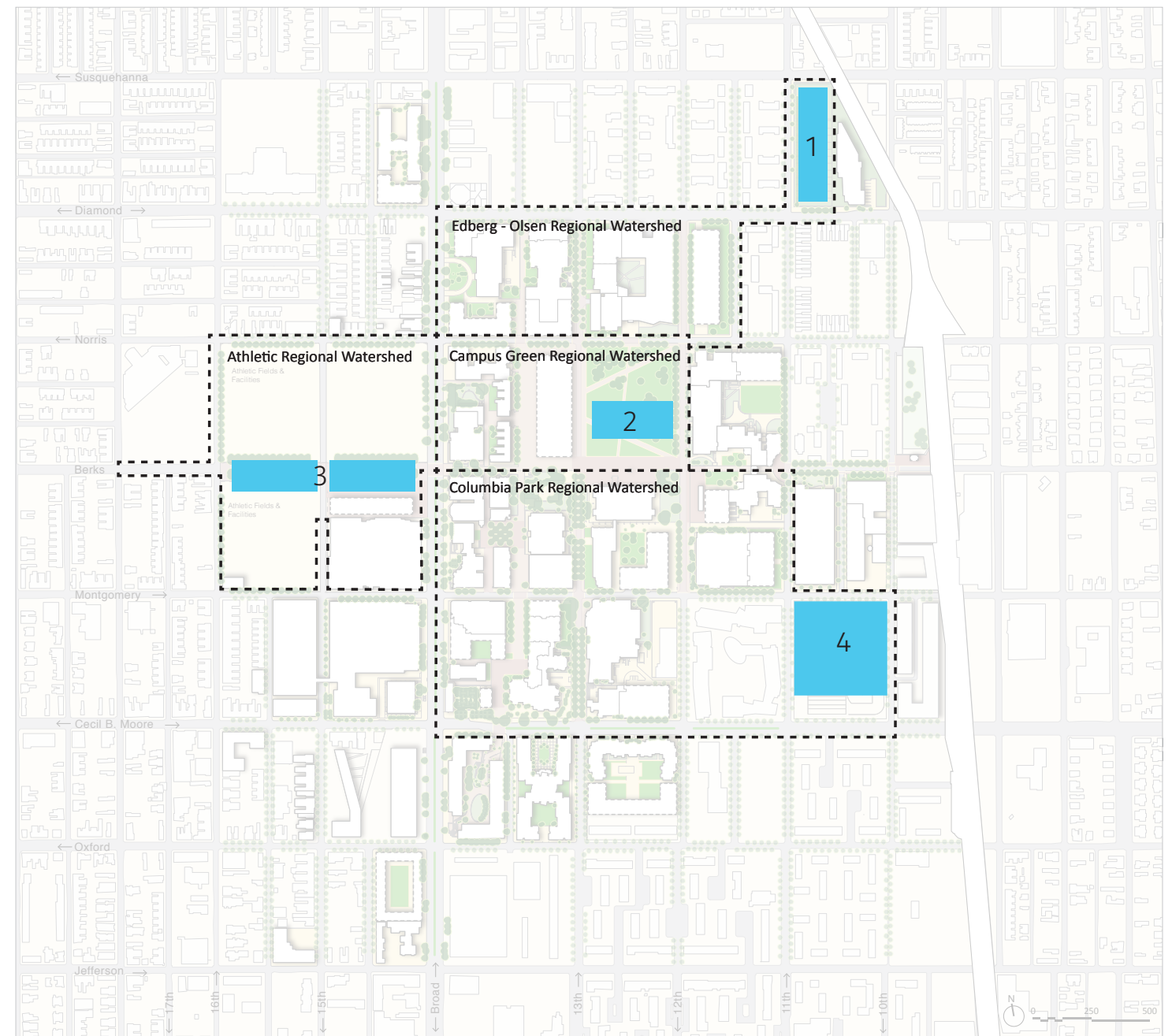
Total drainage area:	23.3 acres
Temple property:	20.2 acres impervious area
Public property:	3.1 acres impervious area
Potential impervious managed:	23.3 acres (22% of Stormwater Study Area impervious)

4 Columbia Park Regional System

Based on the existing topography, a total drainage area of approximately 46.6 acres could be managed by a regional system located at the existing Columbia Park in the southeast quadrant of Temple’s campus. An agreement would have to be reached with the City on the system’s construction and maintainance since it is located on public land. This system would require the construction of a separate storm sewer system to convey runoff from both Temple property and public rights-of-way. The roof drainage systems of existing buildings adjacent to the streets would require evaluation to determine if the roof runoff could be diverted to the new storm sewer system.

Total drainage area:	46.6 acres
Temple property:	25.1 acres impervious area (9.7 acres existing roof area, 12.0 acres existing ground impervious area, 3.4 acres proposed building area)
Public property:	10.8 acres impervious area
Potential impervious managed:	35.9 acres (43% of Stormwater Study Area impervious)

This opportunity has been analyzed in detail in a PWD SMED study which should be reviewed for additional information.



■ Regional Subsurface System Area
 - - - - - Watershed Boundary

RECOMMENDATIONS: LOCALIZED STORMWATER MANAGEMENT

A fundamental tenet of sustainable stormwater management is to “manage rainfall where it falls.” While large regional management systems, can provide cost savings for management of runoff from larger regional drainage areas, the use of “localized” stormwater management facilities more closely mimics a natural hydrologic condition in which rainwater falls to the ground and is infiltrated.

The localized systems approach is more in keeping with the goals of Philadelphia’s Green City, Clean Waters initiative, which promotes “decentralizing” stormwater management in smaller vegetated surface systems that promote water quality improvements, water runoff quantity reduction, and other non-stormwater benefits such as more aesthetic and shaded pedestrian spaces. While the comparative costs for these localized systems versus regional systems may be higher on a stormwater management volume basis, these vegetated surface systems can be incorporated into the drainage area of a regional stormwater management system. The smaller systems can provide significant water quality benefits before the runoff overflows to the larger regional system which primarily provides flood (peak discharge rate) control.

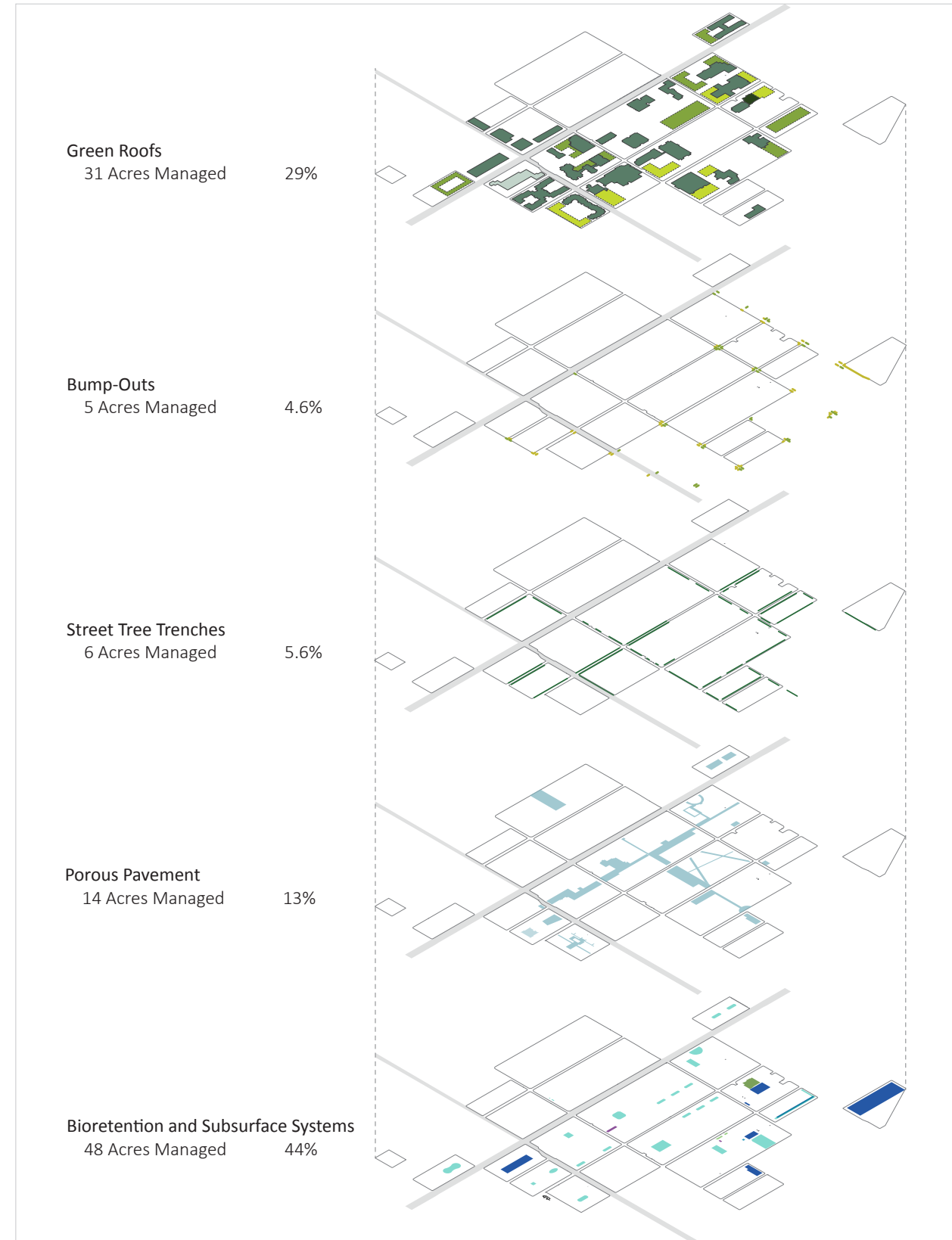
Since the adoption of the PWD stormwater regulations in 2006, Temple has been following the localized system model, constructing smaller individual runoff management systems for each new construction project.

Before discussing possible options for constructed localized systems, it should be noted that the simplest, and often most cost-effective, solution to reducing stormwater runoff is to remove unneeded impervious surfaces from the landscape. If over-sized and/or under-utilized pedestrian or vehicle impervious areas can be demolished, stormwater runoff is reduced and PWD stormwater fees can be lowered.

Another simple method of reducing stormwater runoff is through the disconnection of a Directly Connected Impervious Area (DCIA). DCIA refers to impervious

surfaces that drain directly to a storm inlet and enter the City’s combined sewer systems without flowing through any vegetated area or stormwater management system. Methods of reducing DCIA include replacing impervious surfaces with permeable surfaces. Impervious surfaces can also be disconnected by draining them to adjacent vegetated areas meeting specific PWD requirements. The simplest example is a sidewalk draining to an adjacent lawn area of at least the same width as the sidewalk and with a slope of less than 5 percent. Once disconnected, an impervious surface requires no further stormwater management; it is as if the impervious surface does not exist and it is exempt from a PWD stormwater fee. Permeable pavement surfaces may be created with porous asphalt, an asphalt mix with larger pores that allows runoff to drain through the asphalt and infiltrate into the underlying soil. Walkways may be constructed with porous pavers or with solid pavers separated by wider gravel-filled joints that allow the runoff to drain through to the underlying pavement base and soil. Runoff from impervious roofs may be directed to a pervious vegetated area to achieve a disconnection credit. In addition, green roofs and porous pavement areas are also considered disconnections.

Typical options for constructed localized green stormwater infrastructure systems are described on the following pages. It should be noted that Temple is not limited to these systems. PWD invites innovation and will consider new stormwater management techniques. As described throughout VERDANT TEMPLE, there may be opportunities for Temple and PWD to collaborate on the design and monitoring of new technologies. These efforts could be incorporated into Temple’s engineering curriculum or provide opportunities for graduate research.



Temple campus potential stormwater management options (exploded view)

STORMWATER BUMPOUTS / TREE TRENCHES

As discussed previously, the construction of bumpouts and tree trenches in City rights-of-way offers potential credit trading opportunities for Temple’s private impervious area (by managing public runoff in Temple constructed systems in rights-of-way) and/or partnerships between Temple and PWD for joint construction, operation and maintenance of these systems.

The map illustrates recommended locations for bumpouts and tree trenches within the Stormwater Study Area. These locations were selected based on a variety of criteria including aesthetic visual impact, vehicular traffic and parking considerations, pedestrian circulation considerations and overhead and subsurface utility line conflicts.

The bumpouts are divided into two classes: those with drainage areas greater than, and less than, 5,000 square feet. As discussed, PWD considers green stormwater infrastructure practices with drainage areas of less than 5,000 as less cost-effective solutions. However, if an entire intersection is being reconstructed at one time, the combined management potential of numerous small systems may improve the cost-effectiveness of these smaller systems.

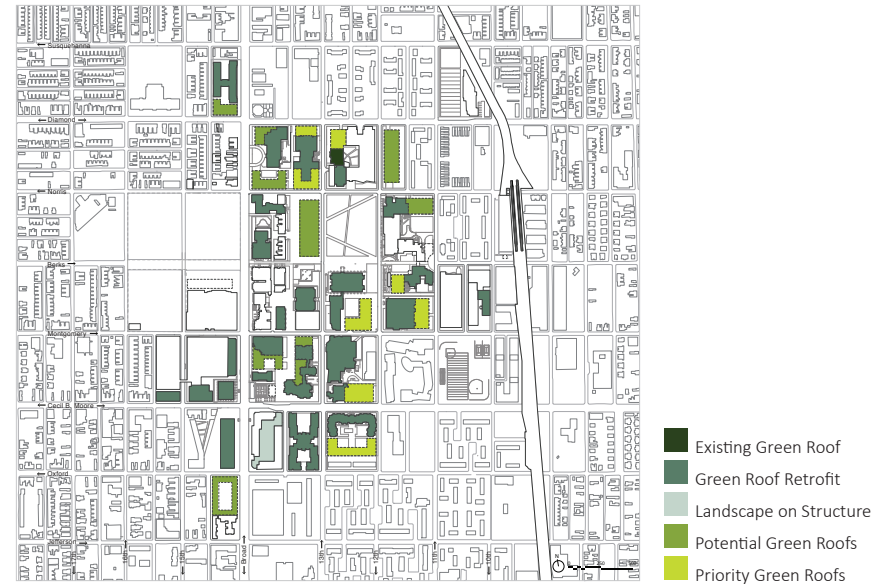
If all bumpouts with drainage areas of at least 5,000 square feet were constructed (assuming drainage areas of 5,000 square feet), a total of 5 acres of public right-of-way impervious area would be managed.

If all tree trenches shown on the graphic were constructed, a total of 6 acres of public right-of-way impervious area would be managed.

For the two types of systems combined, a total of 11 acres of public right-of-way impervious area would be managed, or 10 percent of the total impervious area (108 acres) within the Stormwater Study Area.



LOCALIZED SYSTEMS: GREEN ROOFS



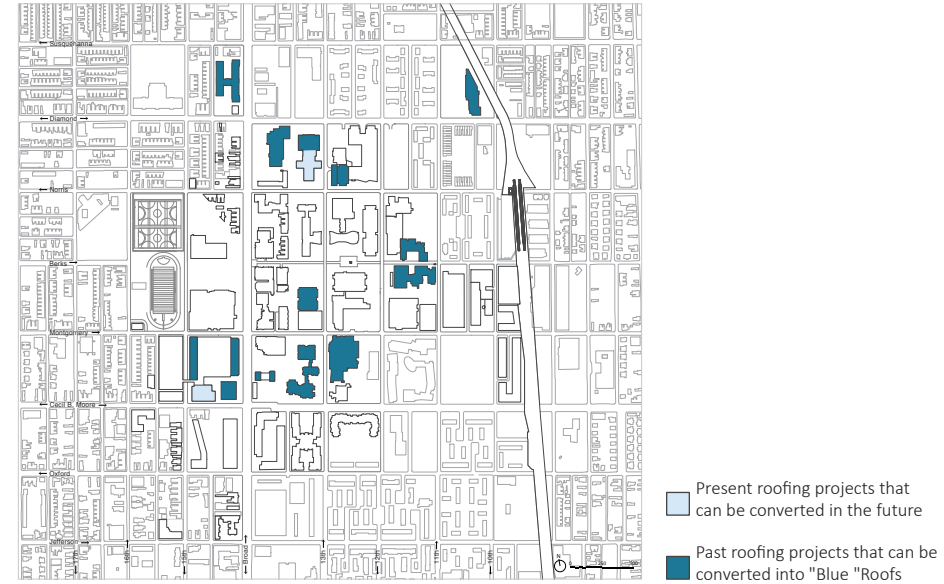
The construction of a green roof with a minimum 3-inch thick planting medium provides full stormwater management compliance for green roof area. No further ground-level stormwater management is needed.

The map depicts a preliminary evaluation of existing Temple buildings. If an existing roof is flat, and does not have excessive equipment on it, the building was considered a potential candidate for a green roof retrofit. Further evaluation would be required to determine if existing roofs have the structural capacity to support a green roof system. Also, the anticipated life cycle for a building should be assessed; a building slated for demolition in the near- to mid-future may not make a good candidate for a green roof retrofit.

The map also shows locations of existing green roofs and landscape on structure. It is assumed that all future buildings have the potential for green roofs. "Priority" green roofs are proposed future construction with limited or no ground-level open area for ground-level management of stormwater; therefore, green roofs may be the best and only management solution.

If all green roofs shown on the map were constructed, a total of 31 acres of building impervious area would be managed, or 29 percent of the total impervious area (108 acres) within the Stormwater Study Area.

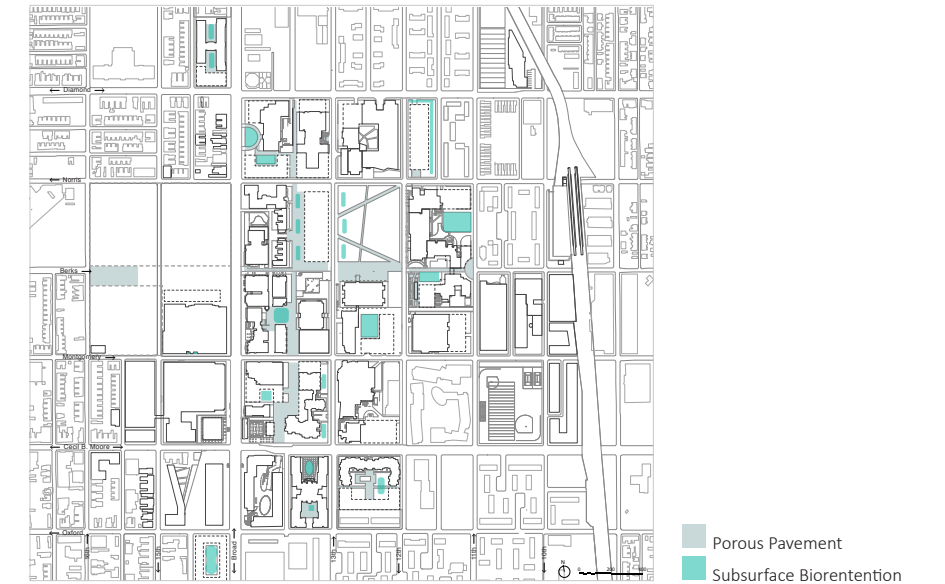
LOCALIZED SYSTEMS: BLUE ROOFS



A newer trend in stormwater management for building roofs is the construction of blue roofs. These are essentially green roofs without the green, that is, the roof is designed as a detention system for rainwater to pond on the roof, which is then slowly released via restrictions on the roof drains. A blue roof is viewed as a detention system by PWD. It does not qualify towards the 20 percent reduction in existing impervious area, but it will reduce the stormwater fee associated with a building if the roof is designed to manage the first inch of runoff via slow release. Because a blue roof does not reduce runoff volume via evapotranspiration as a green roof does, the blue roof does not contribute to PWD's "greened acre" requirement. Nevertheless, Temple may want to discuss with PWD the possibility of constructing a blue roof on an existing or new building as a research project, so that the stormwater management benefits of blue roofs on the campus can be better understood.

Potential blue roof inventory provided by Temple.

LOCALIZED SYSTEMS: GROUND-LEVEL



The locations of potential localized ground-level stormwater management systems including porous pavements, bioretention areas and subsurface systems are depicted on this map. The areas of impervious surfaces managed by these systems are assumed to be based on a loading ratio of 10:1. That is, a stormwater system of a given area is assumed to manage 10 times its area in impervious area. A detailed analysis would be required for each potential system to determine how much impervious area could actually drain to the system based on site topography and other constraints such as utility conflicts.

If all ground-level systems shown on the graphic were constructed, a total of 48 acres of impervious area would be managed (assuming a 10:1 loading ratio), or 44 percent of the total impervious area (108 acres) within the Stormwater Study Area.

STORMWATER TOOL KIT

Potential green stormwater infrastructure practices recommended by VERDANT TEMPLE are briefly introduced starting below, followed on subsequent pages with detailed descriptions and illustrations. Additional information on these systems can be obtained in PWD's *Stormwater Management Guidance Manual (2014)* and the *City of Philadelphia Green Streets Design Manual (2014)*.

The suitability of a particular practice for a particular location is based on several factors. First and foremost for a surface infrastructure practice on Temple's campus will be its aesthetic appropriateness. The practice should blend with the landscape in accordance with VERDANT TEMPLE recommendations. There are also numerous technical considerations including:

Drainage Area And Loading Ratio

Generally, PWD does not see value in a system that has a drainage area of less than 5,000 square feet. This represents a threshold where the amount of stormwater that a system can manage does not warrant the design and construction costs for developing that system. Also, PWD seeks a "loading ratio" of between 10:1 and 15:1 for green stormwater infrastructure practices; the relationship of an impervious area draining to a practice, to the surface area of the practice. This represents the limitations of the underlying soils of a system to infiltrate the stormwater runoff directed to it.

Soils

Ideally, stormwater runoff is infiltrated into the underlying soils. Urban soils may have undergone disturbance that makes them unsuitable for infiltration, either through compaction, contamination or placement of fills with fine soil particles that limit the rate of infiltration.

Utilities

Philadelphia's streets serve as utility corridors for water, sewer, gas, electrical and communication lines. Utility laterals branch off of these main lines to service individual buildings on Temple's campus. The depths of these utilities can vary from a couple of feet to 20 feet or more. Most green stormwater infrastructure practices have some underground component which may come in conflict with shallow utilities. This may limit the suitability or extent of a given practice for a particular area. A review of existing as-built utility plans and/or confirmation with the utility provider may be necessary to determine the feasibility of stormwater infrastructure placement.

Basements

Infiltrating stormwater systems can cause moisture or flooding problems in nearby building basements. PWD requires that infiltration systems be located at least 10 feet from buildings but, in some conditions, greater distances may be warranted. The age, construction and condition of basement walls should be evaluated as well as the soils in which the stormwater system is being constructed.

The seven practices described below are individual elements of a stormwater management toolkit that when utilized will help guide Temple to a more sustainable future.

1 REGIONAL SYSTEM

Regional systems capture and manage the runoff from large drainage areas. These may be surface or subsurface systems, though subsurface systems are more suitable for a highly developed area like Temple's campus where open land available for building development is at a premium. The size of a regional system will depend on the drainage area flowing to the system.



2 STREET TREE TRENCH

A Stormwater Tree Trench is a subsurface system installed under a sidewalk area. Street trees are planted in openings in the sidewalk above the trench. Street runoff is directed to the trench via one or more inlets. The runoff waters the tree root systems, which absorb and transpire the water, thereby reducing runoff volume. Excess runoff infiltrates into the underlying soils or flows to an underdrain system that connects back to the sewer system.



3 STORMWATER BUMPOUT

A Stormwater Bumpout is a vegetated curb extension into the cartway of a street. The bumpout area is constructed slightly below the elevation of the road pavement. Curb cuts allow street runoff to drain into the vegetated area, where it infiltrates either into the underlying native soil (if soil conditions allow it) or flows into an underdrain system that connects back to the sewer system. Runoff from the adjacent sidewalk may also drain to the bumpout.



4 POROUS PAVEMENT

Porous, permeable or pervious pavement may consist of poured asphalt or concrete or pavers. In the case of asphalt and concrete, the pavement mix consists of particles of a uniform size with no fines, thereby creating channels for water to flow through the pavement into a stone subbase below, where the water can infiltrate into underlying soils. For a unit paver system, water flows through the spaces between the individual pavers into the stone subbase below.



5 GREEN ROOF

A green roof consists of an engineered layered roofing system that includes waterproofing, a drainage layer, an engineered planting media and plantings selected for their ability to tolerate long periods of dry conditions. Green roofs can be designed as part of a new building's construction, or can be retrofitted to an existing building roof (assuming the roof has the structural capacity for the added load).



6 BIORETENTION AREA

Bioretention areas are surface vegetated features that manage stormwater through the natural processes of plant uptake, soil retention and infiltration (if soils are suitable). Infiltration and soil storage reduces runoff volumes and attenuates peak flows; water-purifying biological and chemical reactions occur in the surface mulch, planting soil matrix and root zone; and stormwater is filtered through contact with the vegetation and soil.



7 RAINWATER HARVESTING (CISTERNS)

Rainwater harvesting is the capture and reuse of rainfall, typically from building roof areas. Harvesting systems can range from small rain barrels to large surface cisterns or subsurface tanks holding thousands of gallons. The captured rainwater may be used without treatment for external uses such as landscape irrigation or vehicle washing or with treatment for internal uses such as toilet flushing or industrial process water.



1 REGIONAL SYSTEM

Regional stormwater management systems refer to large subsurface infiltration and/or detention systems. Traditionally, these systems were constructed using large diameter perforated plastic or metal piping installed in crushed stone beds. More recently, numerous commercially manufactured systems have become available. These systems could be placed beneath green open space areas or beneath surface parking areas.

Regional systems typically have better cost-benefit ratios than a series of smaller localized systems providing the same storage volume, but the smaller systems can compliment the large system by acting as water quality treatment devices. Storm sewers from inlets are connected to the regional system. An outlet structure regulates the discharge of the captured runoff to meet PWD's flow requirements. The system should have access ports for inspection and maintenance.

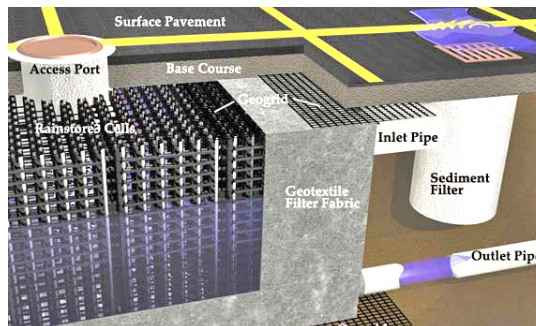
The illustrated raintank system shows individual plastic storage cells stacked in infinite horizontal and vertical arrangements to provide the required storage volume within an available site area. Ninety-five percent of the system is air space available for water storage compared to only 40% storage space for crushed stone beds. With appropriate cover, the system can support heavy vehicle loads so it can be installed under parking areas to conserve sites for other uses.



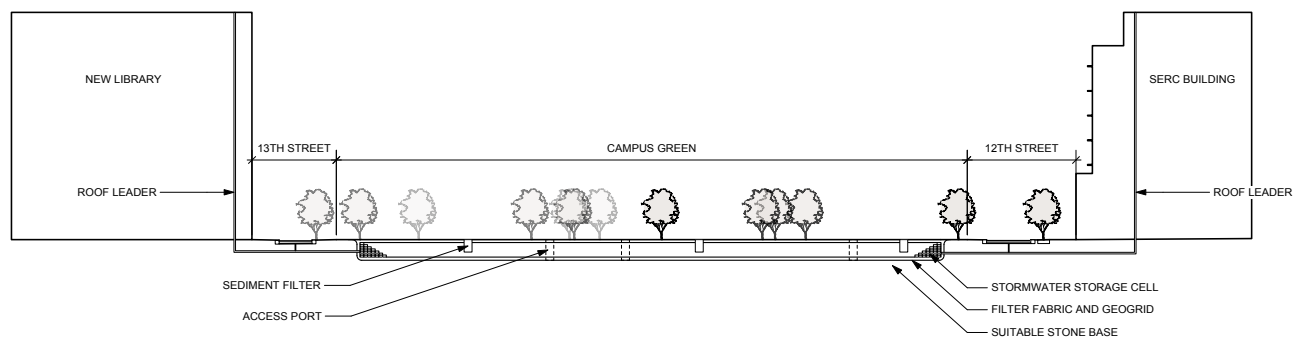
Raintank system being installed



Raintank system stacked for installation



Conceptual raintank system rendering



Proposed section of a raintank system for new Campus Green

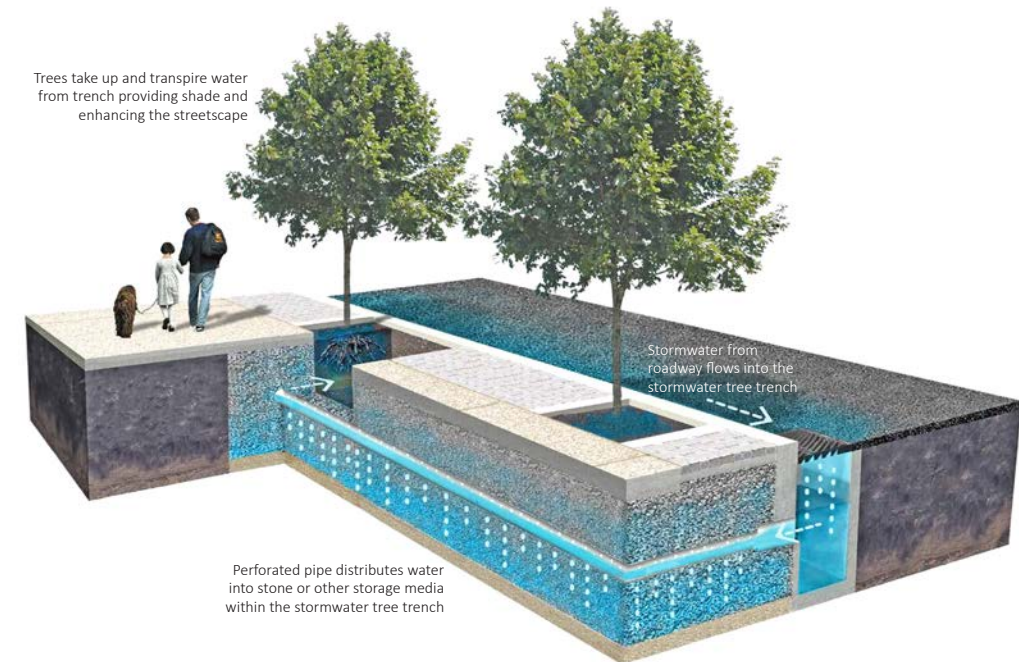
Photo and rendering credit: Invisible Structures, <http://www.invisiblestructures.com>

2 STORMWATER TREE TRENCH

A stormwater tree trench consists of a subsurface trench capable of storing stormwater runoff that is fed by one or more inlets located along the gutter line of a street. The trench and its trees are located in the sidewalk area of the right-of-way. The trench is connected back into the existing storm or combined sewer via a pipe to allow for the bypassing of excess runoff in large rain events. A tree trench measuring 4 feet wide and 125 feet long (500 square feet) can manage 5,000 square feet of impervious area (at a 10:1 loading ratio). Stormwater tree trenches can be paved or unpaved.



Unpaved stormwater tree trench



Stormwater tree trench axonometric view

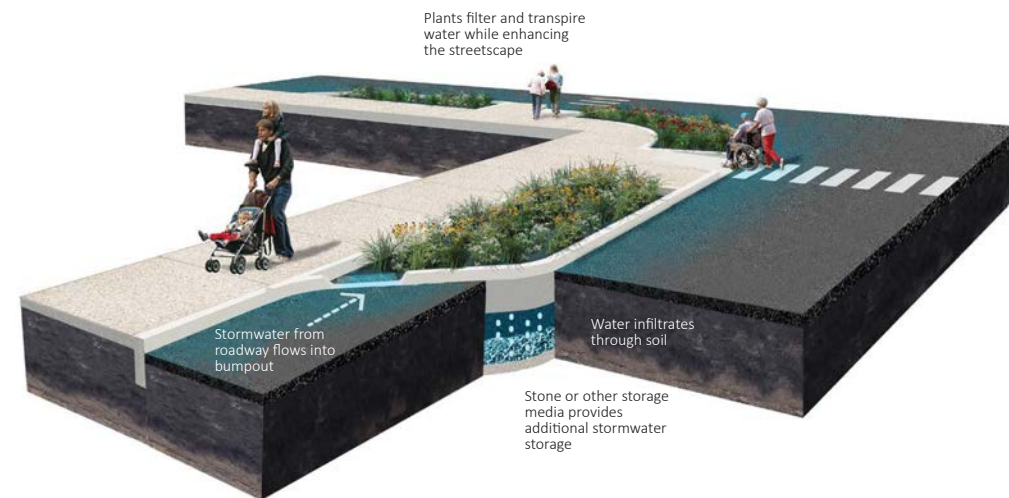
Graphics and rendering credit: PWD's *Green Streets Design Manual*

3 STORMWATER BUMPOUT

Stormwater bumpouts, or curb extensions, are landscaped areas created by extending the sidewalk curb out into the street cartway. The planting area's soil is placed so that it is below the street's gutter line, allowing street and sidewalk runoff to enter the bumpout and infiltrate into the soil. Runoff from adjacent sidewalks can enter the bumpout directly or by flowing over the street curb into the gutter before flowing into the bumpout. Using PWD's preferred minimum drainage area of 5,000 square feet and loading ratio of 15:1, the area of a minimally-sized bumpout is approximately 333 square feet. This equates to an area measuring approximately 8 feet wide by 40 feet long or about two car parking spaces.



Stormwater bumpout



Corner stormwater bumpout

4 POROUS PAVEMENT

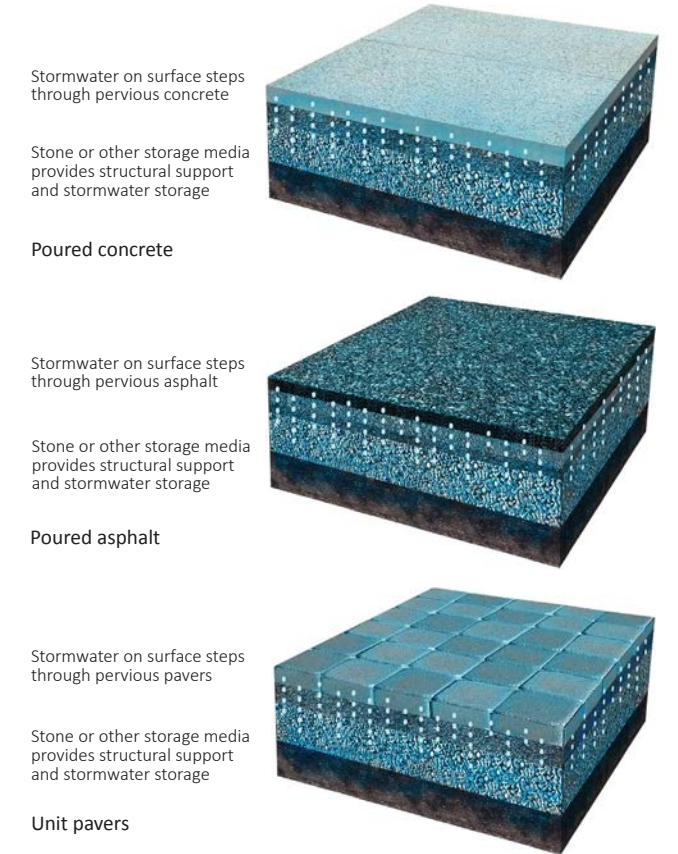
Porous, permeable or pervious pavements are designed with a porous asphalt or concrete surface over an open-graded stone subbase. This allows rainwater to pass through the pavement layer and drain through the stone subbase to the underlying soils for infiltration.

Porous pavement slopes should be less than 5 percent. The soil subgrade should be uncompacted and level. It is critical that the subbase stone be clean washed so that the aggregate contains no fine particles that could clog the underlying soil pores essential for infiltration. The stone subbase should include an overflow drain system that prevents accumulated water from saturating the porous asphalt or concrete pavement layer.

Porous pavement meets the Water Quality Requirement of PWD's Stormwater Regulations if the only stormwater entering the system is the rainwater that falls on it. In this situation, it is considered to provide the necessary management for the first inch of runoff and is eligible for stormwater fee credits.

The stone subbase can also be used as a detention system by connecting nearby roof drains to the subbase, or adjacent porous pavements (e.g., sidewalks) can sheet flow to the porous pavement area. In this condition, the porous pavement cannot contribute to the 20 percent reduction of existing impervious area that exempts a project from Flood Control Requirements, but the porous pavement area and roof/impervious pavement areas managed by the system would be eligible for stormwater fee credit.

As with a green roof, each square foot of porous pavement manages its own runoff. Porous pavements are typically more expensive than standard impervious pavements, but since they are their own stormwater management systems, costs associated with inlets, piping and subsurface detention systems are eliminated. Porous pavements require periodic vacuuming with specialized equipment to maintain their function. Porous asphalt pavement should not be used in high-traffic areas or areas receiving heavy equipment loads.



Types of porous paving



Parking lot using porous unit pavers

Graphics and rendering credit: PWD's *Green Streets Design Manual*

5 GREEN ROOF

Green roofs are best designed by engineers or architects experienced in their design. Also, numerous pre-manufactured green roof systems are now commercially available. Most manufacturers will provide design assistance and some will provide installation and maintenance services.

A green roof with a growing medium of 3 inch minimum thickness meets the Water Quality Requirement of PWD's Stormwater Regulations, is considered to provide the necessary management for the first inch of runoff and is eligible for stormwater fee credits. No further ground-level management is required for large storms. Therefore, each square foot of a green roof manages its own impervious area. A green roof can also contribute to the 20 percent reduction of existing impervious area that exempts a project from the Flood Control Requirements.

It is critical that the roof's waterproof membrane be in excellent condition before installing green roof components. Retrofitting a green roof to an existing building will be most cost-effective if installed when the roof membrane is scheduled for replacement. While green roof construction costs are typically higher than conventional roofs, they provide the added benefit of longer roof life and reduced heating/cooling costs in addition to the reduced costs of ground-level stormwater management facilities and piping.

The detail depicts typical components of a green roof and is not intended to represent an actual design.



Green roof

6 BIORETENTION/SUBSURFACE DETENTION

Bioretention areas are surface vegetated areas that manage stormwater through the natural processes of plant uptake, soil retention and infiltration. The detail shown here represents a combination bioretention/subsurface detention system. Stormwater runoff flows into the surface bioretention area and seeps into the planting soil mix. Water that is not taken up by the bioretention plantings drips into the subsurface detention system consisting of plastic raintank storage cell units. These units provide 95% water storage volume for the system volume. This compares to only 40% water storage volume for a detention bed constructed of stone aggregate.

This system could work in an infiltrating or non-infiltrating condition depending on the site soils. Excess runoff is typically managed via an overflow outlet that drains to an underground detention system or directly to the public sewer system. In the event that the underlying soils do not permit infiltration, the bioretention area can be underdrained, with the underdrains tying into the overflow outlet; in this scenario, the bioretention area provides reduced stormwater volume management but provides the same water quality benefits as an infiltrating system. A 10-foot x 50-foot bioretention area (500 square feet) can manage 5,000 square feet of impervious area (with a loading ratio of 10:1). There are a number of commercially available modular systems designed specifically for installation in sidewalk areas.

It should be noted that there is ongoing discussion in the engineering community about whether geotextile should be placed at the bottom of infiltrating systems. There is concern that the geotextile pores may clog with fine sediment particles over time. PWD no longer specifies the use of geotextile at the bottom of infiltration systems.

Chapter 8 of PWD's *Stormwater Management Guidance Manual (2014)* includes listings of recommended plant species as well as invasive species that are not permitted for bioretention areas.



Bioretention area

7 RAINWATER HARVESTING OR CISTERNS

Capture and storage of rainwater for reuse at later times has been practiced for centuries. However, it is only in the last few decades that this practice has been adopted in U.S. urban settings. Due to the low cost of public water and the added cost of constructing a water treatment system and a secondary plumbing system, the economics of this practice can be difficult to justify, especially as a retrofit practice to an existing building or site. However, with new construction, the right combination of rainfall catchment area and water demand may make the practice economically and operationally feasible.

Rainwater harvesting, or capture/reuse, systems can range from small rain barrels for garden watering to large surface cisterns or subsurface tanks storing thousands of gallons of captured rainwater. The rainwater may be reused for external uses such as landscape irrigation or vehicle washing, or for internal building uses such as toilet flushing or industrial process water.

PWD requires that stormwater management systems be completely drained within 72 hours of a rainfall event so that the system capacity is fully available for a subsequent rainfall event. It should be noted that PWD does not give stormwater management credit for capture/reuse systems used for landscape irrigation. Since irrigation will not occur during the winter months, there is no mechanism for draining the system within 72 hours. Also, within three days of a rain event, it may not be necessary to irrigate the landscape, so the system will not be drained. However, automated systems are being developed that link real-time weather forecasting with pump systems that will draw down the stored rainwater in anticipation of an impending rainfall event. The pump system could be designed to meet the slow release requirements of PWD's stormwater regulations, thereby making the system potentially eligible for stormwater credit.

For external non-potable uses, the rainwater may be able to be reused without any water quality treatment prior to use. For internal uses, some level of water quality treatment is typically required depending on the proposed use of the captured rainwater. In addition to the added costs of a cistern and a water treatment system, these internal systems typically require a "parallel" plumbing system so that water can be provided from the public water system during periods when the cistern is empty. For Temple, these systems would be most practical in buildings that are occupied year-round, so that a constant demand is available to draw down the captured rainwater volume. Administration buildings and research facilities

may be better suited for this technology than residential buildings or dining halls.

These systems are typically designed by a mechanical/electrical/plumbing (MEP) engineer in coordination with an architect who helps establish anticipated water demands from the building's occupants. A number of simple models are publicly available to aid in the sizing of cisterns based on local rainfall patterns; one such model is available online from North Carolina State University at www.bae.ncsu.edu/topic/waterharvesting/model.html.



Metal rain barrel type cistern



Underground concrete cistern



Underground metal cistern

CAMPUS GREEN CASE STUDY

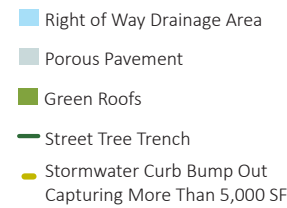
Using the proposed Campus Green site as a case study three scenarios were developed and analyzed to demonstrate benefits and costs of the potential application of several alternative stormwater management practices described in VERDANT TEMPLE:

1. Stormwater management of the Green watershed using only localized systems;
2. Stormwater management of the Green watershed using only a single large regional system;
3. Stormwater management of the Green watershed using a combination of localized systems and a large regional system.

The order-of-magnitude costs assigned to these scenarios illustrates a comparative cost efficiency, more detailed study will be required to determine future project budgets

SUMMARY

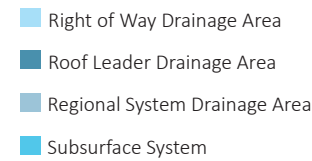
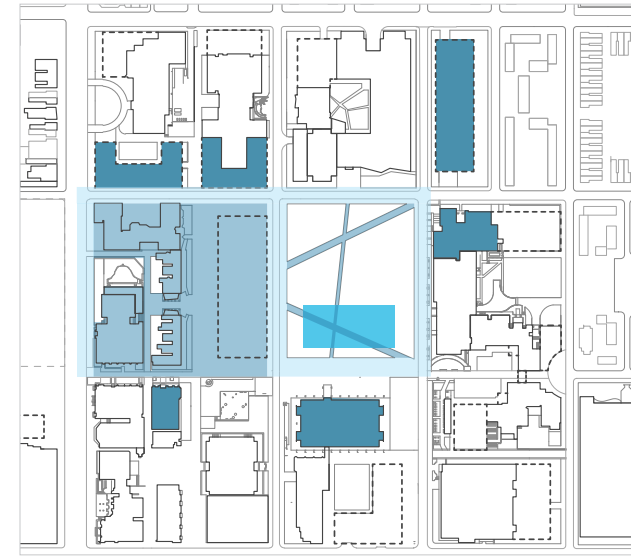
The implementation costs of Scenario 2 is the most cost effective stormwater management approach. However, Scenario 3, while more expensive, has additional benefits. The localized bumpout and tree trench systems will function as water quality treatment devices, providing stormwater filtration and cleaning before the runoff overflows to the infiltrating regional system. By directing cleaner water to the regional system, its maintenance requirements will be decreased (reduced removal of accumulated sediments in the system) and its operating life will be extended. Also, these localized systems are recommended in VERDANT TEMPLE to enhance the streetscape of the campus so they are providing benefits beyond stormwater management. Unit pavers are recommended in VERDANT TEMPLE for much of the study area since it is located in the heart of campus. Since unit pavement is already being utilized for aesthetic value, implementing porous pavement will decrease the size of the regional system thereby reducing the cost. Additionally, permeable unit pavement provides greater flexibility for phased implementation over time. Phasing of the regional system is a more challenging endeavor.



Campus Green Scenario 1

In this scenario, only localized systems are used to manage the runoff from impervious surfaces within the Green watershed. Because open land is limited to construct the localized systems, less impervious area can be managed than under the regional system scenarios.

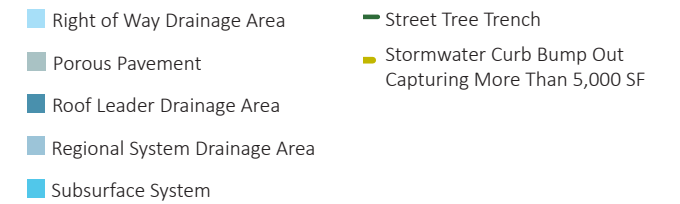
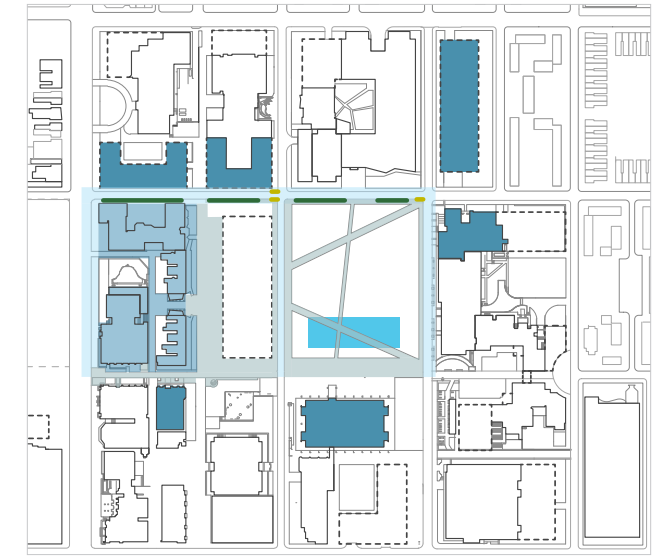
Amount of impervious surface managed:	7.5 acres
Cost of implementation:	\$4.2M
Cost per acre of impervious area managed:	\$566,000



Campus Green Scenario 2

In this scenario, a single large subsurface infiltration/detention system is constructed at the Green. In order to capture runoff from the drainage area, a series of new inlets with a shallow storm sewer piping network would be installed in city streets which would convey runoff from both Temple property and the public rights-of-way. The roof drainage systems of existing buildings adjacent to the streets would require evaluation to determine if the roof runoff could be diverted to the new storm sewer system, but in this scenario it is assumed that it could be.

Amount of impervious surface managed:	12.9 acres
Cost of implementation:	\$1.6M
Cost per acre of impervious area managed:	\$124,000
Non-Porous Pavement	267,946 SF



Campus Green Scenario 3

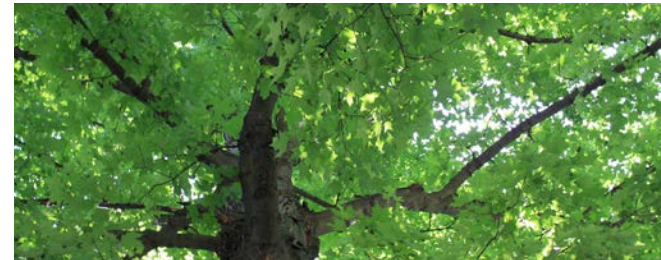
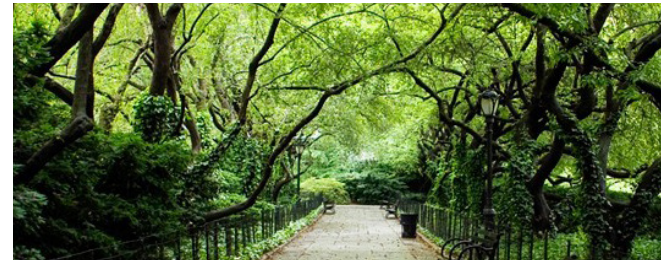
In this scenario, a large regional system is constructed in the area of the Green, including the new storm sewer network, but localized systems are also constructed within the watershed. Primarily, the localized systems will consist of proposed stormwater bumpouts and tree trenches.

Amount of impervious surface managed:	12.9 acres
Cost of implementation:	\$3.6M
Cost per acre of impervious area managed:	\$282,000
Porous Pavement	142,989 SF

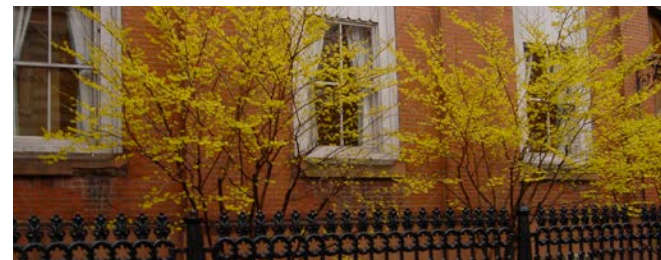
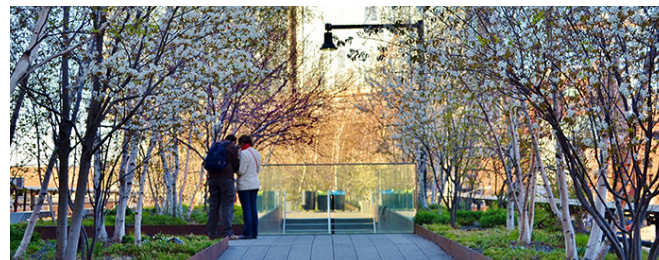
SYSTEM:
VEGETATION



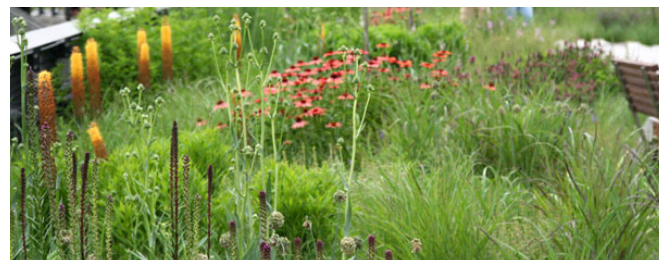
Canopy Tree



Understory Tree



Understory Planting



Lawn



Green Roof



Canopy Tree

Understory Tree

Understory Planting

Lawn

Green Roof

TREE MANAGEMENT PLAN SUMMARY

Based on site observations made during July 2014 a comprehensive Tree Management Plan for Temple's main campus was prepared. The recommendations that follow are summarized from, and follow the format of, that report which includes additional graphics, tables and maps and is a companion document to VERDANT TEMPLE. Standards and abbreviations referenced in the summary below are defined and detailed in the full report.

TREE ASSESSMENT RECOMMENDATIONS

Arboricultural activities, such as tree pruning and removal, directly related to the tree inventory and assessment findings are addressed:

Tree Removal And In-Depth Inspection

- Address all high- (“a”) and intermediate- (“b”) priority removals as soon as possible.
- Decide which of the seven trees coded as “consider removal” (“cr”) will be removed and schedule the others for appropriate maintenance work.

Tree Pruning

- Schedule all high-priority pruning needs as soon as possible, and schedule intermediate-priority pruning within one year.

Tree Life Expectancy

- Anticipate budget requirements for trees expected to live less than five years.

Cabling And Bracing

- Schedule the “b” priority cable within one year.
- Install cabling designed by an experienced arborist using the ANSI A300 standards.
- Periodically inspect existing (tree 12C-051) and newly installed cable systems. Perform necessary adjustments and repairs when problems are discovered.

Girdling Root

- Remove three trees with girdling roots to improve their long-term tree health.
- Remove or reposition, if possible, girdling roots when planting new trees.
- Inspect for girdling roots at the nursery when purchasing new trees and do not accept trees with noticeable problems.

TREE PEST RECOMMENDATIONS

Major pests present on campus, or impending in the short-term, which will impact tree management activities and planning, are addressed:

Bacterial Leaf Scorch (BLS)

- Identify red oaks to be preserved and actively managed to control BLS symptoms; these can be red oaks that are valuable to the landscape, very large or old, or have special meaning. Solicit proposals to treat the “actively managed” oaks.
- For “actively managed” red oaks:
 - Monitor and test managed oaks for BLS.
 - Get a quote from at least two arborists to treat infected red oaks.
 - Treat infected red oaks by irrigation and other cultural techniques. An arborist can help craft treatments for BLS infected trees.
- Since oaks, such as the campus's large willow oaks, are valuable landscape trees, consider minimizing, but not eliminating, planting trees from the red oak group.

Emerald Ash Borer

Temple's Grounds Maintenance should decide which trees, if any, to treat, which trees to remove over what timeframe and what trees, if any, to replant in the open sites.

TREE MANAGEMENT RECOMMENDATIONS

Various and important issues affecting tree management and planning activities are addressed:

Tree Species Diversity

- Continue to plant a diversity of tree species on campus whenever possible. There are many large-growing species that have proven to be adapted to the campus and are long-lived, so these should be represented in the next generation of trees.
- For specific areas, such as along streets or in certain garden areas, it is acceptable to make the design intent paramount, and use only one or two tree species in a limited area. The intent is to have a diverse collection of tree species over the entire campus.

Tree Planting

- Routinely plant a diversity of tree species to complement new facilities and landscape improvements and to replace trees that perish
- Plant trees that are adapted to the site conditions
- Follow the ANSI A300 (Part 6) standard for tree planting activities.
- Ensure transplanted trees are irrigated properly, for at least two years after planting.

New Tree Pruning

- Plan to prune newly planted trees starting three years after they are planted.
- Structural pruning should be accomplished on a three-year cycle due to the relatively fast growth rates of younger trees.
- Ensure that knowledgeable practitioners carry out structural pruning on new trees.

Tree Grates

- Continue the tree grate maintenance program and inspect all tree grates at least once per year. Implement management activities to make sure trees are not girdled and that tree grate related tripping hazards are ameliorated in a reasonable period of time.

Mower Damage

- Decide which trees to protect with mulch and which to treat with Roundup or its equivalent. If desirable, replace turf around tree trunks with up to three inches of mulch to protect trunk flare. Larger mulched areas are recommended around trees with surface roots that are susceptible to damage from mowers. Mulch should not be placed in direct contact with the trunk.
- Care should be taken to avoid spraying thin-barked trees or the trunk, roots, or any suckers arising from the trunk or roots.
- Educate mower/string trimmer contractors/operators that contacting trees with mower decks or string trimmers is an unacceptable maintenance practice that produces undesirable results.

Fertilization

- All tree fertilization should be based on a clearly defined objective. Common objectives include:
 - Overcome a visible nutrient deficiency.
 - Eliminate a deficiency not obviously visible that was detected through soil or foliar analysis.
 - Increase vegetative growth, flowering, or fruiting.
 - Increase the vitality of the plant.
- Fertilization quantity should be based on soil test recommendations.
- Generally, if grass is fertilized, surrounding trees do not need additional fertilization.

Mulching

- Use turf mowers with mulching blades during the fall to mulch the leaves into the turf and soil.
- Mulch should never be placed in direct contact with the trunk.
- Mulch should be a maximum of two inches thick.
- If decomposed mulch is too thick, use a hand-held spring steel-headed grass rake to distribute the excess organic matter under the tree's canopy.
- Damage to large tree roots is less likely if the edge of mulch rings is delineated by manually using an edging shovel.

Soil Volume

- Adequate soil is critical to the long-term viability of tree plantings. Industry standard recommendations suggests 1000 cubic feet of soil is required to sustain a large canopy tree with a 16 diameter at breast height trunk (*Up by Roots*, by James Urban, ISA Press, 2008).

Soil Compaction/Bulk Density

- Equally important as soil volume is the compaction or bulk density of the soil volume and is often the most prevalent deficiency in proper growing conditions. The density must be high enough to avoid settling, yet low enough to allow root growth. Ideal bulk densities vary slightly depending on site specific conditions and soil properties. Consult a qualified expert to ensure optimal growing conditions are being provided.

Street Tree

- Update the street tree inventory and assessment
- When planning new building projects, increase available soil volume by using soil cells or soil trenches.
- Explore, with Philadelphia Parks and Recreation, becoming a special district that defines responsibilities for each party.

Climate Change And Tree Species

- Start planting more trees that are better adapted to heat and urban conditions.
- Balance this initiative with other tree species considerations such as maintaining species diversity and choosing the right tree species for the space for the right reasons.

Fall Planting Hazard

- Construction projects should anticipate the use of fall planting hazards and should plan to dig and transplant plants only in the spring.
- If there is no way to avoid planting fall hazards in the fall, a two-year guarantee should be procured from the planting contractor.

Utility Pruning - Street Tree

- If planting a tree under electric distribution lines, choose a compatible species from PECO's street tree list.
- Explore MTRP grants for planting compatible trees under distribution wires.
- When Temple is notified about street tree pruning, the Grounds Maintenance Facilities Superintendent should exercise the option of reviewing PECO's vegetation management pruning activities.

Safety, Security Cameras And Tree Conflicts

- For new camera placements: Campus Safety Services and Grounds Maintenance should be involved early in the design/deployment process to consider optimal camera placement that will minimize tree clearance issues while still providing an adequate field-of-view.
- For existing cameras: If tree-related clearance is an issue, Grounds Maintenance should be consulted on how best to accomplish the needed clearance.
- Temple's Policy 04.61.11 – Camera and Video Imaging Systems, should be updated to reflect the above recommendations.
- If Campus Safety Services identifies problematic tree species/placement issues Grounds Maintenance should resolve these issues by pruning, transplanting or replacing offending trees. The Grounds
- Maintenance Facilities Superintendent and Campus Safety Services should review landscape plans and tree species placement for all new buildings and construction to identify and resolve safety-related issues early in the design process.

ADMINISTRATIVE AND ORGANIZATIONAL RECOMMENDATIONS

Administrative and organizational issues that impact planning and managing common area tree resources are addressed:

Periodic Inspections And Updating The Tree Assessment

- Plan and budget for periodic updates of the tree inventory/assessment.
- Divide the overall property into areas that are assigned inspection periods.
- Undertake tree assessment updates using appropriately qualified personnel who possesses sufficient education, training, and experience in inspection techniques and tree hazard detection.

Maintaining The Tree Inventory And Assessment Spreadsheets And Cad Map

- Designate an individual, with working knowledge of CAD and MS-Excel software, who will be responsible for maintaining the CAD map, tree inventory and assessment spreadsheets.
- Establish security and access protocols, such as password protection or access as read-only, to the CAD and spreadsheet data.
- If requested, design team member the Morris Arboretum Consultants, could maintain the tree inventory, assessment spreadsheets and CAD map.

Completing The Tree Inventory And Assessment

- Inventory and assess the remainder of Temple's trees in the common area and update the CAD map, tree inventory spreadsheets and this report with new data.
- Update the street tree inventory.

Tree Campus USA

- The Grounds Maintenance Facilities Superintendent should bring the idea of Temple becoming a Tree Campus USA to the Support Services Division meeting for discussion.

Arbor Day

- The Grounds Maintenance Facilities Superintendent should bring the idea of Temple holding an Arbor Day activity to the Support Services Division meeting for discussion.

Class/Alumni Tree

- Grounds Maintenance should consider implementing a Class/Alumni tree planting program.

Establishing An Arboretum

- Determine if Temple would like to extend the Ambler Arboretum onto the main campus.

Benefits From Temple's Trees

- Temple's Administration and decision-makers should understand how valuable trees are to the main campus, and how this value equates to financial benefits.

Tree Protection During Construction

- Add a professional arborist, knowledge about tree preservation and construction processes, to the construction team early in a project's planning stage if trees are to be preserved in or adjacent to a construction site.
- Involve an arborist in the review of landscape plans if new trees are to be installed.

Comprehensive Tree Policy/Operating Procedures

- Create a Tree Policy/Operating Procedures document within three years.
- Contact Temple Ambler to explore the opportunities for using its policy as a template for main campus and to explore the policy being written as a student project.

Memorial Tree Policy

- Explore the concept of creating a memorial tree policy. This may necessitate the robust development of the policy before the concept is presented to Temple's administration for approval.
- The process of creating the policy should be inclusive, all departments/groups that would be impacted by a tree memorialization policy, such as Institutional Advancement, Grounds Maintenance, Temple Alumni, etc., should have review capacity of the draft policy.
- All tags or memorialization should be vandal-resistant and should be made of low-value materials such as stainless steel.

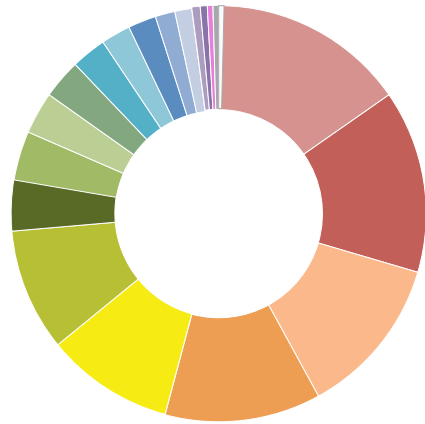
Tree Appraisal And Valuation

- The Grounds Maintenance Facilities Superintendent should query the University's Risk Management and Insurance Department as to current tree insurance coverage.
- If there is no coverage, the Risk Management and Insurance Department should explore appropriate coverage amounts.
- Hire an experienced tree appraiser to develop a scope for the tree appraisal, and deliver a tree appraisal report that would be the basis for negotiating coverage with Temple's insurance broker.

EXISTING: TREE DIVERSITY

Tree Diversity in the urban landscape is important to protect against new pests and outbreaks of old pests. The USDA recommends the following guidelines:

- Plant no more than 10% of any species
- Plant no more than 20% of any genus
- Plant no more than 30% of any family



FAMILY		GENUS		DECIDUOUS UNDERSTORY		EVERGREEN	
15.3%	Sapindaceae	12.9%	Maple	7.8%	Cherry	1.8%	Pine
14.2%	Rosaceae	11.0%	Oak	2.7%	Hawthorn	1.4%	Holly
12.4%	Fagaceae	10.1%	Japanese Pagoda Tree	2.5%	Magnolia	1.2%	Cedar
12.1%	Fabaceae	9.5%	Honeylocust	1.3%	Tree Lilac		
9.9%	Betulaceae	9.0%	Birch	1.0%	Golden Raintree		
9.5%	Platanaceae	8.6%	Planetree	0.5%	Snowbell		
4.0%	Ginkgoaceae	3.7%	Gingko	0.4%	Dogwood		
3.8%	Ulmaceae	2.8%	Linden	0.4%	Crabapple		
3.3%	Pinaceae	2.7%	Zelkova	0.3%	Eastern Redbud		
3.1%	Tiliaceae	2.0%	Sweetgum	0.1%	Serviceberry		
2.7%	Magnoliaceae	1.9%	Bradford Pear				
2.3%	Oleaceae	0.8%	Ash				
2.2%	Hamamelidaceae	0.8%	Elm				
1.5%	Aquifoliaceae	0.7%	Bald Cypress				
1.3%	Cupressaceae	0.5%	Dawn Redwood				
0.7%	Cornaceae	0.4%	Katsura Tree				
0.5%	Styracaceae	0.3%	Beech				
0.4%	Cercidiphyllaceae	0.3%	Kentucky Coffee Tree				
0.4%	Taxodiaceae	0.2%	Hickory				
0.2%	Juglandaceae	0.2%	Nyssa				
		0.1%	Mimosa				
		0.1%	Yellowwood				



SPECIMEN TREE INVENTORY

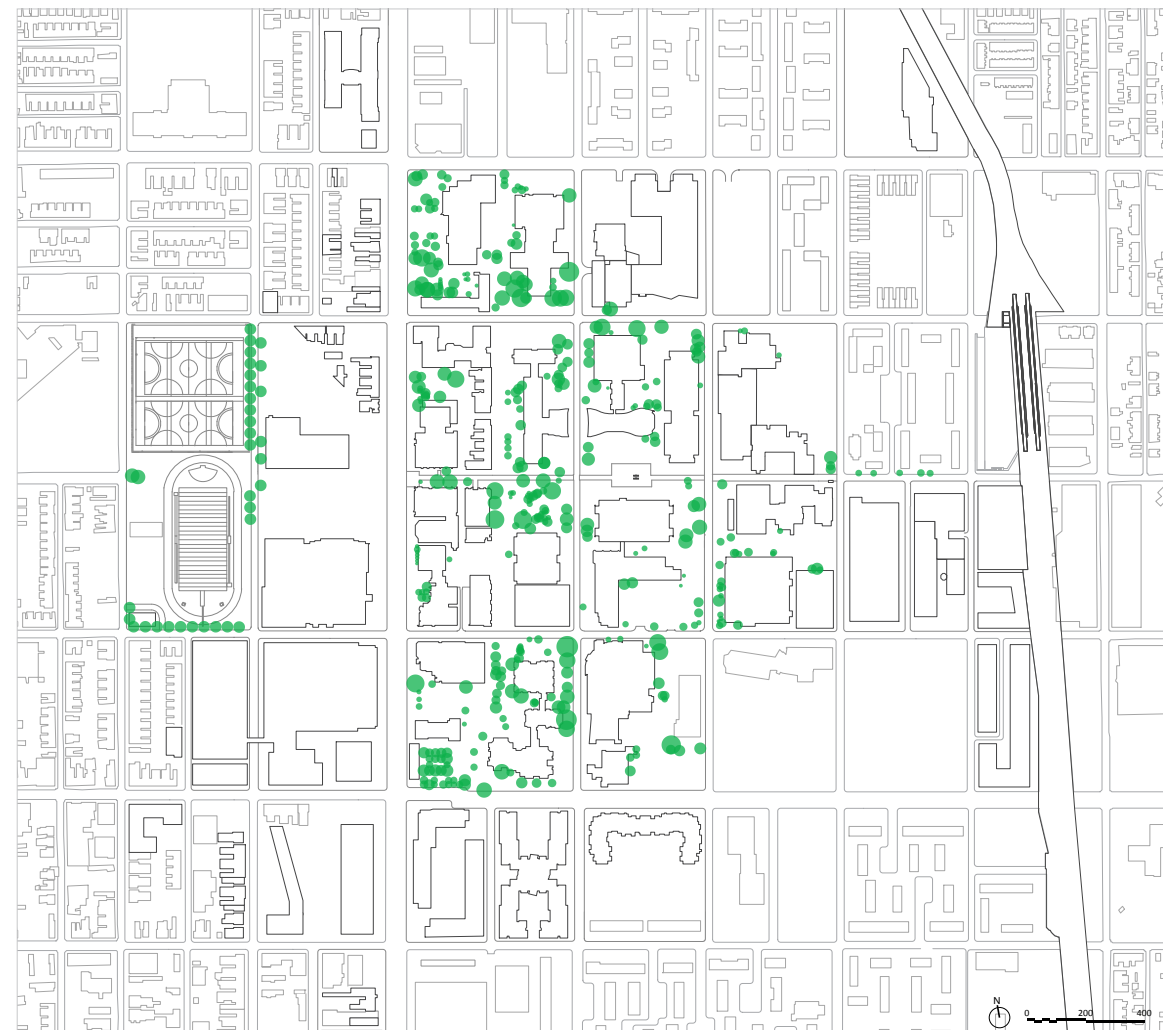
An analysis of valuable tree specimens was completed using information collected by the design team. Trees were analyzed using the following criteria:

Canopy Trees

- Spread - Over 20'
- Circumference at Breast Height - Over 24"
- Risk Rating - Low or Moderate
- Life Expectancy - Over 15 years

Ornamental Trees

- Spread - Over 10'
- Circumference at Breast Height - Over 10"
- Risk Rating - Low or Moderate
- Life Expectancy - Over 15 years



- Canopy Tree
- Ornamental Tree

TREE GROUPS OF VALUE

Specific grouping of trees can have aesthetic value even if the individuals are not considered valuable alone. This drawing shows specific groupings of trees that have value when considered together. These trees should be preserved when new building projects are contemplated.



- Valuable Tree Grouping

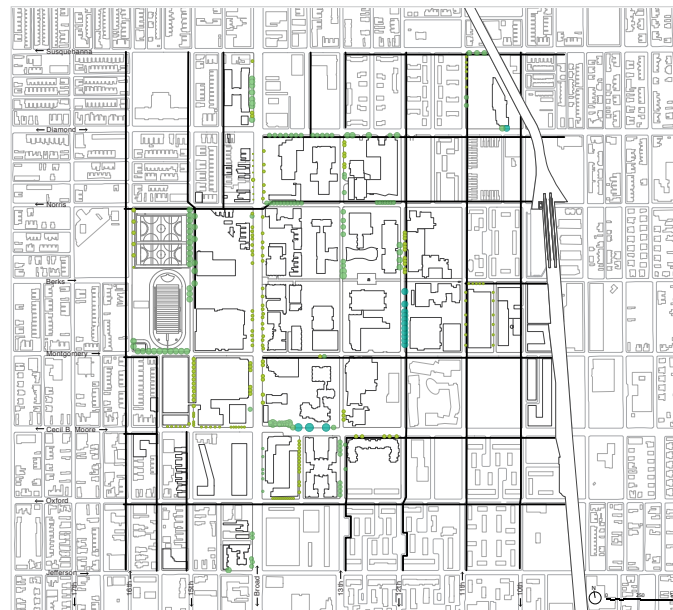
SCALE OF CAMPUS

Temple's campus has necessarily been built at a civic scale to support its identity as a premier institution of higher learning. The mass and height of Temple's buildings are in stark contrast to the predominately residential scale of its surrounding neighborhoods. The consistent presence of mature street trees in and around the campus would help mediate the transition between these two different scales of built environment and also provide well-being and campus image benefits.



OVERHEAD WIRES AND STREET TREES

Overhead utility wires are prevalent throughout the Temple campus as illustrated on this diagram. The wires have significantly affected the condition of existing trees as well as potential species that can be planted. Many large canopy trees, currently under wires have been severely pruned and are deformed, which greatly impacts their aesthetic contribution to both the campus and neighborhood landscape. In order to avoid forced radical and unnatural pruning by utility companies when trees come in contact with their overhead wires Temple will have to adhere to a limited tree palette. While planting smaller trees will increase the aesthetics of Temple's landscape because they can grow in their natural form beneath the wires, planting large canopy trees wherever possible will be the most effective way to create an appropriately scaled verdant campus environment.

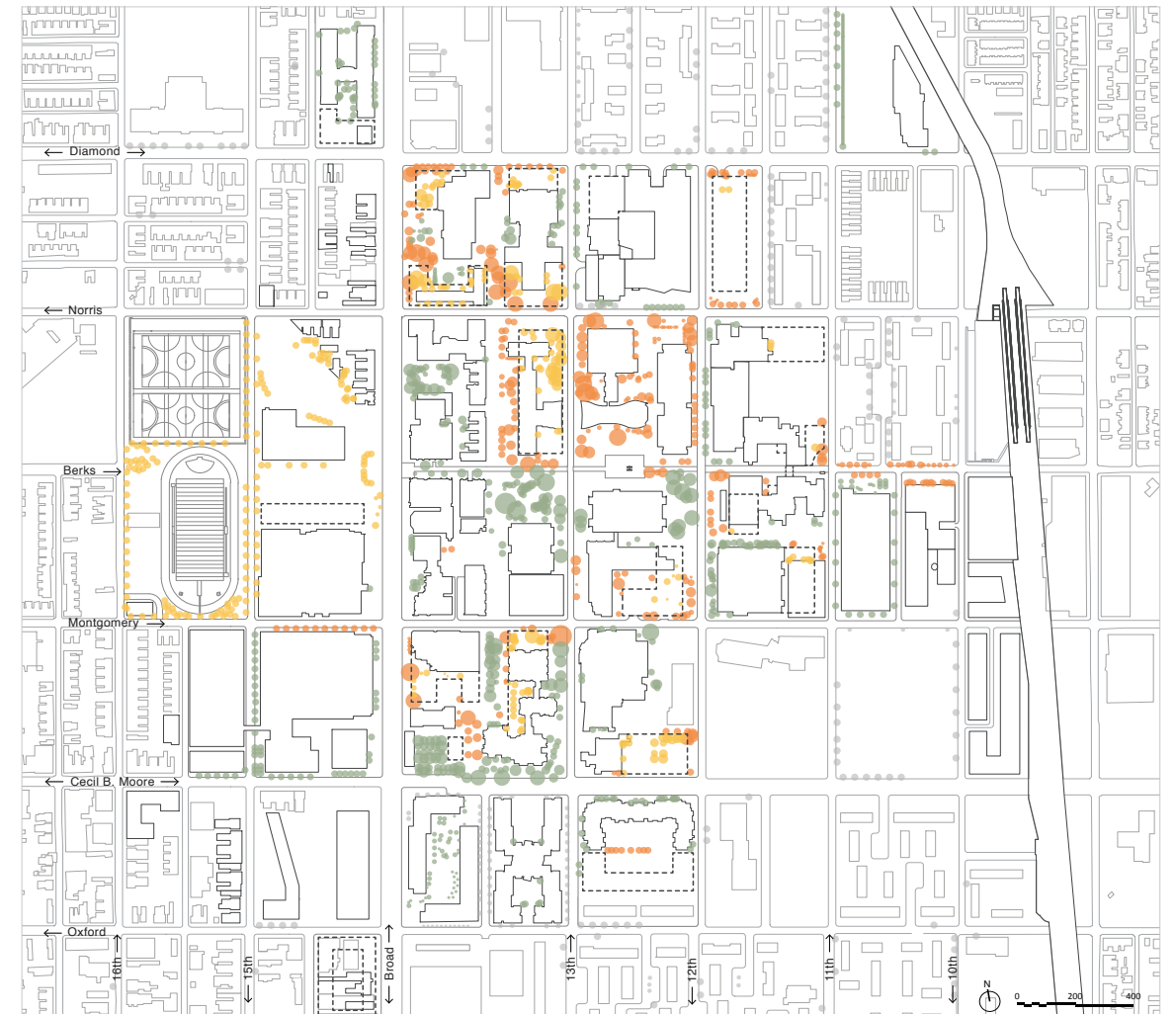


TREE LOSS: DEVELOPMENT

A significant portion of the Temple's existing tree canopy will be lost to future development. Approximately 40% of the existing trees will be removed. Both interior campus trees and street trees will be subject to removal.

+/- 1,233 EXISTING TREES

- 54% Trees to Remain
- 26% Trees Removed: Site Development
- 20% Trees Removed: Building Development

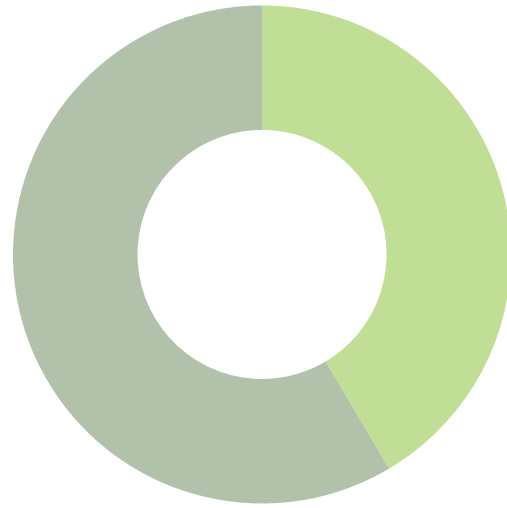


PROPOSED: TREE PLANTING STRATEGY

Anticipated future buildings and related campus development suggests that much of Temple's current street tree population will require replanting. The planting strategy for proposed trees illustrated here is designed to support the goal of scaling the University's streets to blend with their context thereby creating a cohesive and verdant campus experience while resulting in an increase of the total amount of trees in Temple's environment.

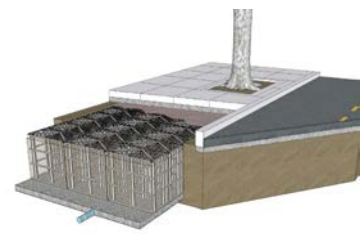
+/- 1,408 PROPOSED TREES

- 59% Trees Existing
- 41% Trees Proposed

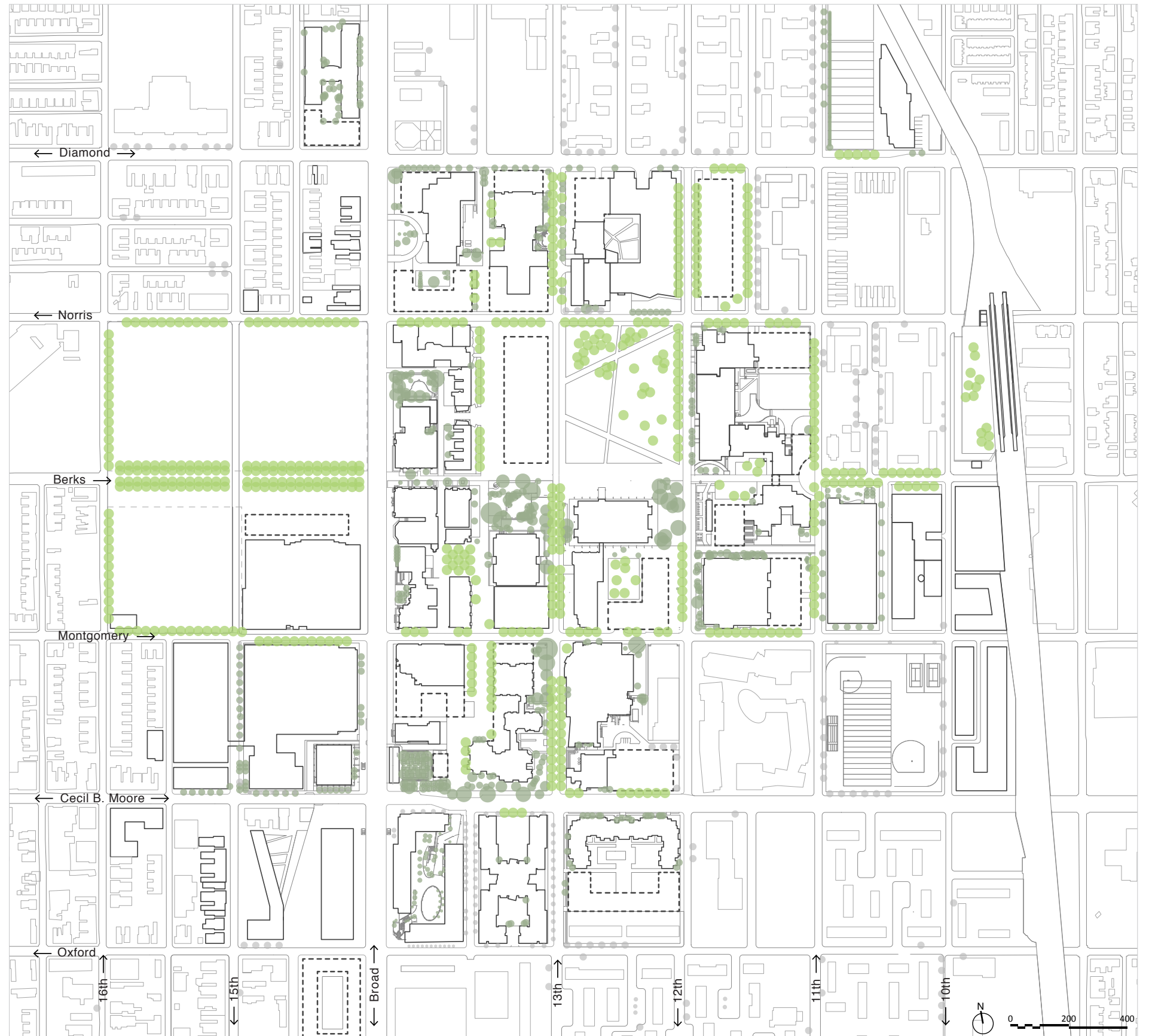


GROWING CONDITIONS

Most of the proposed trees are street trees adjacent to the roadway curb. These locations pose challenging growing conditions, particularly for many native species. A critical element to the long-term vitality and vigor of these trees is uncompacted soil volume. Commercially available products such as DeepRoot Silva Cell® and CityGreen Strata Cell® provide structural support for pavements above and allow soils within the planting trench below to be organic rich and uncompacted. Investment in this type of structural soil system will ensure the trees are given an opportunity to mature into large, healthy specimens that will contribute to the campus experience for generations.



DeepRoot Silva Cell®



ENVIRONMENTAL BENEFITS OF TREES

The aesthetic and image creating benefits of an urban campus of tree-lined streets interspersed with gardens and greens of varying scales and intimacy is obvious. The environmental, well-being and sustainability benefits of the a verdant campus are also compelling reasons to encourage greening efforts at Temple.

Air Quality And Pollutant Filtering

- Two healthy trees can produce enough oxygen (through a process called photosynthesis) needed by a person each year (about 400 lbs).
- Trees also absorb 120-240 lbs. of air pollutants such as nitrogen dioxide, sulfur dioxide, and carbon dioxide produced by automobiles, power plants and factories.
- Trees sequester carbon dioxide (a greenhouse gas) from the air, converting and storing it in the form of wood. A healthy tree uses about 500 lbs. of carbon dioxide per year.
- For every ton of wood produced, about 1.8 tons of carbon dioxide is removed from the air.
- A large tree will store the same amount of carbon dioxide as is released by three cars driven 15,000 miles.
- As trees cool the surrounding environment they reduce smog levels and ozone pollutions by up to 6%.
- Recent USDA Forest Service research estimates that Philadelphia's urban forest air pollution removal is valued at \$4.8 Million for 1 year.

Environmental Impact Of Proposed And Existing Trees

- 700,000 pounds of carbon used by trees.
- 280,000 pounds of oxygen created each year.
- 250,000 pounds of air pollutants removed.
- Equivalent carbon sequestering of 4,200 cars driven 15,000 miles.

Reduce Energy Consumption

- A 25 foot tree reduces annual heating and cooling costs of a typical residence by 8 to 12 percent.
- While asphalt paving, and concrete building and walkways reflect heat causing "heat islands", a mature tree canopy reduces air temperatures by about 5-10 degrees F, influencing the internal temperatures and air conditioning needs of nearby buildings.
- The net cooling effect of a healthy tree is equivalent to 10 room-size air conditioners operating 20 hours a day.

Improved Water Quality And Reduced Community Flooding

- The canopy of a tree absorbs and intercepts rain, reducing the amount of water that will fall on pavement and then must be removed by stormwater drainage systems.
- Reducing the amount of stormwater with tree canopies can mean reductions in stormwater management costs (smaller and fewer pipes).
- As stormwater falls on paved surfaces such as roadways and parking lots, it washes oils, metals, salts and other chemicals into nearby streams and rivers. By intercepting stormwater with tree canopies, these non-point source pollutants are reduced in our streams.
- Flash flooding can also be reduced if a community has good tree canopy cover slow down rainfall that would otherwise run off paved surfaces into nearby streams and rivers.

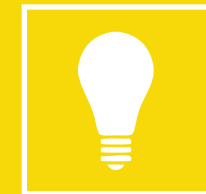
Bird Migration

- About 25 species of birds use the Atlantic flyway, which covers the sky over Philadelphia, as a regular path of travel for their yearly migration. Planting trees on campus that support these bird population will create habitats, aid in conservation and contribute to the environmental health of the region.



Street trees along 13th Street

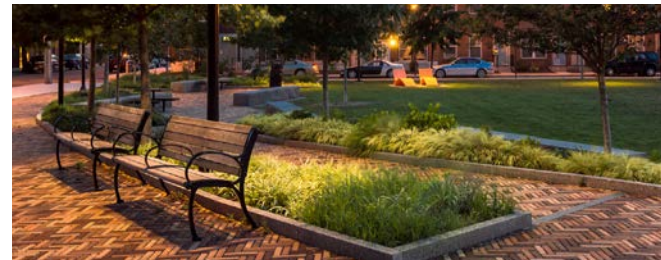
SYSTEM:
LIGHTING



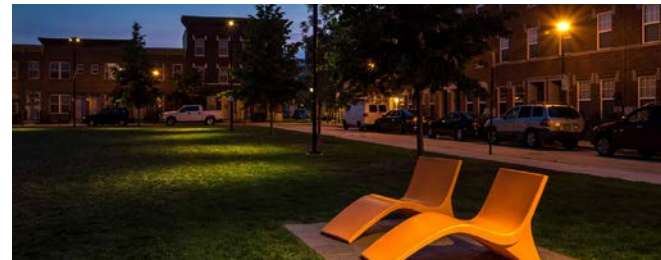
Facade



Pedestrian



Landscape Lighting



Street



Building Entry



Facade

Pedestrian

Landscape Lighting

Street

Building Entry

LIGHTING: EXISTING CONDITIONS ANALYSIS

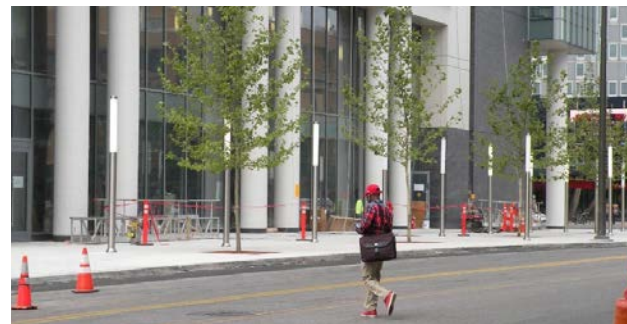
EXTERIOR LIGHTING

This section of VERDANT TEMPLE outlines the various means by which Temple's campus is lighted and provides recommendations for future improvements. The recommendations take into account the key factor of campus security while defining new standard practices that will improve the overall appearance and maintainability of Temple's campus.

A variety of pole-mounted and parapet-mounted floodlight and cut-off type luminaires provide most of the existing campus lighting. Their style and placement generate high intensities of illumination, not a consistent nighttime pathway or a harmonious architectural appearance. The cut-off luminaires come in several sizes and forms, from a rectangular "shoebox" housing to a dome-shaped glow-top luminaire. Cut-off luminaires are used in plazas, along walkways and driveways, in parking lots and truck docks.

Floodlight luminaires are also found in a variety of housing configurations. Parapet-mounted floodlights are used to augment the light from cut-off luminaires or to provide illumination when light poles are absent. Temple facility staff told the design team that the location and placement of parapet-mounted floodlight luminaires was determined in reaction to crime on or near the campus.

The most common existing exterior luminaires are shown to the right. The design team found that Temple's exterior lighting has been designed primarily to promote security. Aesthetics, wayfinding, efficiency and sustainability have taken a lower priority.



ILLUMINANCE VALUES

Illumination Criteria

The design team consulted the recommendations of Illuminating Engineering Society of North America (IESNA) to determine the recommended illumination criteria for Temple's campus. Temple is located in a densely populated urban area that is perceived as having a high incidence of crimes against people and property. Within this context, IESNA's document G-1, dated March 1, 2003, *Guidelines for Security Lighting for People, Property and Public Spaces* recommends the following illuminance criteria for schools and institutions.

- General Parking (not in a parking structure):
2 footcandles (30 lux) maintained horizontal average with an average:minimum contrast ratio of 4:1.
- Sidewalks and Footpaths: 1 footcandle (10 lux) maintained horizontal average with an average minimum contrast ratio of 4:1.

The United States Green Building Council (USGBC) has also developed lighting criteria within its Leadership in Energy Efficient Design (LEED) program. In their document entitled *LEED Reference Guide for Green Building Design and Construction, 2009 Edition*, Sustainable Site Credit 8 speaks about lighting energy usage, and the control of light trespass and stray or misdirected light. LEED Credit 8 categorizes sites into four environmental zones. In general within each zone, all luminaires must have full cut-off optics directing all light downward. This is meant to preserve the darkness of the night sky and avoid interference with the diurnal cycle of the natural environment.

Temple's campus fits into IESNA's Outdoor Lighting Zone LZ4 – High (Major City Centers, Entertainment Districts). This zone allows the following.

- Light Pollution Limitation: (Light above 90°)
- Maximum 10% of total installed fixture lumens on the site.
- Light Trespass limitation: Maximum 0.60 horizontal and vertical footcandles at the site boundary. Maximum 0.01 horizontal footcandles at 15 feet beyond the site boundary.
- Electric power for lighting: Maximum 0.8 watts per linear foot of walkway less than 10 feet wide. Maximum of 0.12 watts per square foot of walkway equal maximum of 2.5 watts per linear foot of building facade or 0.1 watts per square foot of building facade.

Observations

The adjacent map shows measured illuminance values found along campus walkways and sidewalks adjacent to city streets. These values were measured at grade, after dark. The illumination levels vary greatly from one area of campus to the next, and often along the same stretch of walkway or sidewalk. This variety in illumination is typically caused by parapet-mounted floodlights. This irregularity in the application of light creates hot spots and shadows instead of a consistent lighted pathway across the campus. Shadows cast by trees adjacent to the floodlights further exacerbates the contrast of light and dark. This high level of contrast creates a less safe environment as the extreme bright areas will make the dark areas appear more shadowy.

The green lines shown on the adjacent map indicate the locations of wooden utility poles with overhead wiring. This is noted because the Philadelphia City Streets Lighting Department will not allow additional light poles to be mounted beneath the overhead wires. In many instances Temple has dealt with this condition by installing light poles set back from the street.

The design team's footcandle readings show that much of Temple's existing walkway lighting exceeds the footcandle recommendations of IESNA. However, the University has become accustomed to higher illumination levels. Therefore, the design team undertook a series of nighttime surveys and tests to determine a lighting level for campus walkways that would provide both a safe well-lit campus environment and be responsive to USGBC energy-use restrictions.

The testing revealed that an average lighting level, along segments of Liacouras Walk adjacent to the Founder's Garden, lighted only by glow-top poles, measured 3 footcandles. The design team verified that a 3 footcandle average could be achieved by pedestrian scale lighting poles without using parapet-mounted floodlights, and within the energy limits prescribed by USGBC at other campus locations. Park Avenue at Cecil B. Moore Avenue and Polett Walk at 12th Street were selected for this testing because they are representative of campus areas with regularly spaced light poles. Much of Temple's campus illumination is provided or supplemented by floodlights mounted at building parapets. This test was designed to measure illuminance values with the light poles in full-working order and with the nearby parapet-mounted floodlights turned off.

METHODOLOGY / ANALYSIS

RE-LAMP LIGHT POLES AND TURN OFF FLOODLIGHTS

Basis For Test

Much of the campus illumination is provided or supplemented by floodlights mounted at building parapets. A test to determine appropriate light levels on campus was designed to measure illuminance values with the light poles in full-working order and with the nearby parapet-mounted floodlights turned off. The two sites were selected because they are representative samples of areas with regularly spaced light poles.

Park Avenue At Cecil B. Moore Avenue

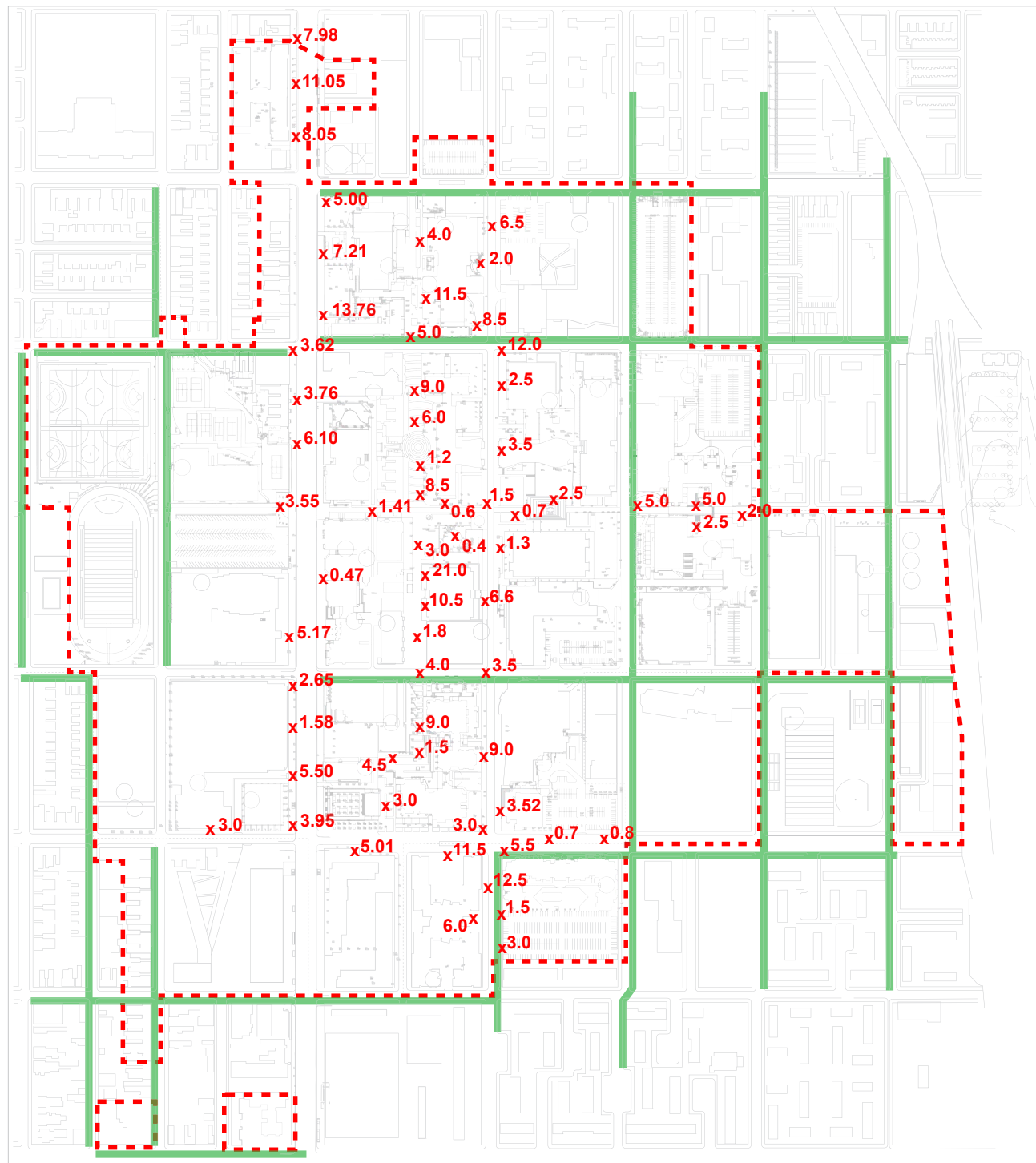
Lighting for sidewalks along Park Avenue varies greatly from the east side to the west side of the street. The east side is lighted by city owned and operated cobra heads mounted to wooden utility poles and by parapet-mounted floodlights. Without contribution from the floodlights, the east side of the street averages 1.44 footcandle (FC) with an average: minimum ratio of 4.5:1. The west side is lighted by regularly spaced pedestrian scale light poles and building-mounted wallpacks located adjacent to entries. The light poles are located approximately 50 feet on center. Without contribution from the floodlights, the west side of the street averages 3.53FC with an average: minimum ratio of 2.52:1. Based on these tests, the pedestrian light poles along the Park Avenue west sidewalk show that a 3FC average with a contrast ratio of 4:1 average: minimum or better is achievable without the parapet-mounted floodlights.

Polett Walk At 12th Street

Lighting for Polett Walk from 12th Street to the Bell Tower Quad is fairly consistent. Three regularly spaced cut-off metal halide luminaires are located between decorative light poles with (3) clear globes on each pole. Without contribution from the floodlights mounted to Biology Life Sciences, the illuminance values average 1.90FC with an average: minimum ratio of 2.54:1.

Results

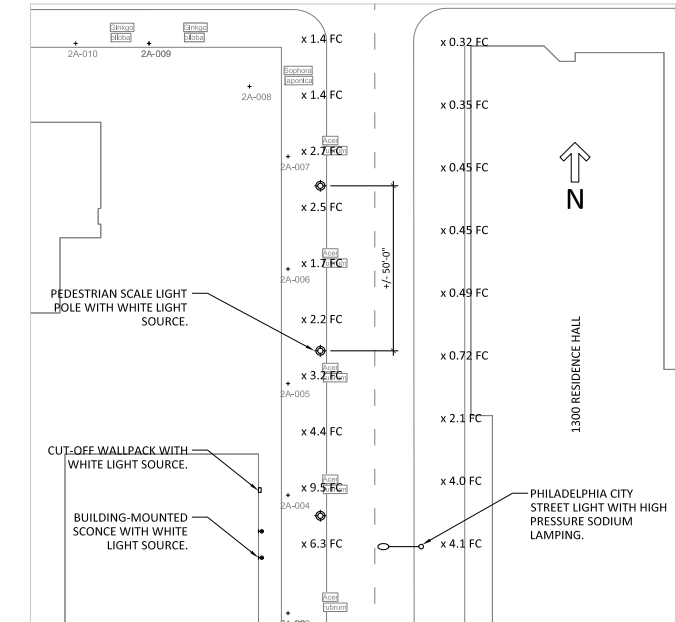
Based on these tests, the design team, including Temple's University Architect and the Director of Architectural Services determined that a maintained average of 3 horizontal footcandles is an acceptable and sustainable standard for Temple's campus walkways.



x 5.01 Illuminance Measurement at Grade in Footcandles

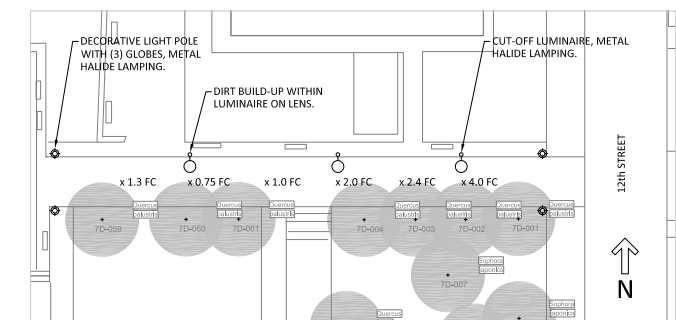
- - - Project Boundary

— Wooden Utility Poles with Overhead Wiring



Park Avenue at Cecil B. Moore Avenue

NOTES:
 - ILLUMINANCE MEASUREMENTS RECORDED JANUARY 23, 2014 STARTING AT 6PM.
 - LOCATIONS OF LIGHT POLES AND LOCATIONS OF ILLUMINANCE MEASUREMENTS ARE APPROXIMATE. ACTUAL VALUES MAY VARY.



Polett Walk west of 12th Street

NOTES:
 - ILLUMINANCE MEASUREMENTS RECORDED JANUARY 16, 2014 STARTING AT 6PM.
 - FLOODLIGHTS ON ANDERSEN HALL MAY HAVE CAUSED INCREASE ILLUMINANCE AT THE ENTRY TO POLLETT WALK FROM 12TH STREET.
 - LOCATIONS OF LIGHT POLES AND LOCATIONS OF ILLUMINANCE MEASUREMENTS ARE APPROXIMATE. ACTUAL VALUES MAY VARY.

PROPOSED LIGHTING HIERARCHY

SCALE SECTION

The scale of light poles should relate to both their surroundings and to the intended use of the space they are placed in. The sketch depicts a family of light pole types recommended for use on Temple's campus and their relationship to each other.

Light Column

A low height object, the decorative light column provides an intimate feeling with the visual brightness of the glowing diffuser creating an aura that brings the immediate area to life by illuminating the surrounding architectural and landscape features. The light column is best suited for marking feature areas.

Pedestrian Light

At approximately 15-feet high, pedestrian-scale light poles allow for a connection between the lighting object and the pedestrians on the pathways. These scale elements are best suited for illuminating sidewalks adjacent to streets and for internal campus walkways.

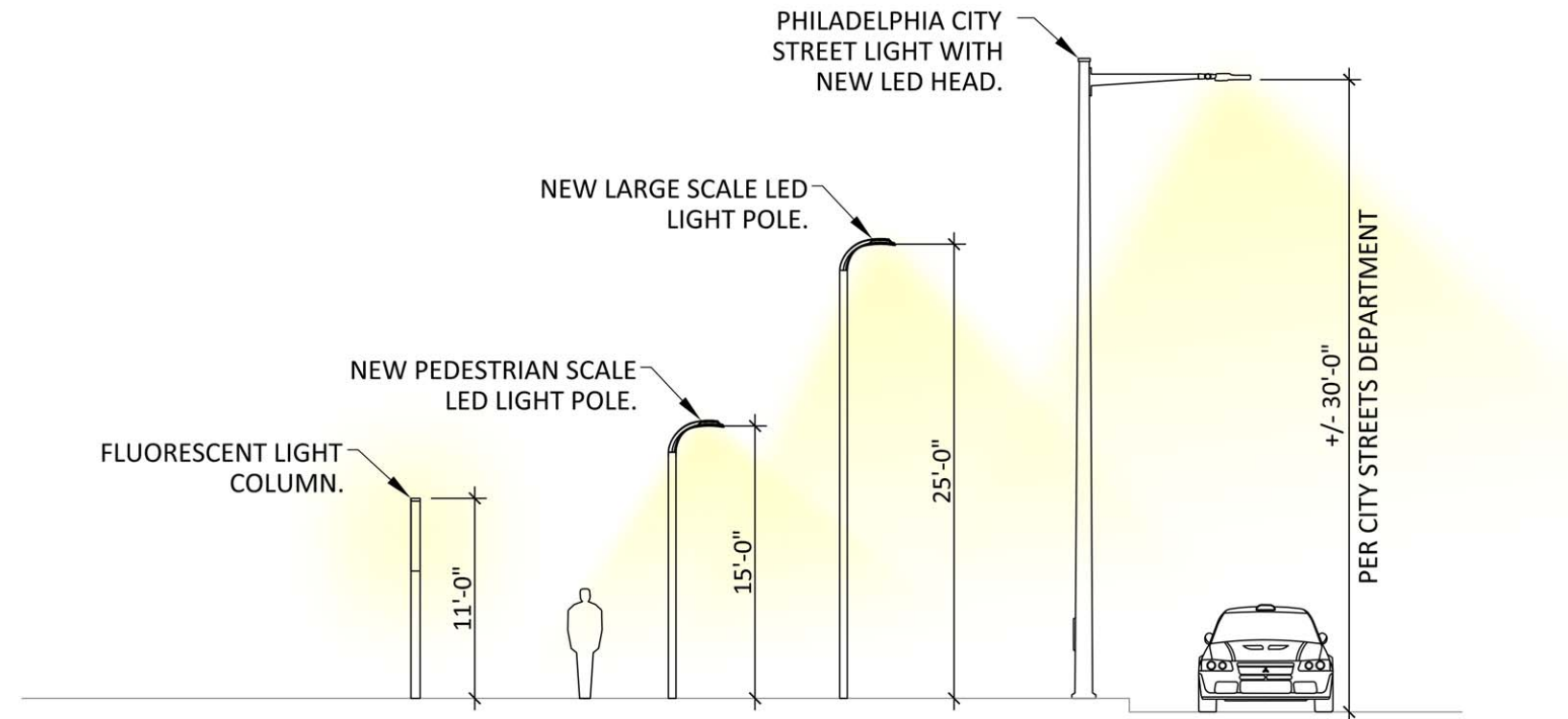
Large-scale Light

By raising the mounting height from the pedestrian-scale light poles, to approximately 25-feet high, a larger area is illuminated and the sense of grandness of plazas and significant pedestrian walkways is reinforced. The pedestrian-scale and large-scale light poles should use luminaires from the same family to keep a consistent appearance of the luminaire as well as the quality of light throughout campus.

Street Light

These lights are standard Philadelphia City Streets Department issue however Temple should work with Streets to prioritize the retrofit of existing high pressure sodium (HPS) roadway luminaires to LED sources. This change will provide a consistent light color across campus, 4000K neutral white, instead of the stripes of yellow HPS streetlights interleaved with the 4000K metal halide sources that are currently visible throughout campus.

Refer to the map on the right for recommended areas in which to use this family of light poles.



HIERARCHY DEFINED

The map at the right indicates the proposed hierarchy of light pole types, landscape/hardscape areas to be lighted and building facades to be lighted.

The decorative light column is an attractive, architectural element that provides a visual statement. It should be used at feature areas and Gateways into Temple's campus as an accent marker.

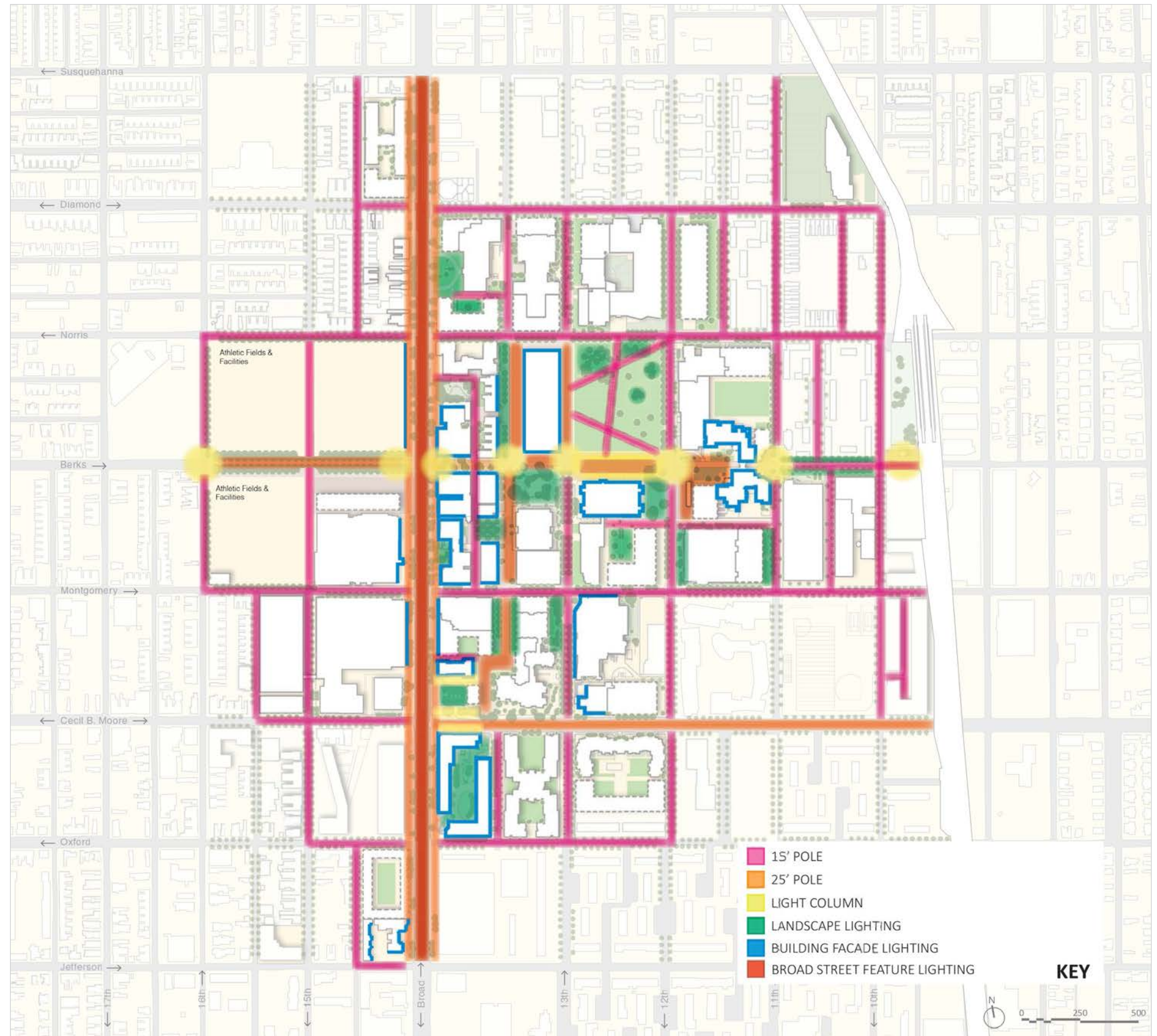
Pedestrian pathways and sidewalks should be lighted by 15-foot high light poles with full cut-off luminaires that use an LED source. These light poles will also provide a visual reminder for pedestrians that they are on Temple's campus during the daytime. Regular spacing and consistently lighted pathways will further reinforce the campus identity at night.

Larger plaza areas should be lighted by 25-foot high light poles with full cut-off luminaires that use an LED source. By using tall poles from the same family as the pedestrian poles Temple's campus identity will be visually reinforced.

Also noted are feature areas that would immediately benefit from landscape lighting and buildings that would immediately benefit from facade lighting.

In addition to the qualifications mentioned previously, the light poles selected as the new standard for Temple are to be vandal resistant. Finishes should be easily cleaned, fasteners should be tamper-resistant or concealed, and materials should be impact resistant.

Light pole specifications are detailed on p. 2.80.



Lighting Hierarchy

INSPIRATIONAL IMAGES

BUILDING FACADE LIGHTING

Temple’s campus has many buildings with historic character and a unique architectural appearance. Some of Temple’s buildings are campus landmarks visible down Broad Street or from SEPTA Regional Rail. Architectural features such as steeples, domes, window frames and columns can be lighted to transform a building’s nighttime appearance. The texture of stone or brick can create accent when grazed with light. Tall buildings with light finishes, such as Wachman Hall, can be transformed into towers of light to be a beacon when approaching campus. Lighting the “Historic District” along Polett Walk and Liacouras Walk would serve to reinforce these two major pedestrian thoroughfares. Buildings recommended to receive a facade lighting treatment are:

- Shusterman Hall
- 1810 Liacouras Walk
- Rock Hall
- Ritter Hall Entry Points
- Mitten Hall
- Sullivan Hall
- Barrack Hall
- Wachman Hall as a campus beacon
- Carnell Hall
- Paley Library
- Anderson Hall and Gladfelter Hall as campus beacons

Building entries vary considerably from building to building on campus. Because of this, no single lighting strategy will suit all circumstances. Lighting for all building entries should be reviewed to ensure the entries are clearly evident. If not, luminaires that fit with a building’s style should be selected to define entry points and further enhance the architecture.



LANDSCAPE LIGHTING

Lighting the landscape creates areas of visual interest and repose that students, faculty, and staff may choose to make use of during fall and spring evenings. During winter months, the lighted landscape features create a welcoming environment that provides a sense of safety. The renovated Columbia Park is an example of how uplighting of trees creates a safe environment. Lighting landscape elements, such as benches or artwork creates focal elements within a space. Marker lights mounted in paving can create visually interesting patterns as a pedestrian crosses through a plaza. Areas recommended to receive a landscape lighting treatment are:

- Founder’s Garden
- Hardscape north of 1810 Liacouras Walk leading to Wachman Hall
- Johnson Hall / Hardwick Hall drop-off loop
- Ritter Hall / Klein Law Building trees
- Temple TECH Center and Welcome Center trees
- Proposed alleé of trees along Berks from the SEPTA Regional Rail Station
- Hardscape at Wachman, Carnell and Conwell Halls

Landscape lighting should also be considered for the new Green, when that area is designed.



13TH STREET CASE STUDY

EXISTING

Summary

The illumination along 13th Street from Montgomery to Norris consists of city street lights, parapet-mounted floodlights, and cut-off luminaires on 12 foot tall light poles. The city street lights use high pressure sodium lamping, whereas all Temple-owned lighting uses 4000K metal halide lamping.

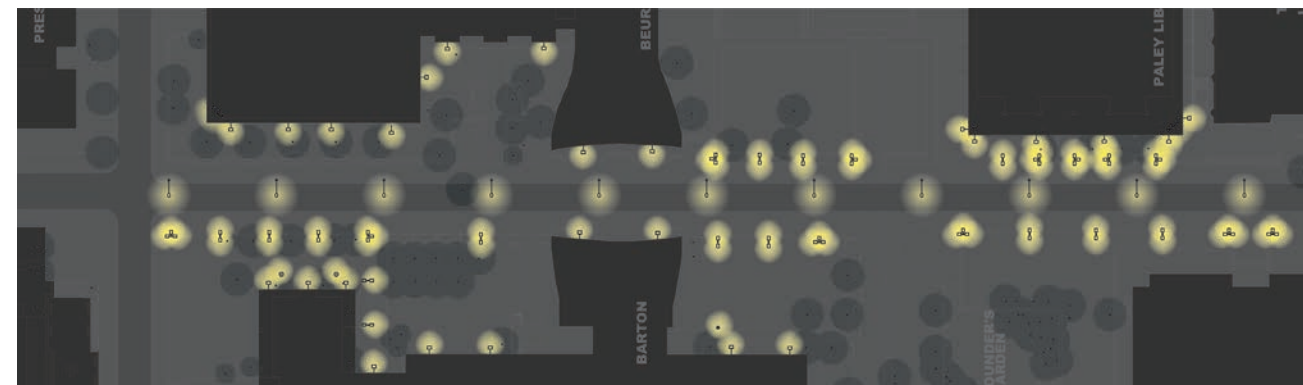
Quantities

City Street Lights - 14
 Cut-off Luminaire on 12-foot Pole - 72 @ 198W each
 Parapet-mounted Floodlights - 36 @ 1090W each
 Parapet-mounted Floodlights - 2 @ 1605W each

Power

Installed Connected Load = 56,706W
 ASHRAE 90.1-2007 Allowable Connected Load = 9,562W
 LEED Allowable Connected Load = 7,650W

Connected load estimates do not include city street light electrical loads.



PROPOSED

Summary

The proposed layout replaces the existing cut-off luminaires on 12-foot poles with new LED luminaires using the same mounting locations. The city street lights are retrofitted with a new LED luminaire with a CCT to match the Temple 4000K standard. The locations for new LED luminaires mounted in existing locations are highlighted in orange. This case study has removed the parapet-mounted flood lights. To provide illumination in areas where the floodlights have been removed, new light pole locations have been added and are highlighted in yellow. Landscape and facade lighting opportunities are noted and highlighted in yellow.

Quantities

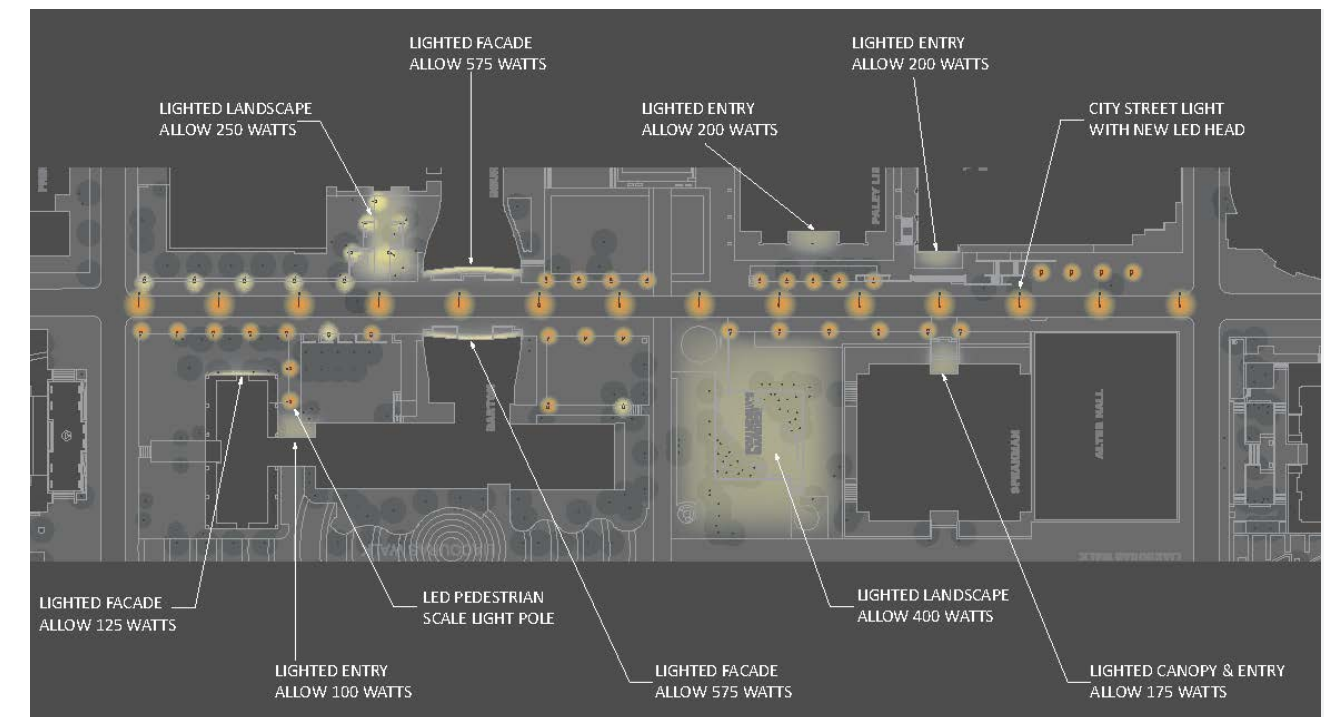
City Street Lights with LED luminaire - 14
 LED Pedestrian scale cut-off luminaires - 43 @ 70W each
 Facade Lighting - 1,950W
 Landscape Lighting - 650W

Power

Existing Connected Load = 56,706W
 Proposed Connected Load = 5,610W
 ASHRAE 90.1-2007 Allowable Connected Load = 9,562W
 LEED Allowable Connected Load = 7,650W
 Proposed Power Savings = 51,096W

Connected load estimates do not include city street lights.

Total load reduction is estimated at 85% for all of Temple's campus. This estimation is based on extrapolations from data for areas of campus with documented lighting layouts.



LIGHTING PERFORMANCE STANDARD

All outdoor lighting projects shall use LED luminaires to reduce energy use and maintenance costs. A correlated color temperature of 4000K shall be used throughout campus to keep a consistent appearance with the existing metal halide luminaires. Pedestrian walkways shall be designed to meet a maintained average illuminance of three (3) footcandles at grade with a maximum contrast ratio of 4:1 average to minimum. For new light poles, a spacing to mounting height ratio of at least 3:1 shall be maintained wherever possible. A 3:1 spacing to mounting height ratio provides a consistent cadence of luminaires and helps to define the space. All existing parapet-mounted floodlights shall be removed when new poles are installed.

Projects moving forward shall use the luminaire types designated in VERDANT TEMPLE. Deviations from these standards shall require review and approval by the University Architect. Submit photometric calculations to the University for approval of all lighting layouts.

STANDARD LIGHT POLES

15-Foot And 25-Foot Pedestrian Light Pole

The new Campus Standard Light Pole is a full cut-off luminaire with a circular top. The LED module is mounted in the top and aimed downward. The luminaire is a modified standard by Selux Lighting. Provide nominal 65W LED engine for luminaires mounted to 15-foot light poles. Provide nominal 100W LED engine for luminaires mounted to 25-foot poles.

Refer to Lighting Hierarchy (p.2.77) for locations to use 15-foot pedestrian scale light poles and 25-foot light poles.



Manufacturer: Selux
 Description: Modified Saturn Cutoff LED
 Model: SACL/SAM SHADE
 Mounting: 1 Single
 Temperature: 4000k
 Finish: Silver
 Pole Model: A35-14-SV-BC5

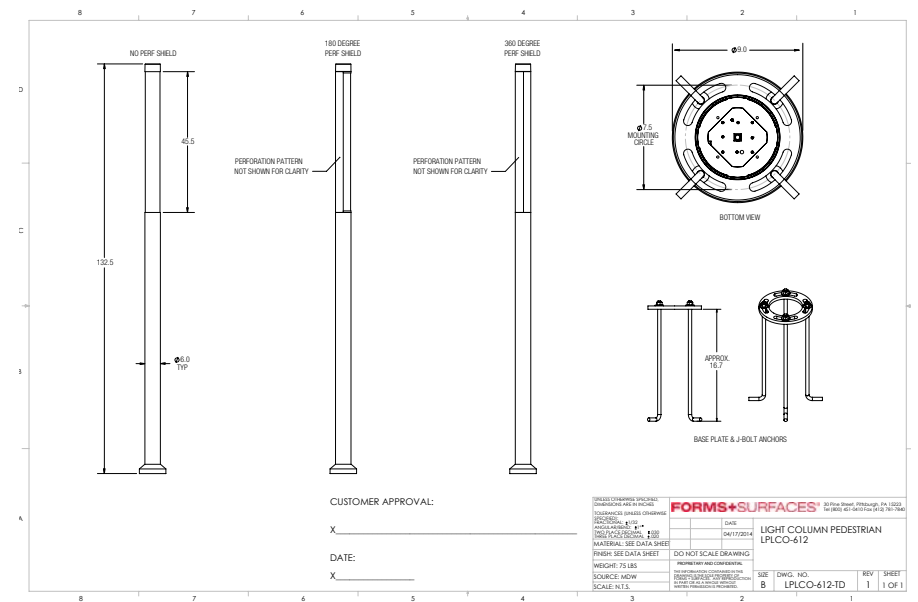
Decorative Light Column

The Light Column by Forms and Surfaces is a linear fluorescent luminaire with a nominal 48 inch long luminous acrylic top. Nominal 6 inch diameter satin aluminum pole with overall 11-foot height.



Refer to Lighting Hierarchy (p.2.77) for locations to use Decorative Light Column.

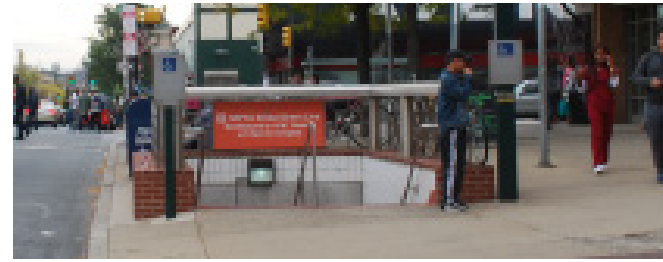
Note:
 Manufacturer: Forms and Surfaces
 Catalog No.: LPLCO-612-2F32T8-SAT



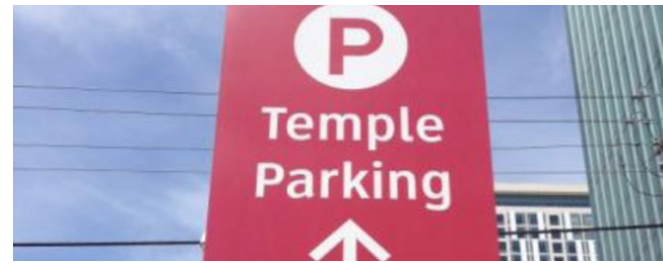
Pedestrian



Transit



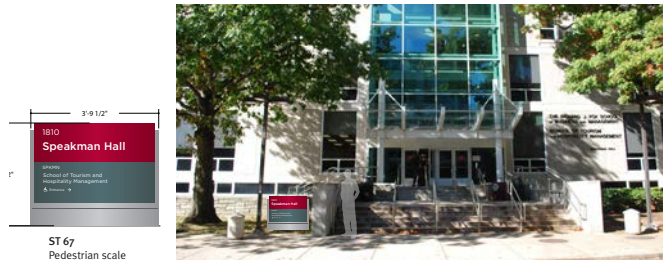
Vehicular



Gateways



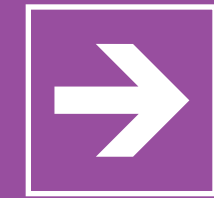
Building



Sustainability



SYSTEM: WAYFINDING



- Pedestrian
- Vehicular
- Gateways
- Building
- Sustainability

WAYFINDING AT TEMPLE

In response to identified campus needs, the planning process led to the development of a high-level, but fully implementable system of wayfinding tools.

SIGN SYSTEM PLAN INTENT

Towards A Unified And Positive Experience

Temple University, with more than 37,000 students and 3,436 faculty, needs a sign system that will address the pragmatic issues of wayfinding and parking for thousands of students and yearly campus visitors and sports fans attending cultural events, lectures and graduations. A well-designed signage and wayfinding system will provide an opportunity to enhance and strengthen Temple's identity and better define the physical environment.

The signage component of the plan presents a framework for a comprehensive system of signage, wayfinding and environmental tools that can be implemented in phases.

The identity component — the name and logotype — ensures the Temple name is presented in an effective, legible and consistent manner in all applications across all media. Colors, materials and finishes should complement and enhance the Temple brand.

The functional component — the wayfinding and signage — ensures a user-friendly experience for first-time and repeat visitors by helping them safely and efficiently locate parking, event venues and campus buildings.

The image component enhances the look and feel of the campus by complementing its architecture and landscape while creating clearer connections and user/arrival experiences.

The educational component — the interpretive aspect — seeks to elevate Temple's rich historical, cultural and athletic traditions, so it is resonant and accessible for everyone. This means creating opportunities for faculty, students, visitors and friends to connect with Temple stories and themes.

VERDANT TEMPLE SCOPE

Programming

- Conduct visual audit of exterior campus.
- Conduct interviews with select administration/staff.
- Discuss desired image and system vocabulary.
- Assess existing permanent and temporary signage.
- Develop sample journeys and messages.
- Develop prioritized list of recommendations.

Schematic Design I

- Develop schematic concepts.
- Develop wayfinding strategy and recommendations.
- Develop sample journey location plan and messages.
- Create rough count location plan for all sign types.
- Create Photoshop studies for select sign types.
- Prepare preliminary cost estimates.

Schematic Design II

- Develop selected concepts, materials and details.
- Refine system recommendations and specifications.
- Adjust sample journeys and messages.
- Finalize rough count location plans and budget estimate.
- Adjust Photoshop studies for select sign types.
- Revise fabrication cost estimates and phasing outline.

Final Plan

- Finalize all system goals and recommendations.
- Resolve selected schematic design concept.
- Conclude cost estimating, phasing plan and sample journeys.

A sign – no, a signpost – can do more than just point towards a place. It can set the tone. It can give the place an identity. It can tell us something about the product, the people and the building. And if, as we read it, we forget about time and space, the system will quickly and politely direct us where we need to go.

-Andreas Uebele

FUTURE SCOPE

Design Development

- Finalize design for all sign types.
- Study full-size printed mock-ups.
- Update cost estimate for fabrication and installation.
- Discuss possible detailing and value engineering of sign system with preferred fabricator.
- Prepare final draft of sign location plans/message schedules for directional signs.

Construction Documentation

- Compile design intent drawings for each sign type with necessary information on sizes, materials, fabrication techniques, typography, colors, hardware and typical installation/mounting elevations.
- Complete performance specifications and shop drawings to be prepared by fabricator.
- Include final message and location plans. Fabricator to be responsible for final, exact sign locations and checking of underground utilities.

Implementation

- Assist client in negotiating a favorable bid with the preferred vendor. Discuss any pricing options with client prior to commencement of fabrication.
- Issue clarifications with vendor as required.
- Review samples, shop drawings and specifications prepared by fabricator. Answer fabricator and installer questions as work progresses.
- Survey finished phase one project; prepare punch list.

STAKEHOLDER INVOLVEMENT

Over a period of three months, the design team documented existing conditions related to signage and collected information from a wide range of individuals including staff, faculty and students. Documentation of the findings included photographs of campus, field observation of university operations and interview summaries. Many groups contributed to make the plan as comprehensive as possible:

Athletics
Campus Safety Services
Continuing Education
Creative Services
Development Office
Disability Resources and Services
Engineering, Construction and Maintenance Operations
Office of Admissions
Office of Alumni Relations
Office of Community Relations
Office of Emergency Management and Continuity Planning
Office of the Fire Marshal
Office of Orientation
Office of Parking Services and Shuttle Services
Office of the President
Office of Special Events
Office of Sustainability
Office of University Communications
Office of University Housing and Residential Life
Planning and Architecture
Senior Administration
Web Communications

THE BIG PICTURE

With the development of Visualize Temple and VERDANT TEMPLE, a new attitude is growing alongside the University's long-standing mantra of "Access to Excellence." Not only is Temple University a place for higher education, but also a place for growth, connection and discovery. This new attitude has shifted focus to the campus and the physical expression of Temple being much more than a cluster of academic buildings.

The signage and wayfinding system aspires to:

Improve The Journey To Campus And Parking Facilities

Direct drivers to campus from interstates and local roadways. Improve vehicular navigation on-campus with directional signage to parking and drop-offs.

Evolve Into A More Pedestrian-Centered Campus

Provide better wayfinding and identification tools for pedestrians.

Pay Closer Attention To The Physical Character Of The Campus And Campus Life

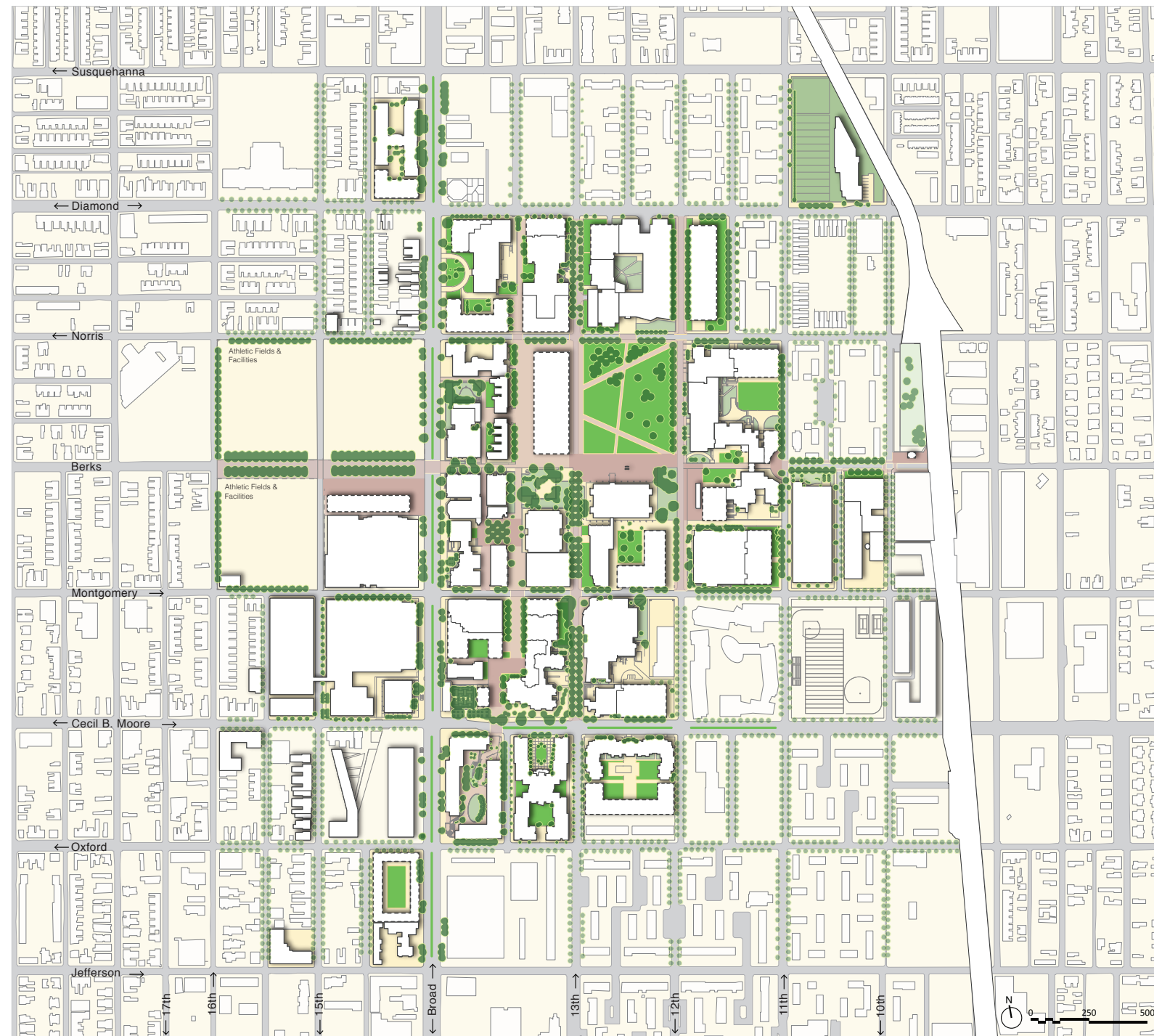
Create a signage system that expresses and enhances Temple's identity.

Create Spaces For Students, Faculty And Visitors To Connect And Discover

Give the campus a sense of place and purpose through proper signage and graphic elements. Enhance the environment with interpretive storytelling.

Make Temple's Campus Feel Safe And Welcoming

Greet visitors at gateways and help them confidently navigate the campus.



VERDANT TEMPLE

IDENTITY GUIDELINES

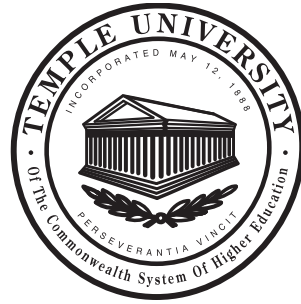
EXISTING LOGOS/LOGOTYPE



University logo - Minion



University logo - Minion & Gotham



University seal

COLORS

Primary Color Palette



Pantone 201

Black

White

LOGOS FOR SIGNAGE AND ENVIRONMENTAL MEDIA

Recommended Modifications

The current version of the Temple T and wordmark are not suitable for the built environment. Modifying these brand elements for use in signage and environmental media is recommended as shown. These adjustments created geometries that are legible and feel comfortable even when viewed at oblique angles or from a distance.

S1

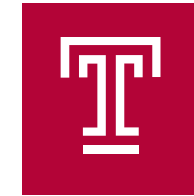
Tight spacing, spatial and formal relationships of the Temple T to the red box makes it difficult to interpret in signage. The modified version slightly enlarges the box around the Temple T for increased legibility of the forms.

S2

Temple University is typeset in Minion, with a relaxed letter spacing suitable for large and small scales. This wordmark is also highly legible when rotated vertically.

S3

Temple University in the stacked format, with relaxed letterspacing for "Temple."



S1. Temple T - white on red



S2. Temple University (Minion) - single line white on red



S3. Temple University (Minion & Gotham) - two lines white on red

SYMBOLS



Accessible



SEPTA Subway



SEPTA Regional Rail



SEPTA Bus



Temple Shuttle



Parking



Motorcycle parking



Bike



Lockers



Showers

EXISTING FONTS

Minion
ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz
1234567890 &!?,.”

Minion Bold
ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz
1234567890 &!?,.”

Gotham Book
ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz
1234567890 &!?,.”

Gotham Medium
ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz
1234567890 &!?,.”

Gotham Bold
ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz
1234567890 &!?,.”

FONTS CONSIDERED FOR SIGNAGE

Gotham Book
ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz
1234567890 &!?,.”

Gotham Medium
ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz
1234567890 &!?,.”

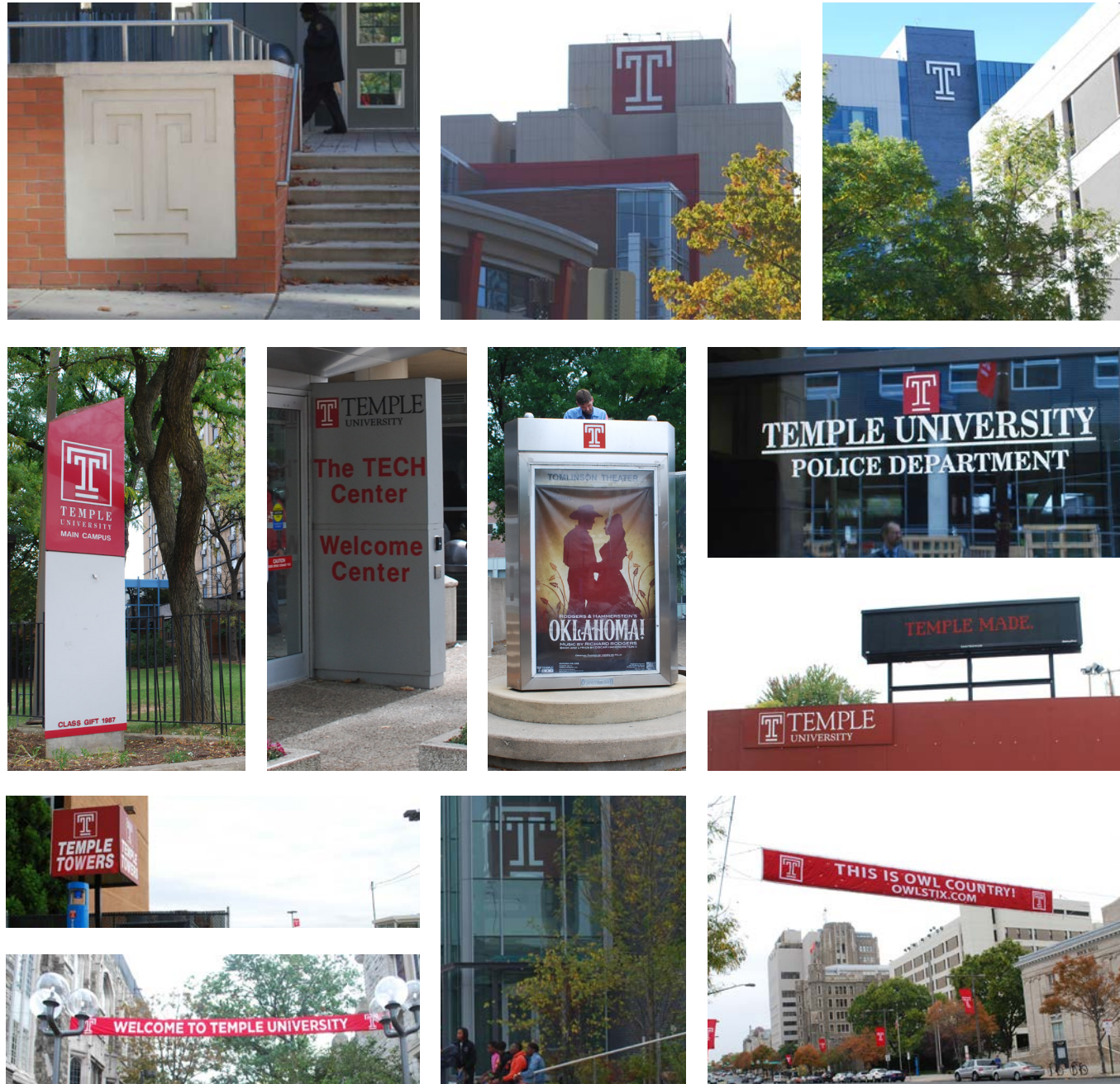
Gotham Bold
ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz
1234567890 &!?,.”

FONTS FOR VEHICULAR SIGNS

Clearview Highway
ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz
1234567890 &!?,.”

ENVIRONMENTAL AUDIT

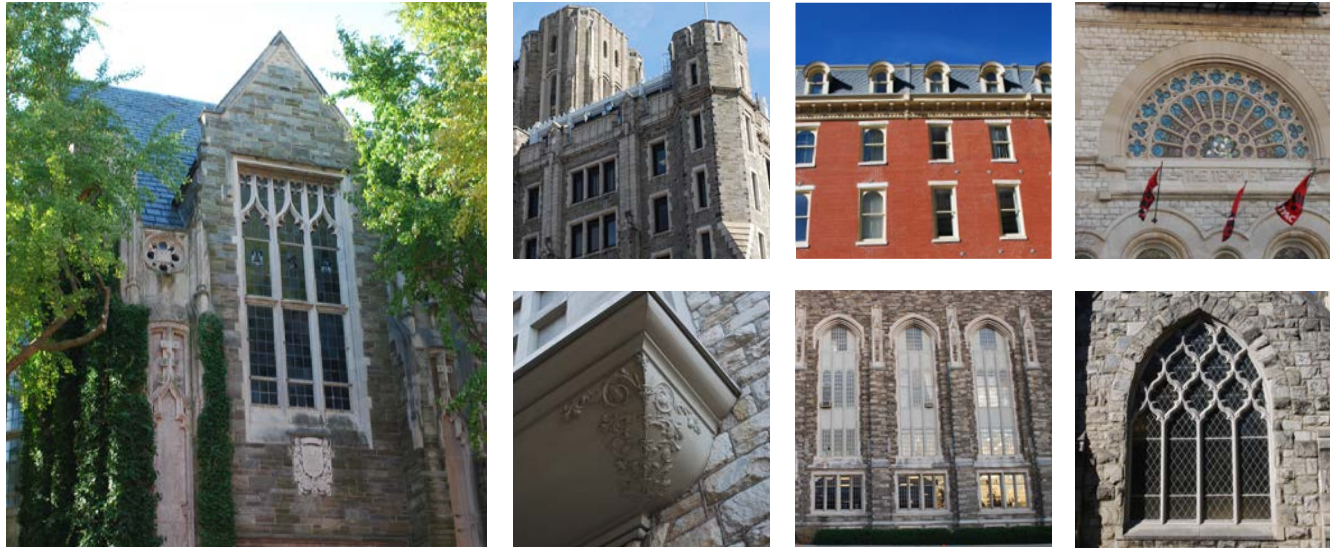
LOGO, SYMBOL AND WORDMARK IN THE ENVIRONMENT



TYPOGRAPHY IN THE ENVIRONMENT



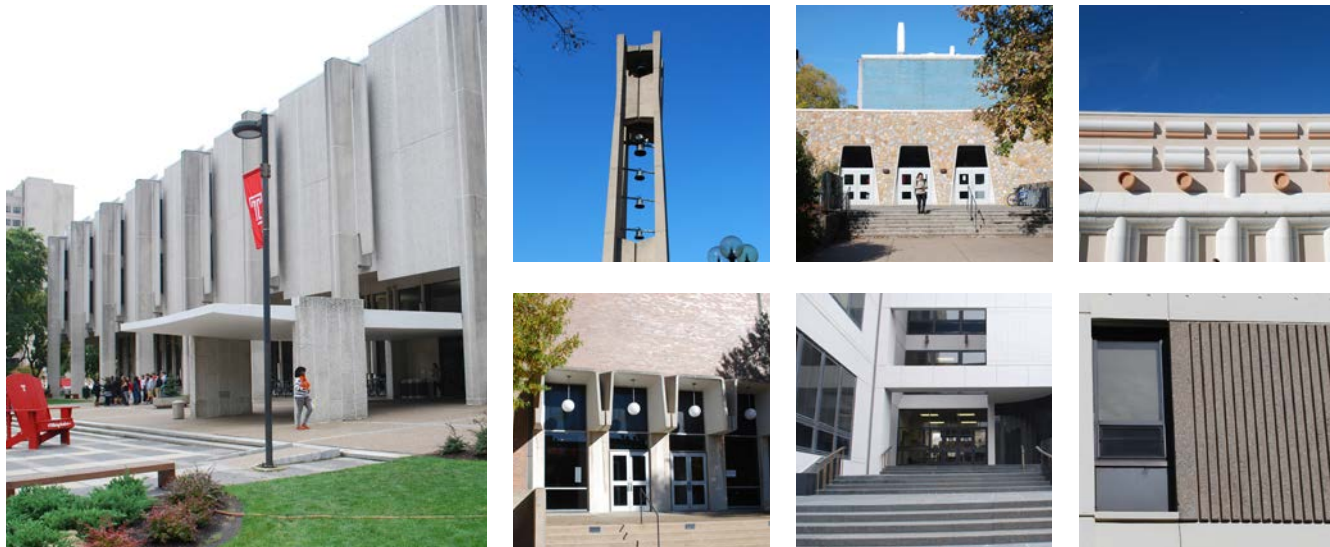
CAMPUS ARCHITECTURE - HISTORIC



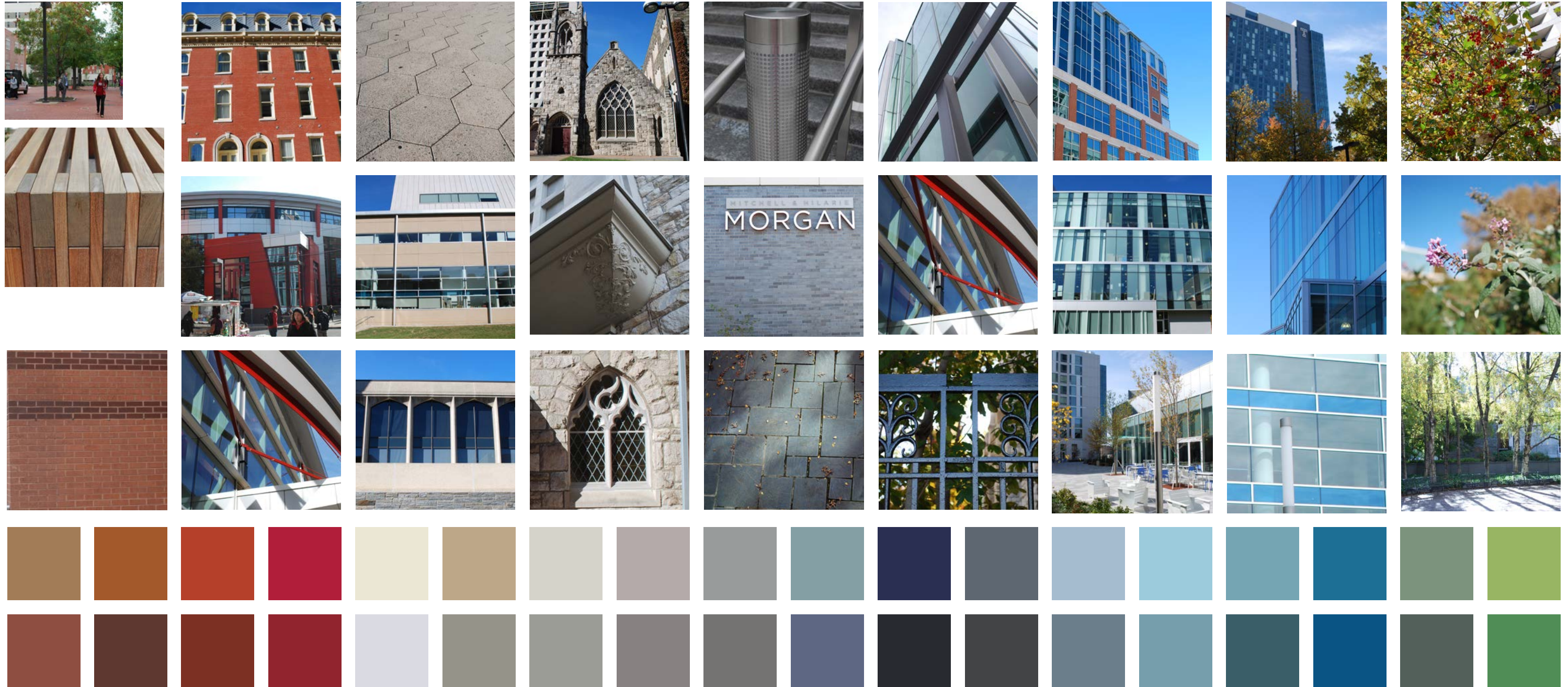
CAMPUS ARCHITECTURE - MODERN



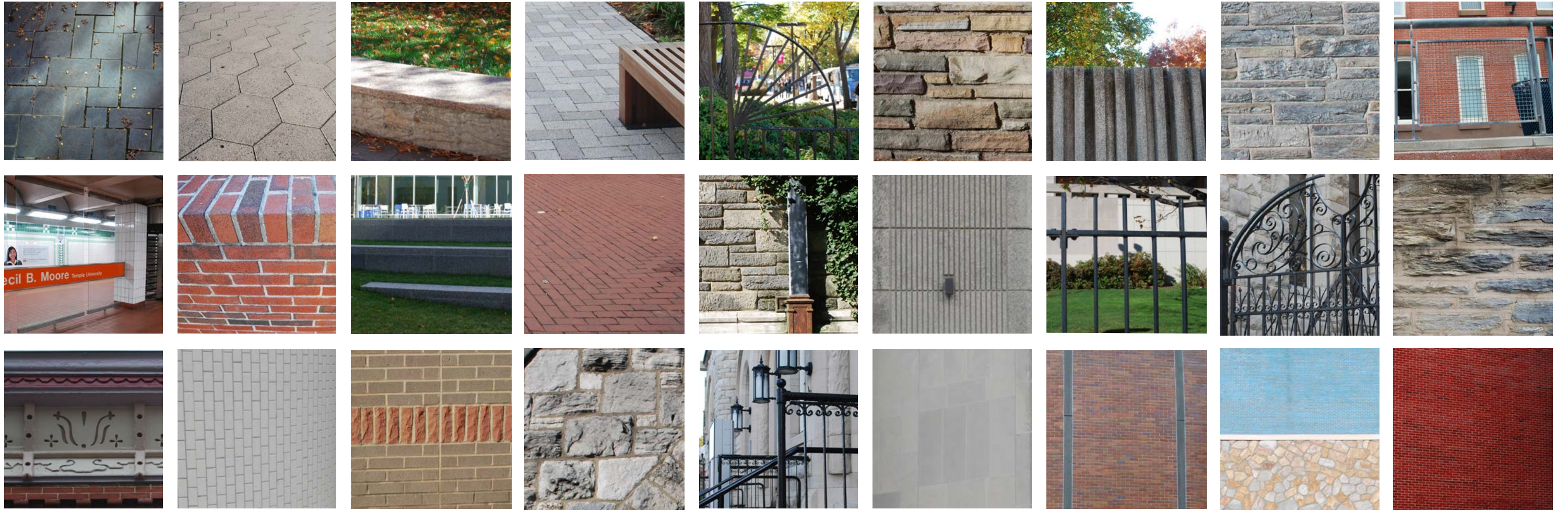
CAMPUS ARCHITECTURE - MID-CENTURY



COLOR MATRIX



CAMPUS MATERIALS



PREVISIT INFORMATION

GOAL

Visitors should, through print or electronic media, be able to locate and receive directions and maps about how to get to and move around the Temple campus. The information should be consistent with what a visitor will find at home, when they travel to and arrive on the campus.

MAPS AND DIRECTIONS

1) Observation

Maps and directions to campus on the Temple website are not easily available; requiring excessive effort by the public to locate, open or download. The link off the home page is at the bottom near the boilerplate information. One must scroll to the bottom of the page and search amongst a variety of information. Otherwise a user must click through to another topic not directly related to directions and look for a link that may be further buried on another page (e.g., Home page – admissions – undergraduate – learn more about visiting Temple).

Recommendation

Most universities provide a link on the first screen of their home page to maps and directions and the link goes directly to the information necessary to get to or navigate around campus. Temple should modify its website to follow suit.

2) Observation

Directions to campus are not customized but just drop the user to the generic home screen of MapQuest or Google Maps. The user must input Temple's address which is on the previous screen.

Recommendations

The web should provide, at the least, links to customized MapQuest and Google maps that have Temple input pre-programmed as the destination. It is preferred that maps be on the same page as directions so users can link written directions to the location.

3) Observation

Most departments interviewed do not pro-actively provide directions to their external clientele, whether potential students and their parents, alumni or visitors. Those coming to campus must make the effort to look up information on the existing website; something that at present takes considerable effort.

Recommendation

Departments that interact with the public should provide customizable templates for directions to their location(s) that are distributed to their public coming to the campus for each event. This should include material in both digital and print formats. As a matter of policy departments should send materials automatically with event announcements or registrations.

4) Observation

Existing directional material is inconsistent and does not always follow contemporary practices for presenting directional instructions in steps rather than as a narrative.

Recommendation

All directional information should be rewritten to follow contemporary practice of step by step instructions for motorists. The Ambler campus has a model direction format.

PARKING

1) Observation

Parking information on the website is fragmented and effort-intensive for the visitor to obtain and understand. The parking map, which is not on the parking information page is a generic campus map which does not highlight public parking. Text on the map is small and difficult to read.

Text on the parking directions page (Undergraduate Admissions version) reflects the presence of the two public parking garages but the information is not organized for easy scanning. Text messages themselves are ambiguous and easily confused (e.g., method of payment).

Recommendation

Parking information for visitors and the University community needs to be reorganized to improve identification, comprehension and reduce effort on the part of users. Maps should use a common base but have layers customized for the particular purposes (e.g., parking, ADA access routes, etc....) Users should not have to move between pages to get text and map information. Operational information should be in lists, tables or steps rather than in body text paragraphs.

USER NEEDS

GOAL

The design and implementation of the sign system must fulfill the functional requirements of its users. Temple's campus requires a comprehensive sign system that satisfies the needs of its many users. In addition to regular users (faculty, staff and students) there are a number of other users with additional needs.

FACULTY, STAFF AND STUDENTS

- As regular users, this group needs information about changes or detours to established routes.
- Directional information is needed for new students and for occasions when staff must go to unfamiliar locations.
- Parking facilities are accessed daily by regular users. There must be clear operation signs that include hours of operation and special conditions.
- Building identification; even long-time staff need to find new or infrequently-used facilities.

VISITORS

- Visitors have the same needs as daily users but as first-time or infrequent users, they need to see the information more often and, preferably, have it to take with them.
- Visitors will also benefit from information available to them prior to setting out on their travel to the University. "Previsit" information that can be mailed or accessed online is extremely helpful.
- In addition to temporary traffic signs installed at detours, it is important to provide advance information about detours on the website or in an email (e.g., for students coming for a campus tour).
- Clear designation of parking and public transportation options is needed.

SPECIAL USER GROUPS

Disabled

- Clear designation of accessible parking and of drop-off zones at major destinations.
- Clear designation of accessible routes where these vary from standard access paths.
- Clear designation of accessible building entrances and routes to them.
- Notification to the disabled if specific destinations within a building are not accessible.
- Legible type font/size to aid the visually impaired.

Elderly

- Similar needs to disabled and regular users.
- Elderly have stronger motivation to seek confirmation of directions than other user groups. The availability of someone to answer questions, either in person or on the phone, is desirable.
- Elderly alumni can have more difficulty than other visitors due to pre-conceptions about how the campus looks and operates that are incorrect and out-of-date.
- Elderly will also need more frequent reiteration of directional information or available hard copy information to offset memory limitations.
- Elderly will also have more difficulty with graphic materials and detail due to common visual limitations.
- Higher levels of illumination on signs during evening hours, at dusk and at dawn, are required.

Event Attendees

- Similar needs to visitors.
- Designation of drop-off zones at major venues.
- Clear directions from parking and public transportation stations to major venues and back.

FACILITIES/ MAINTENANCE STAFF

Facilities and maintenance staff have different requirements from other users discussed. For them, the issue is what goes on signs, how they are fabricated and installed, and how they can be repaired and updated.

Needs include:

- A system with changeable components so making repairs or installing replacement panels is easier.
- A system with sufficient structural strength to resist accidental damage, deliberate vandalism or theft.
- Material finishes and coatings that can be cleaned with solvent if graffiti occurs.
- Sufficiently standard fabrication processes to allow for multiple local bidders.
- Sufficient fiscal resources to perform routine maintenance and message updates.
- Sufficient fiscal resources in construction budgets for design, fabrication and installation of appropriate sign types at all new buildings.
- Database of signs with text and location information for administrative and maintenance purposes.

EMERGENCY SERVICES

- Police, fire, EMT and other service personnel need clear street address and entrance location information to reduce lost time in emergency situations.
- The administration needs to alert emergency services personnel to special equipment or hazards within special-use buildings such as laboratories.
- For heavy equipment such as fire trucks, demarcation of special paths within the campus may be necessary for their safe passage.
- Communicating specialized information to emergency services personnel may best be accomplished by non-sign methods. These issues are discussed further in the policy section. (p. 2.92)

DELIVERY PERSONNEL

- Loading docks needs to be clearly identified. This is especially important when the dock is not located on the same street as the building entrance.
- Street address is important as some delivery services will only deliver to a street address.
- Communicating the location of the loading docks to truckers may best be accomplished by non-sign methods.

POLICY

GOAL

The University needs clear, consistent policies in regard to wayfinding signs, messages and selection criteria that can standardize the signage and wayfinding environment.

FIRST RESPONSE

1) Observation

It was noted in interviews that first responders and other emergency service personnel sometimes have difficulty locating the entrances to buildings and the emergency entrance for the Student Health Center.

Recommendation

Policy: Information for emergency services personnel.

Temple administration needs to develop an inventory of building main entrances and a plan for informing first responders of main entrance locations along with typical information on special equipment or hazard locations on the campus. This information is not typically listed on signs. Because all entrances to buildings may not be in use or operable reconsideration of addressing may be appropriate. In certain instances special signs or markers may be needed to identify the main entrance for first responders.

Where there are multiple lots along a single street, lots can be given an alphanumeric sequence with the same name (e.g., Diamond Lot 1, 2, etc.). A second type of naming is recommended for smaller groups of parking spots and parking lots dedicated to residence hall parking. Those should be identified by the building they are closest to or the residence halls they are used for. This provides added flexibility in naming the smaller lots that lie along many streets. For residential parking it provides identification with the buildings/developments they serve.

2) Observations

Building names on campus often have names easily confused with other facilities at Temple.

Recommendation

Policy: Make building names as unique as possible.

It is inevitable that some buildings will have similar sounding names. For regular users this should not be a problem, although proximity of one to the other will cause difficulties. (e.g., Carnell and Conwell) For newcomers it is a different story. It has been noted on other campuses that visitors have a hard time with names that on the face of it have limited similarity. It is necessary to remember that wayfinding is usually a secondary task for people who have some task to accomplish at their destination; whether that is a meeting with colleagues or an appointment with a faculty member. So a building name becomes just one bit of information in a jumble of items and should a user comes across a name that looks like the one they seek (e.g., if both are long names and start with Bio-) they are as likely to go to one as the other.

3) Observation

Quite a few buildings are joined together and appear to the lay person as one building. When two names are used this creates considerable confusion for visitor, staff and students. It also makes it harder to give helpful directions.

Recommendation

Policy: Buildings that are joined or appear to the casual observer as a single building, should be identified as a single building.

When buildings are joined together or a new structure is appended to an existing building it still appears to observers that they are entering one building. Even if the buildings are given separate names, there should be a third over-arching name given to the whole in order to match what visitors and others see. It is recommended that a name using the term “complex” or “center” be created. (Note that this will also create another development opportunity for the University.) Names of the separate sub-buildings should be retained and placed appropriately within each of the sub-buildings. At the entrances to particular sub-units of the complex the name of the part might be displayed along with the center/complex name to reinforce the latter. There is nothing inherently wrong in connected buildings if signage reflects the building hierarchy.

BUILDING CODES

1) Observation

Existing codes are not consistently linked to building names and many do not use the full number of characters available or leave out critical letters that impair comprehension.

Recommendation

Policy: Official building abbreviations for public use should show a meaningful relationship to a building’s name.

Building codes are often used on official documents (e.g., class schedules and maps) as a substitute rather than as a supplement for building names. Codes need to bear some relationship to the building name and be meaningful themselves. It is most desirable that a meaningful component of the name be used as the

code. The registrar’s database at Temple University contains up to 6 character codes for buildings. Wherever possible building codes should be used alongside building names on signs, maps and other materials to reinforce the relationship between the two. The Facilities Department can maintain their own codes if desired but an index should be maintained for the convenience of contractors.

DIGITAL APPLICATIONS

1) Observation

Temple currently has an internal application and it has a mobile version of its website. The mobile version of the website has a long vertical format that requires considerable scrolling on the users part to find information. It also has screen masks that are not appropriate for mobile devices. The “Maps and Directions” link requires a long scroll to the bottom of the home screen and may be overlooked by visitors. Maps are the same as on the main website. On a small screen these are difficult to read and use.

Recommendation

*Policy:*The mobile app should be designed with an aspect ratio and scale appropriate for mobile devices. There should be consistent maps on all visitor touch points. The user interface for the mobile website should be refined to better accommodate the screen size of personal devices and typical navigation on personal devices. Maps provided should be easily viewable and navigated around on smartphones and tablets.

EVENT INFORMATION

1) Observation

Visitors often arrive on campus with event names instead of location information. University staff often have no way of helping them or accessing information about the event if it is not in the University Calendar. The TU mobile app has the calendar but it is not formatted for small screens.

Recommendation

Policy: Temple should encourage and facilitate all members of the university community in using the common event schedule database for all manner of events.

To ensure that both visitors and university community members have accurate and consistent location and time information it is desirable that University events, regardless of sponsor, be entered into a common schedule database that can be accessed inside and outside the University. The means to input events should be as simple as possible to facilitate the likelihood of university community members using it. If prioritization and editing of events is necessary that intervention should be after initial data entry rather than before or at the time of entry. This will require daily staff attention and review. The calendar for access by personal devices should respond to the needs of small screen display.

Donors for University buildings or other persons deemed worthy of recognition should have appropriate places within buildings where their contributions can be recognized. Formal recognition of their contributions should be placed within the main lobby and/or at the major entrance to the building. In this way, full formal names may be placed appropriately in or on the building and other details of the individual's contribution to the University can be displayed in the lobby area. Donor recognition and wayfinding messages should be kept as separate, parallel systems to avoid compromises that undermine the needs of either or both.

US Department of Justice 2010 ADA Standards provide additional technical requirements that are important to include. Visual characters on signs shall comply with Section 703.5 as follows:

- Characters and their background shall have a non-glare finish.
- Characters shall contrast with their background with either light characters on a dark background or dark characters on a light background.
- Characters shall be conventional in form.
- Characters shall not be italic, oblique, script, highly decorative or of other unusual forms.
- Characters shall be selected from fonts where the width of the uppercase letter "O" is 55 percent minimum and 110 percent maximum of the height of the uppercase letter "I".
- Minimum character height shall comply with table 703.5.5.
- Visual characters shall be 3.25 ft minimum above the finish surface.
- Stroke thickness of the uppercase letter "I" shall be 10 percent minimum and 30 percent maximum of the height of the character.
- Line spacing between the baselines of the separate lines of characters within a message shall be 135 percent minimum and 170 percent maximum of the character height.
- International symbol of accessibility shall comply with figure 703.6 and adhere to the same levels of finish and contrast as previously described above.

ACCESSIBILITY

The principle of accessibility asserts that designs should be usable by people of diverse abilities, without special adaptation or modification. Historically, accessibility in design focused on accommodating people with disabilities. As knowledge and experience of accessible design increases, it has become increasingly clear that many required "accommodations" could be designed to benefit everyone.

There are four characteristics of accessible design: perceptibility, operability, simplicity and forgiveness.

Perceptibility is achieved when everyone perceives the design, regardless of sensory abilities.

Operability is achieved when everyone can use the design, regardless of physical abilities.

Simplicity is achieved when everyone can easily understand and use the design, regardless of experience, literacy or concentration level.

Forgiveness is achieved when designs minimize the occurrence and consequences of errors.

DONOR RECOGNITION

1) Observation

Donor recognition at Temple is not implemented with a consistent set of standards that encourages appropriate recognition. This has resulted in an inconsistent aesthetic that lacks cohesion. One-off policies can set poor precedents that detract from the overall information environment.

Recommendation

Policy: Provide appropriate recognition of donors or patrons of the building.

DEVELOPING A LEGIBLE CAMPUS: CHALLENGES AND OPPORTUNITIES

VEHICULAR WAYFINDING

GOAL

Visitors should encounter information about routes to Temple from major highways and arterial roads that come into and cross Philadelphia.

KEY POINTS

Make navigating to campus easier and clearer by adding directional signage.

Help drivers navigate the campus by adding signage that directs to parking, drop-off areas and major venues.

HIGHWAY

1) Observation

At the regional level there is insufficient signage identifying routes from major arterials to the Temple campus: 76, 95, 676 and Broad Street (611). At present, there is one undersized, faded sign on the westbound side of 676 prior to the Broad St. exit.

Recommendation

Install guide signs and trailblazers at decision points from major arterials to direct motorists to the main campus along Broad Street.

Routes to Temple from 76, 95 and 676 should use the following routing for clarity and ease of navigation by visitors.

From 76:

Direct to 676 Eastbound, exit at Broad Street, and then to Broad Street northbound. It should be noted that at present, the turn onto Broad from the 676 access road is only identified as 611, which is meaningless to visitors and most Philadelphia residents. The sign should identify it as Broad Street.

From 95 Southbound:

Motorists to Temple should be directed to exit at Callowhill Street and follow Callowhill to Broad Street and then turn right onto Broad. This avoids the confusing exit from 676 West onto Broad Street.

From 95 Northbound:

Motorists to Temple should be directed to exit 95 for 676/30 Westbound and exit at Callowhill prior to getting onto 676/30. They can then proceed on Callowhill to Broad.

Return From Temple:

Each of the recommended routes above provide the visitor with a clear route back from Temple by going South on Broad Street.

LOCAL ROADWAYS

1) Observation

As one approaches the campus on main arterials and secondary routes, signs should direct visitors to public parking locations and select drop-off locations for major venues.

No system of directional information for motorists exists near or on the Temple campus at present. A temporary system directing to major visitor parking destinations has been designed for short term implementation.

Recommendation

A permanent system of vehicular directional signing to parking facilities should be integrated with Visualize Temple.

Signs should direct visitors to parking facilities, drop-off areas and major venues.

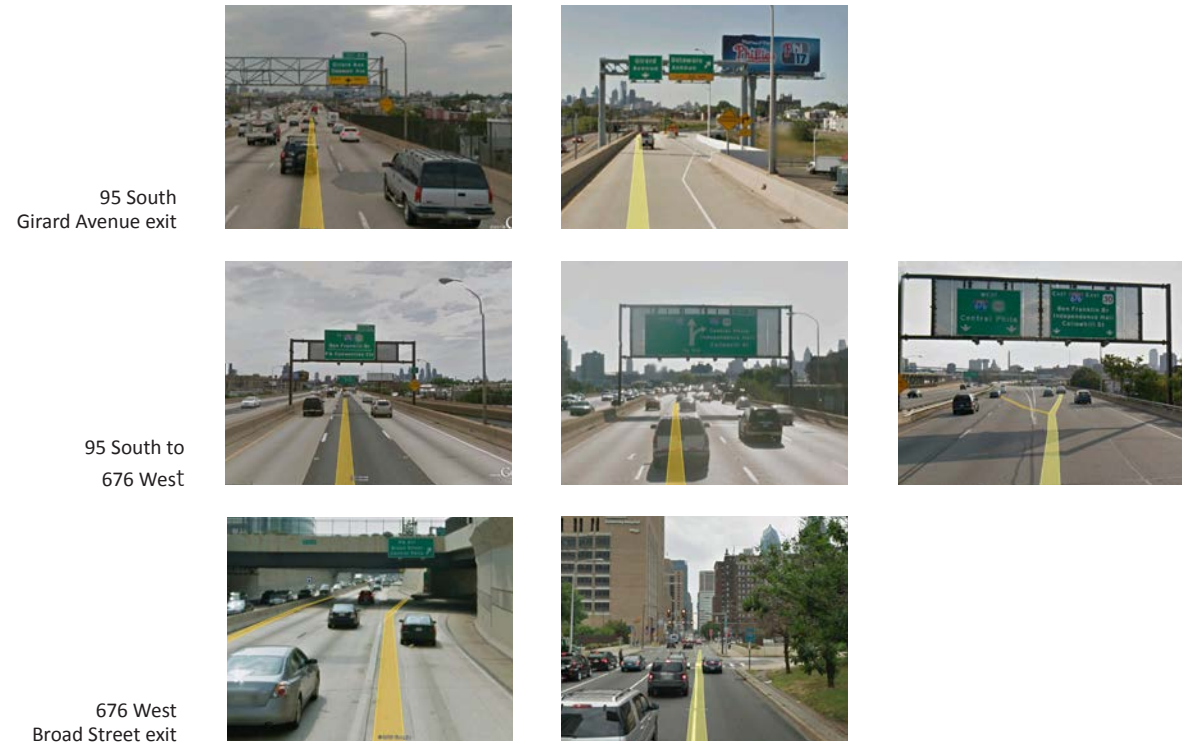
2) Observation

There is a lack of signs for motorists leaving the campus directing them back to major arterials.

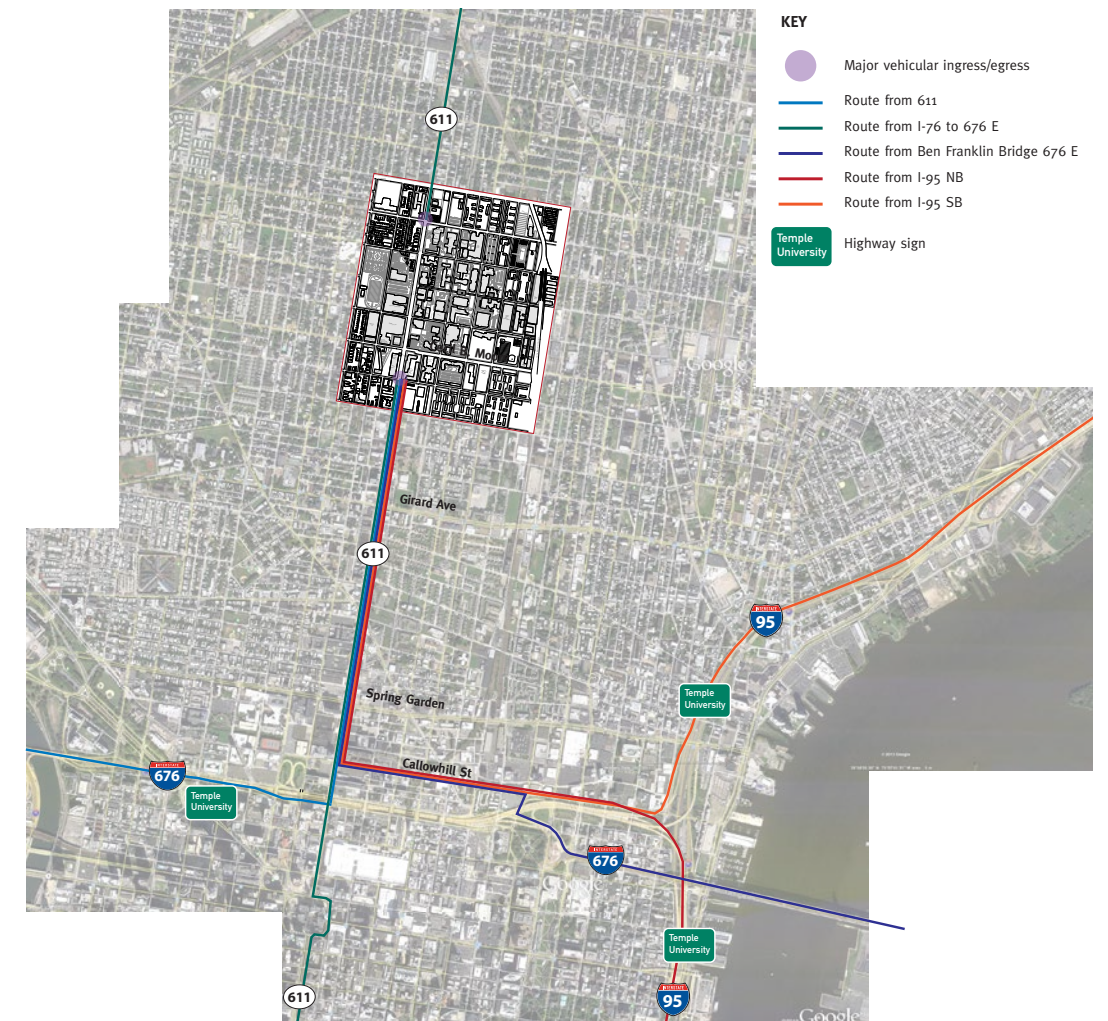
Recommendation

Directional signs and Manual on Uniform Traffic Control Devices (MUTCD) trailblazers should direct users leaving public garages and surrounding areas to major arterials using Broad Street. There are existing signs where Broad approaches 676 that guide motorists to appropriate entrances to 676 to access 76 and 95.

HIGHWAY - EXISTING CONDITIONS



HIGHWAY WAYFINDING - ROUTES AND SIGNAGE



SIGN RECOMMENDATION - HIGHWAY SIGN

Sign Function	Text	Terminology	Sub-components	Symbols	Locations	Legibility Requirements	Comments
Highway Guide Sign	<p>Exit # and Campus (or subsection N or S) with directional arrows</p> <p>MUTCD - No more than two destination names or street names should be shown on any Advance Guide sign or Exit Direction sign.</p> <p>Sign legends should not exceed three lines of copy.</p>	<p>Names limited to 2 words in most cases</p> <p>Names fit on one line</p> <p>Use abbreviations as noted in the MUTCD manual.</p>	<p>Locations listed alphabetically within direction of movement</p> <p>Order of movement: left, right, ahead</p>	<p>Parking, Information, Federal, state, & local route symbols</p>	<p>Guide signs should be located at least 800 feet prior to the first interchange referenced. Locations must not interfere with other existing guide signs on the freeway.</p>	<p>From MUTCD 2009 r1: With all freeway and expressway signs, the message dimensions shall be determined first, and the outside sign dimensions secondarily. Word messages in the legend of expressway guide signs shall be in letters at least 200 mm (8 in) high.</p> <p>Font is to be san serif for legibility</p>	<p>No logo on these signs to avoid overloading motorists.</p>



LOCAL ROADWAY - EXISTING CONDITIONS



Broad Street, North of Lehigh
.5 miles from Temple University



Broad & Susquehanna



Callowhill & Broad Street
1.5 miles from Temple University

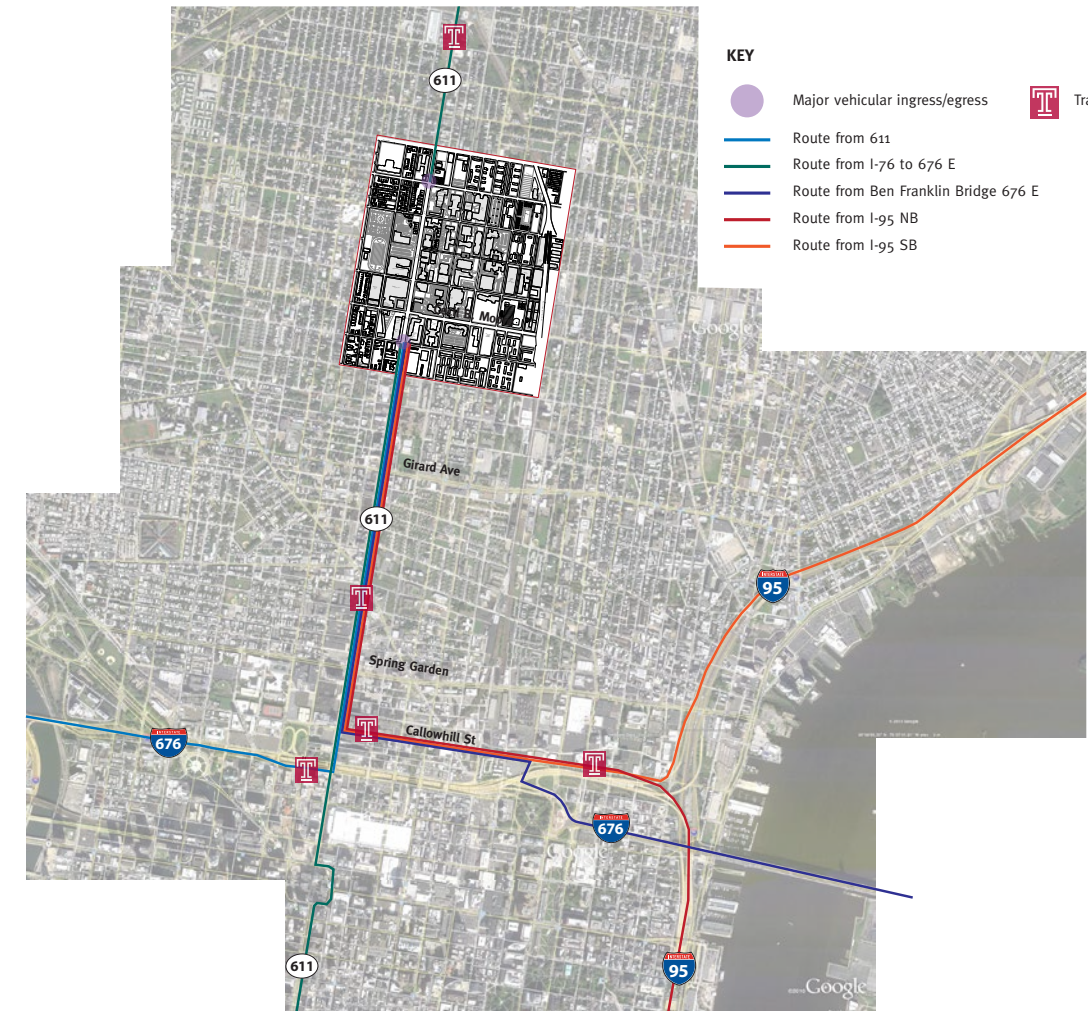


Vine Street, approaching Broad Street
1.5 miles from Temple University



Broad Street, south of Spring Garden
1 mile from Temple University

LOCAL ROADWAY WAYFINDING - TRAILBLAZERS

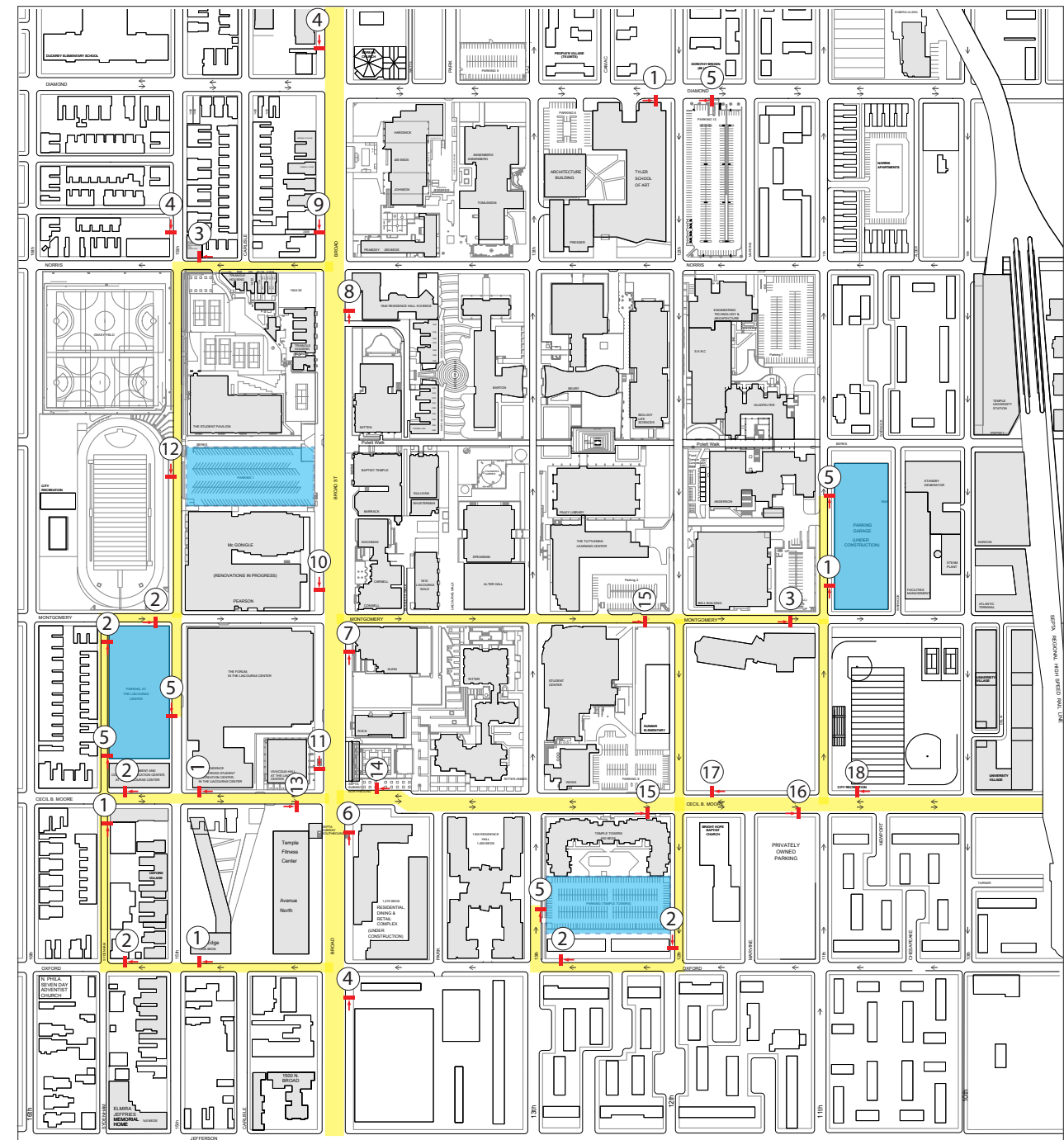


SIGN RECOMMENDATION - VEHICULAR TRAILBLAZER

Sign Function	Text	Terminology	Subcomponents	Symbols	Locations	Legibility Requirements	Comments
Vehicular Trailblazer	Temple University Distance	One destination per trailblazer Directional Arrow on same sign face Distance to destination in miles	None	Temple T	As reinforcement along interstates, approaches to campus/town, and to significant destinations.	As per MUTCD	Using multiple trailblazers along a road is not recommended. Place trailblazers where a turn is needed and in locations that confirm the driver is on course. If 2 or more destinations are needed, use a directional sign instead.



CAMPUS VEHICULAR WAYFINDING - DIRECTIONAL & PARKING SIGNAGE



SIGN RECOMMENDATION - VEHICULAR DIRECTIONAL

Sign Function	Text	Terminology	Subcomponents	Symbols	Locations	Legibility Requirements	Comments
Vehicular Directional	<p>Campus destinations, drop-off and parking facilities</p> <p>Number of lines limited by vehicle speed as per MUTCD requirements.</p> <p>> 35mph 2-3 lines of text</p> <p>25-35 mph 3-4 lines of text</p> <p>< 25 mph 4-5 lines of text on campus if PENNDOT agrees</p>	<p>Names limited to 2 words in most cases; same as or subset of building identification sign name;</p> <p>Names fit on one line</p> <p>Use abbreviations as noted in the MUTCD manual.</p>	<p>Locations listed alphabetically within direction of movement;</p> <p>Order of movement: left, right, ahead</p>	<p>Parking, Information, Federal, state, & local route symbols</p>	<p>For local roads signs should be 100-150 feet prior to the intersection where there is no intervening intersection.</p>	<p>From MUTCD 2009: Letters should be at least 6" in height for all capital letters, with 4.5" in height for lower case letters. On urban streets with speeds of 25 mph or less, letters should be at least 4" in height for all capital letters.</p> <p>Font is to be san serif for legibility</p>	

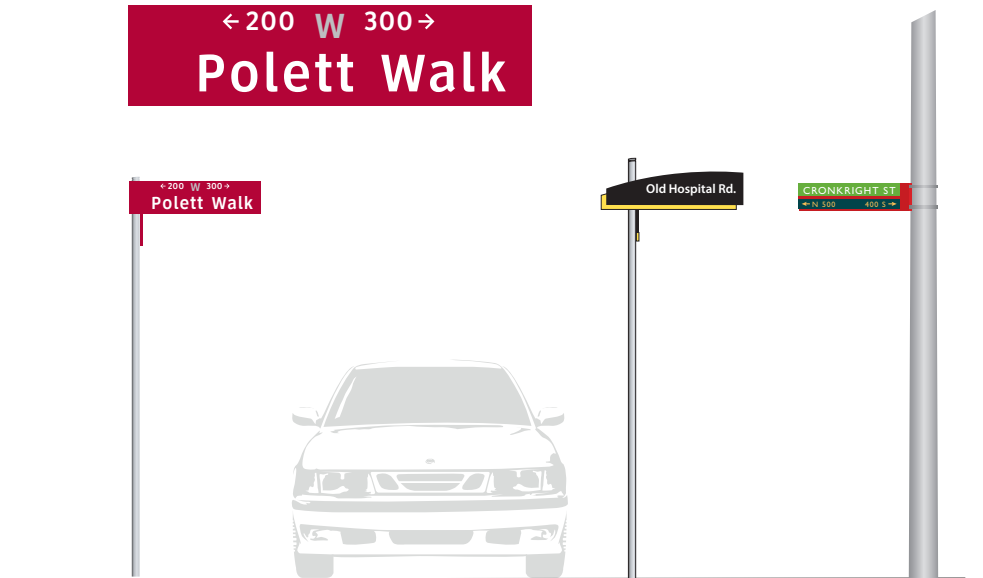


SIGN RECOMMENDATION - STREET SIGN

Sign Function	Text	Terminology	Subcomponents	Symbols	Locations	Legibility Requirements	Comments
Street Sign	<p>Street name</p> <p>Block addressing</p> <p>Direction indicator (N-S-E-W)</p>	<p>Street Name with street type abbreviated as per MUTCD:</p> <p>Street Drive Boulevard Road Highway Lane Walk</p>	None	None	<p>At street intersections and at block range changes (e.g., from 100's to 200's)</p> <p>These should also be present on pedestrianized streets and walkways.</p> <p>For vehicles, there should be one 150+ feet prior to intersections on arterials and major roads within the campus with 6 inch cap height.</p>	<p>Interior of campus: sized for pedestrians or slow moving vehicles (25mph) where adjacent to vehicular right-of-way. At boundaries and along arterials: sized for 45mph.</p> <p>From MUTCD 2009 Letters should be at least 6" in height for all capital letters, with 4.5" in height for lower case letters. On urban streets with speeds of 25 mph or less, letters should be at least 4" in height for all capital letters.</p> <p>Font is to be san serif for legibility</p>	<p>Could be integrated with directional elements at pedestrian locations.</p> <p>For high speed locations consider a second sign hanging from mast arms to improve visibility for motorists.</p> <p>A sign 200 feet prior to the intersection is desirable on approach and frontage roads at the periphery of campus.</p>

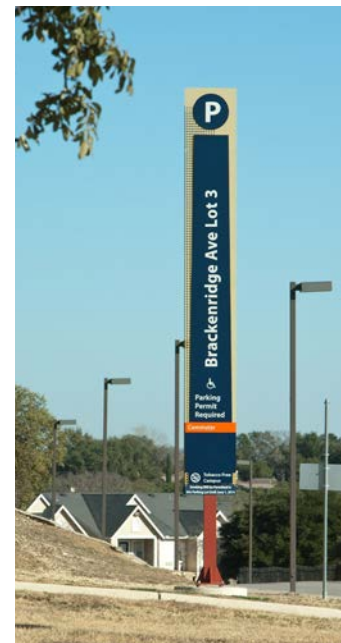
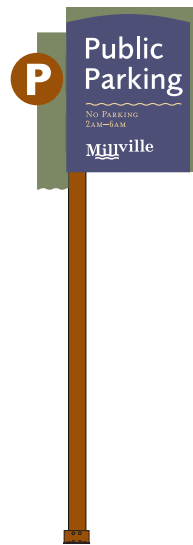
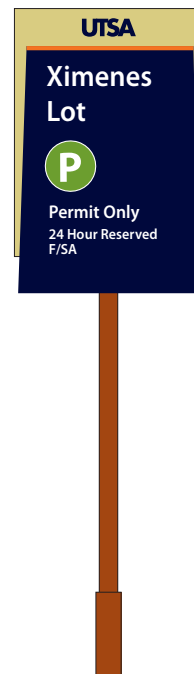


Temple's current street sign (above) should be updated to complement the vehicular wayfinding system.



SIGN RECOMMENDATION - PARKING LOT ID

Sign Function	Text	Terminology	Subcomponents	Symbols	Locations	Legibility Requirements	Comments
Parking Lot ID	Name of lot			Parking symbol if desired Temple T	At entrances to parking lots	Visible and identifiable for 200 feet. Legible in excess of 100 feet.	



SIGN RECOMMENDATION - PARKING GARAGE ID

Sign Function	Text	Terminology	Subcomponents	Symbols	Locations	Legibility Requirements	Comments
Parking Garage ID	Facility name	Facility name	Changeable message screen with spaces remaining, if desired	Parking symbol Temple T	At entrances to garages	Visible and identifiable for 200 feet. Legible in excess of 100 feet. Need illumination during evening hours.	At each selected location



TRANSIT

GOAL

Visitors and university community members should feel confident and comfortable taking advantage of the significant number of transit modes that provide access to the Temple campus.

KEY POINTS

Create an obvious and welcoming pathway from the regional rail station to campus.

Provide more orientation and wayfinding tools for subway riders when they exit.

Upgrade bus shelters with university branding and include route information on shuttle stop signs.

Clarify pathways and regulations for cyclists. Give them better wayfinding tools to navigate the campus appropriately.

REGIONAL RAIL

1) Observation

Those arriving by regional rail do not have clear sight lines to the Temple campus, nor is there information that clearly directs them to the campus. While Temple has a security presence at the Berks exit and a map, there is nothing indicating which direction to travel on Berks to get to campus. The walls and columns create an unclear and undefined space. The path to campus is unclear until one has moved well beyond the station. The map does not have a “heads up” orientation, which makes it more difficult for users to understand where they are in relation to campus. The branding of the security booth is not a good first image for visitors.

Recommendation

The guard booth should be redesigned as a welcome/information booth while retaining its security function. Improve the sight lines to the campus entrance at 11th and Berks street through architectural and landscape interventions. Add clear directional signs to the campus so there is no doubt as to which way to go. Consider the pathway from the station to 11th Street on Berks as part of the University in its look and feel.

SUBWAY

1) Observation

Visitors arriving by the Broad Street line do not find sufficient Temple identification, orientation or directional information on the station level and must move to the street to search for information. Some of the information in the station contradicts terms used by the University.

Recommendation

Temple should work with SEPTA to enhance the Temple identity for those on the train and platform at the Cecil B. Moore station. Consider an area map similar to those used in NYC subway stations to provide a first orientation to the area, with a Temple campus map at street level. The Susquehanna station should add signage in the station directing travelers to campus. Overhead campus maps should be located outside the exits to confirm that the user is traveling in the right direction.

BUSES AND SHUTTLES

1) Observation

Bus stops on the Temple campus are barely identified by sign posts and do not provide a sense that one has arrived on the campus. Most bus stops do not have shelters. At present, the Temple operated shuttles are limited to university community members.

Recommendation

Temple should work with SEPTA at important bus stops on campus to develop branded shelters that identify the location as on campus and make riders feel more comfortable and safe. Secondary stops should still display Temple branding. Temple owned shuttle stops should be branded and include route information and operating schedule. Consider whether operations at peak visitor periods might be enhanced if visitors are encouraged to use the shuttles for comfort and safety.

BICYCLES

1) Observation

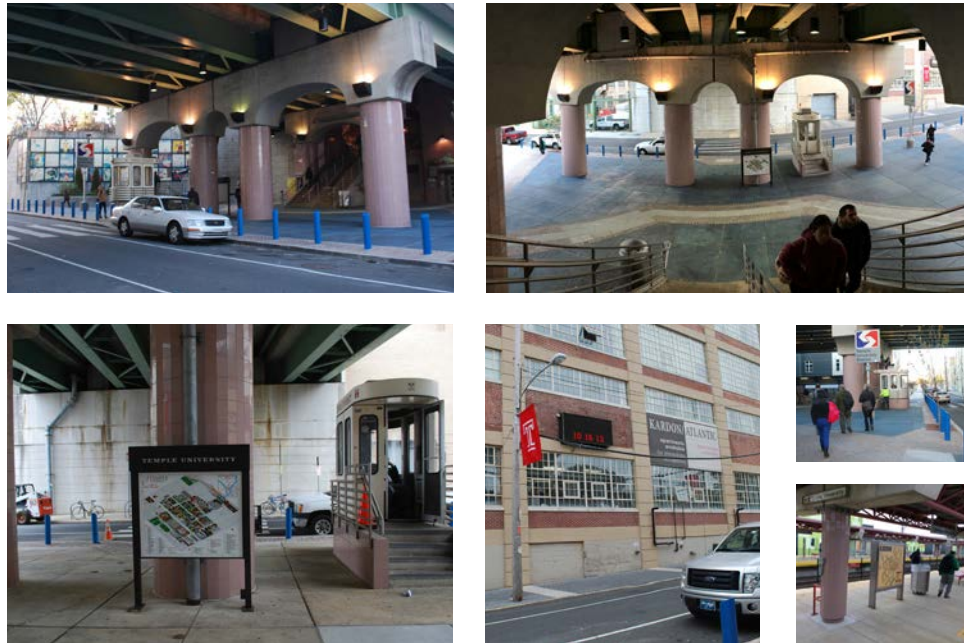
Bicycle paths are not marked on campus maps and bicycle racks/amenities are not consistently located where one might predict they would be. There is no clear bike policy on Liacouras and Polett walks, which results in collisions and injuries.

Current signage on bike racks and railings look unprofessional and illegitimate. They are intended to make cyclists feel like their bikes are safer, but the poor quality of the signage has the opposite effect.

Recommendation

Use MUTCD standard bicycle directional and regulatory signs and pavement markings to clarify appropriate use for bicyclists and other modes. Add bike maps at large bike parking corrals that show amenities (showers and lockers) on campus and bike routes to other areas of the city.

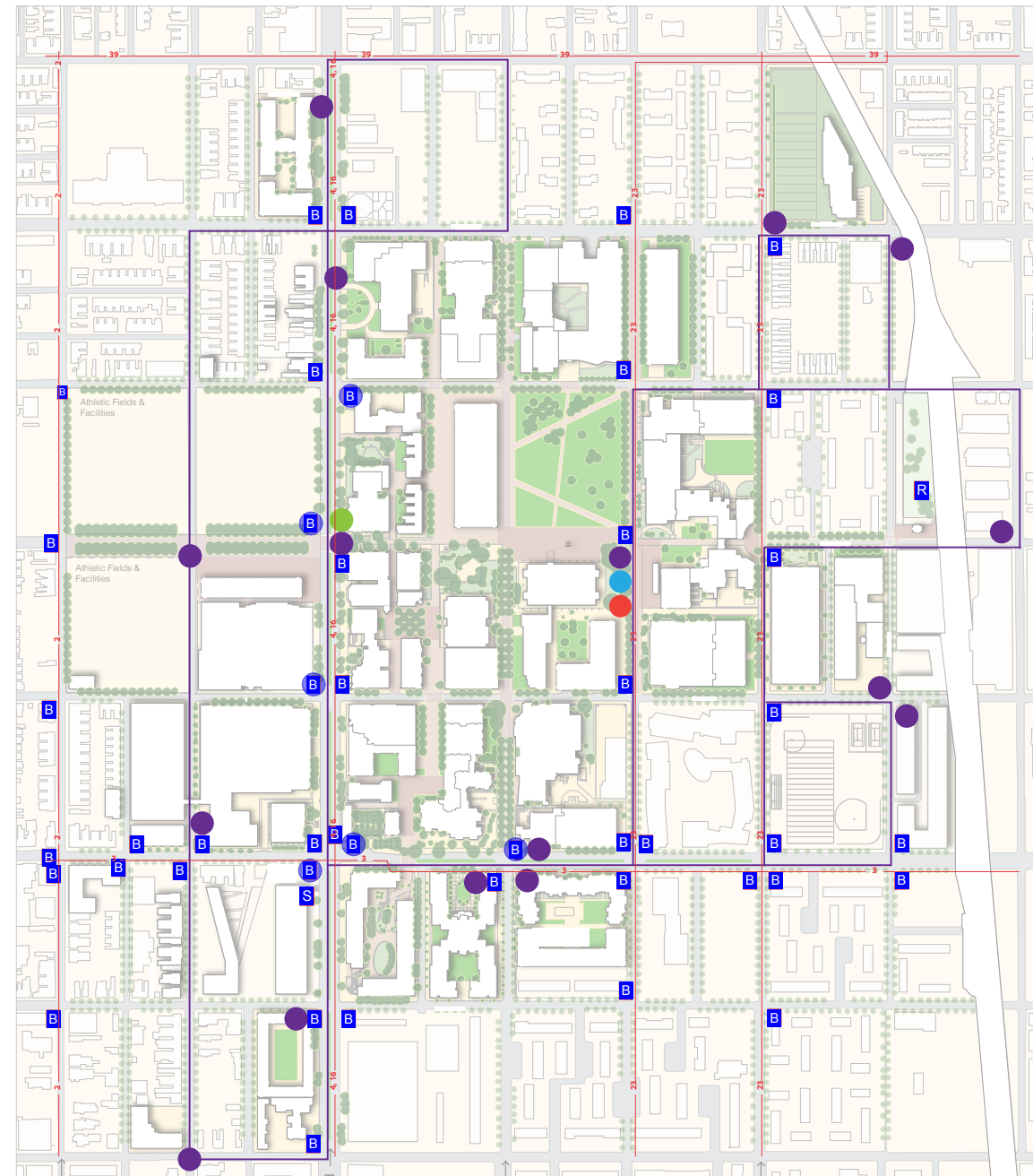
REGIONAL RAIL - EXISTING CONDITIONS



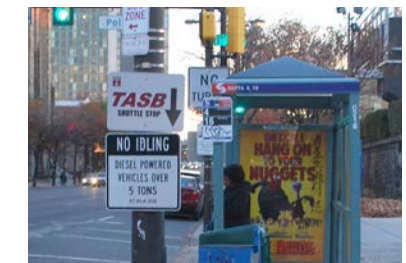
SUBWAY - EXISTING CONDITIONS



BUS & OWLOOP SHUTTLE - EXISTING CONDITIONS



- KEY
- SEPTA bus route
 - OWLoop shuttle route
 - OWLoop shuttle stop
 - Ambler Campus shuttle stop
 - TUr door shuttle stop
 - TASB shuttle stop
 - B Existing bus stop
 - B Existing bus stop with shelter
 - S Existing subway stop
 - R Existing regional rail stop



SIGN RECOMMENDATION - SHUTTLE STOP ID AND MAP

Sign Function	Text	Terminology	Subcomponents	Symbols	Locations	Legibility Requirements	Comments
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Shuttle route stop ID, map and schedule	<p>Stop location</p> <p>Route name (OWLoop, TASB shuttle, etc)</p> <p>Frequency of buses, hours of operation</p> <p>Information number and/or website</p>	<p>Shuttle routes</p> <p>Location names as noted on route</p>	Changeable route map	Shuttle/bus symbol	At all shuttle stops	Place in close proximity to ambient light	
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BIKES - EXISTING CONDITIONS

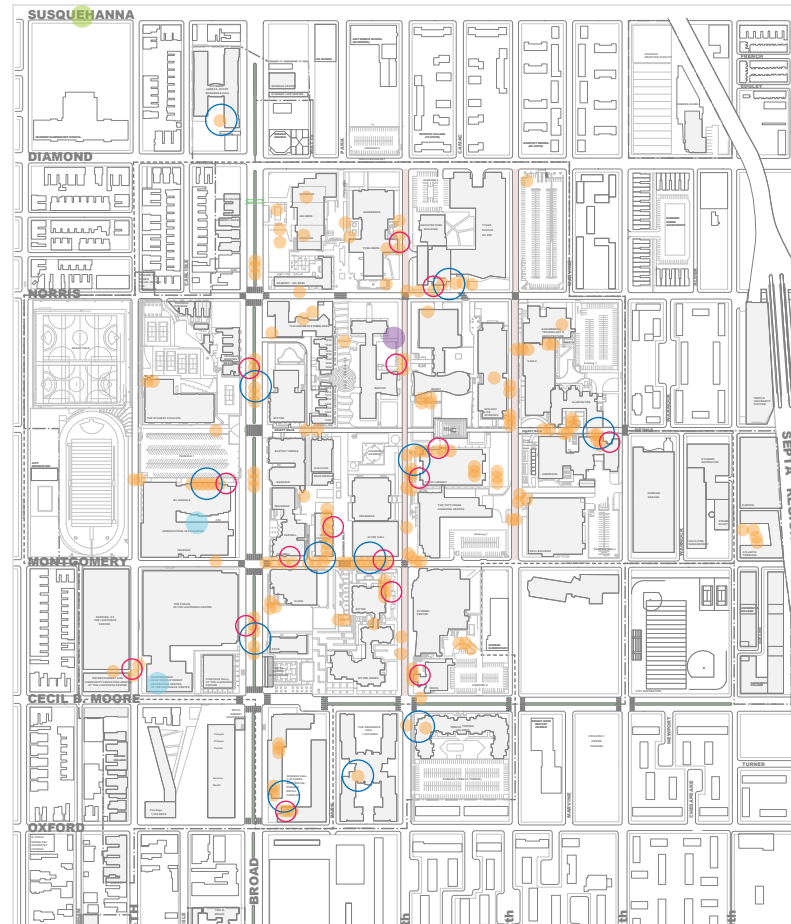


Base on Temple University Maps and Resources

- Showers
- Bike Shop
- Bike Racks

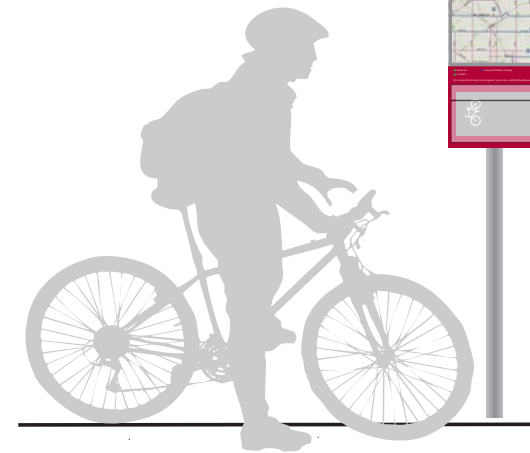
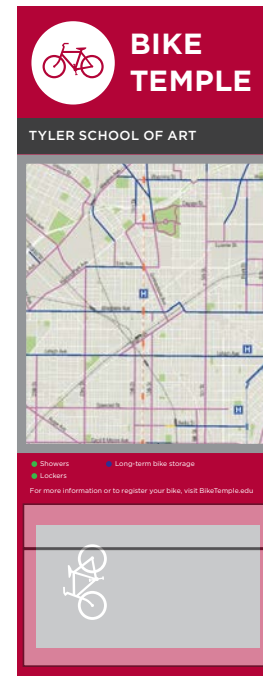
Proposed

- Bike Map
- Bike Parking ID



SIGN RECOMMENDATION - BIKE MAP

Sign Function	Text	Terminology	Subcomponents	Symbols	Locations	Legibility Requirements	Comments
Bike map	Bike Temple Location (street or adjacent building) Map key Information website	Sharrow street, buffered bike lane, etc as needed.	Take-away pamphlet, if desired	Bike symbol Amenity symbols (shower, lockers)	Major bike corrals	Place in close proximity to ambient light	



GATEWAYS

GOAL

Welcome and orient visitors as they arrive on Temple’s Campus.

KEY POINTS

Creating a sense of arrival is a fundamental expression of identity and welcome.

Gateways and thresholds can mark an entrance, identify the heart of a place, connect to history and mission, act as landmarks and serve as illuminated beacons at night. They are the first elements of a sustained narrative and express something tangible about the campus.

Provide a sense of transition to campus with overhead maps and environmental enhancements.



Existing pedestrian gateway

VEHICULAR

1) Observation

At present there is no gateway signage on Temple’s campus. There is a gate at PolettWalk at Broad Street but it is nowhere near vehicular or transit points of access to the campus, nor is it visible to motorists. The banners along Broad Street create a sense of arrival and transition to campus but lack focus and definition. Orientation devices are lacking so visitors need to rely on information they have in hand.

Recommendation

Define entrances to the campus, with readily available visitor information. This will improve the experience of the campus and the image of the University for parents, students, neighbors, alumni and the community. Major entrances at Broad and Oxford, Broad and Susquehanna and 11th and Berks should announce and define the University without being exclusionary. This announcement is relevant even for motorists who are not going to Temple, as it makes them aware of heavy pedestrian traffic. Secondary entrances to the University should still provide a sense of transition on to the campus using vehicular directional signs and orientation pylons.

PEDESTRIAN

1) Observation

For most pedestrian entries to campus, the arrival does not feel intentional—pedestrians are greeted with backs of buildings, service roads, intimidating facades and guard booths. Because banners are deployed both on campus and in the surrounding neighborhoods, the banners vaguely describe a Temple “zone” but not the campus itself, and dilute the sense of arrival onto campus.

Recommendation

Define entrances to the campus with pedestrian gateway signs. Secondary entrances to the University should still provide a sense of transition on to the campus using overhead campus maps and/or environmental enhancements. Environmental enhancements (interpretive messages, quotations, etc.) in the ground plane are a subtle but powerful way of marking the transition from city street to university campus.

2) Observation

The Gladfelter/Anderson underpass is an important formal entrance to the campus but it is not a positive or welcoming experience.

Recommendation

Announce the University with gateway elements. Create a more inviting threshold and sense of arrival. Freestanding and elements mounted to the facade of the underpass should be explored. The guard booth should be redesigned as a welcome/information booth while retaining its security function.

CAMPUS THRESHOLDS

1) Observation

The walk from the regional rail station to Temple’s campus proper is heavily used but does not provide a clean or comfortable transition. Backs of buildings, utilities and public housing do not make a visitor-friendly route.

Recommendation

Temple should consider the entire stretch from the regional rail to the Gladfelter/Anderson underpass as its front door and treat the area accordingly while respecting their neighbors. Creating a branded experience from the station to the 11th and Berks gateway would confirm the direction of campus and make pedestrians more comfortable. Overhead campus maps and environmental enhancements should mark the path to campus.



Existing campus threshold experience

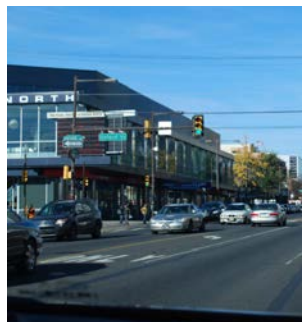
VEHICULAR GATEWAYS - EXISTING CONDITIONS



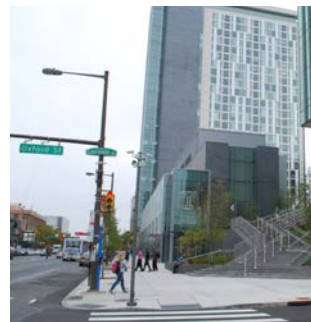
Broad and Susquehanna



Broad, south of Susquehanna

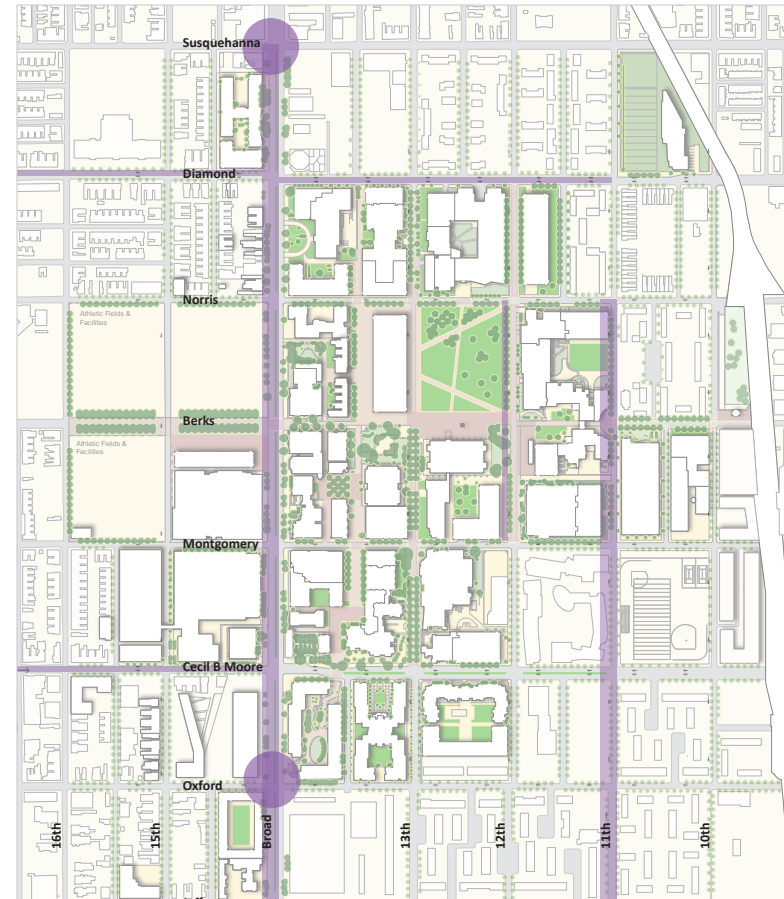


Broad & Oxford, west side



Broad & Oxford, east corner

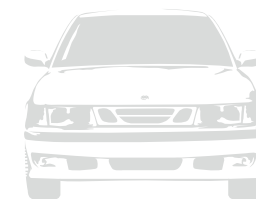
VEHICULAR GATEWAYS - OPPORTUNITIES



- Primary vehicular ingress/egress
- Major vehicular route

SIGN RECOMMENDATION - VEHICULAR GATEWAY

Sign Function	Text	Terminology	Subcomponents	Symbols	Locations	Legibility Requirements	Comments
Gateway	Temple University	Terms approved by the University	Pedestrian directional and map	Temple T	Major entries to campus	Visible and legible in excess of 200 feet.	At each selected location



PEDESTRIAN GATEWAYS - EXISTING CONDITIONS



Broad & Susquehanna



Diamond & Liacouras



Broad & Polett (East side)



Broad & Polett (West side)



15th & Liacouras Garage



Broad & Cecil B. Moore



Broad & Norris

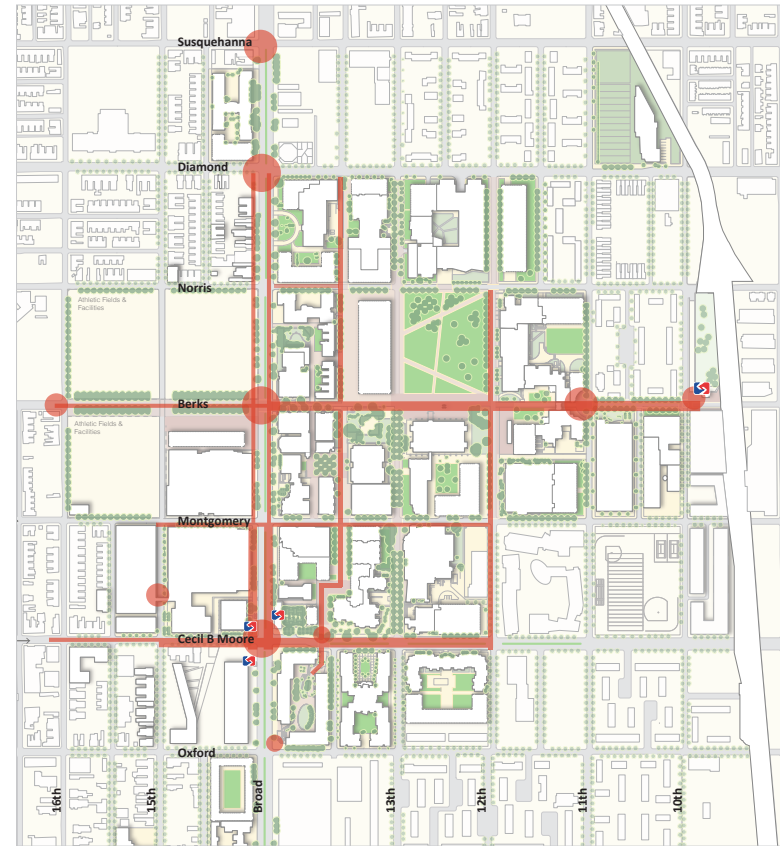


13th & Cecil B. Moore



11th & Berks

PEDESTRIAN GATEWAYS - OPPORTUNITIES



- Pedestrian ingress/egress
- Major vehicular route
- SEPTA

SIGN RECOMMENDATION - PEDESTRIAN GATEWAY

Sign Function	Text	Terminology	Subcomponents	Symbols	Locations	Legibility Requirements	Comments
Pedestrian Gateway	Temple University	Terms approved by the University	Location/Intersection Pedestrian directional and map	Temple T	Major entries to campus	Visible and legible in excess of 100 feet.	At each selected location



CAMPUS THRESHOLDS - EXISTING CONDITIONS



Cecil B. Moore & 12th



Cecil B. Moore & 13th



Cecil B. Moore & Broad



Cecil B. Moore & Broad



15th & Norris



15th & Norris



15th & Montgomery



15th & Liacouras Garage



Berks & 11th

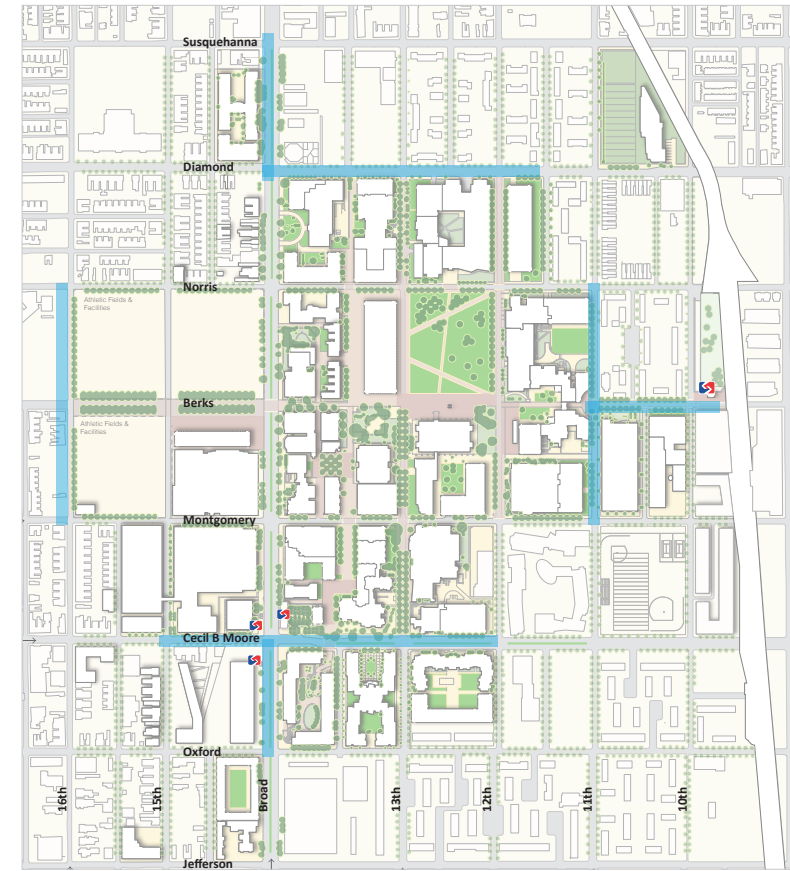


Berks & 11th



Berks & 10th

CAMPUS THRESHOLDS - EXISTING CONDITIONS



Campus threshold treatment



Diamond & 13th



Diamond & Liacouras

PEDESTRIAN WAYFINDING

GOAL

Visitors and members of the University community should have ready and predictable access on the Temple campus to orientation, destination and route information.

KEY POINTS

Give visitors wayfinding tools as they enter the campus.

Connect important places on campus and emphasize important pathways.

Create a network of pedestrian directional signs.

Clarify pathways and regulations for cyclists. Give them better wayfinding tools to navigate the campus appropriately.

Redraw the campus map so it is easier to use.

Physically mark accessible routes on campus. Make accessible route maps and directions available online.

ORIENTATION

1) Observation

When motorists exit their vehicle, there is no information to orient them or allow them to find routes to their destinations on campus. From the Liacouras Garage, they are faced with what seems like a back alley with no information and the service sides of buildings without entrances. They are only a block from Broad Street but there is nothing to direct them there.

Recommendation

There needs to be a building directory sign at pedestrian exits from the Liacouras and Montgomery Garages. These signs should include a map, a directory of buildings/venues and a phone number/URL to use to obtain further information. Take-away maps may also be provided at these stations. Other parking facilities should have an overhead campus map near the exit.

2) Observation

The campus has an internally focused organization that has become fragmented as the campus has grown beyond its original layout. Understanding a sense of campus organization is difficult for visitors and new users. Polett and Liacouras Walks are large pedestrian circulators, with city streets crossing them and paralleling them. The campus west of Broad now consists of sports venues, event venues, playing fields and parking facilities. It currently lacks academic buildings and functions as a main route to and from student residences.

Recommendation

Create a few centers of activity, working from existing ones, that are connected by active pathways in order to create a mesh of places that will serve as points of orientation, information and landmarks. Spaces should be small enough so that activity will keep the spaces utilized. This mesh of places needs to include a pedestrian-friendly crossing of Broad, extending the east side of campus via Polett Walk. Use landscape, signs and architectural features to improve the visibility and usability of pedestrian pathways on campus.

Polett, Liacouras and roads that are converted to pedestrian streets only should be distinguished on the map by a different color. This will create a stronger sense of campus organization.

CIRCULATION

1) Observation

At present there are no pedestrian signs directing to destinations on campus. There are only a scattered number of maps located on the campus. In some locations access to the maps is obstructed by street furniture and other obstacles. Visitors, new staff/students and others going to new locations for the first time have to ask for directions.

Recommendation

A network of pedestrian signs should be installed to create a trail of predictable information locations throughout the campus for visitors and University members alike. Signs need to include select high traffic locations (e.g., Liacouras Center, Welcome Center), landmark locations (e.g., Campus Green), a map of campus, major transit and public parking locations. Pedestrian scale trailblazers between parking locations and a few critical destinations (e.g., Liacouras Center, Baptist Temple, Welcome Center) would assist the broader sign system and add to the comfort of the majority of visitors to the campus.

2) Observation

The University map is drawn axonometrically, so it is difficult for the user to mentally reorient the map to align with the city street grid. Buildings obscure other buildings and roads, which adds to the confusion. You-are-here markers do not adequately reflect the view and orientation of the user.

Recommendation

A new campus map that should be made available as a printed take-away, on the web site, and on you-are-here signs as you approach campus, as you leave your vehicle, and at transitions and junctures along important pedestrian paths. This map should be designed so that multiple departments can use the same map and turn on and off graphic elements as needed (e.g., someone circulating a map about public transportation may choose to omit parking identification symbols).

Critical orientation elements are limited landmarks should be represented on every map. Map orientation should align with the street grid, not at an oblique angle. You-are-here arrows that provide the viewer with correct orientation to the campus are needed. The map needs representation of On-site and adjacent transit options. Map placement is critical to usability, Maps need to be oriented so that what is up on the map is also ahead of the viewer.

ACCESSIBILITY**1) Observation**

Accessible routes are not physically marked on campus. Accessible entrances are not consistently identified. The location of some accessible entrances means that users needing them often have to make significant backtracks when they encounter unmarked inaccessible entrances. This makes it very difficult for those with disabilities, particularly the elderly, to navigate the Temple campus.

Recommendation

Americans with Disabilities Act Accessibility Guidelines (ADAAG) and ADA required signs and markings need to be placed at all inaccessible entrances to guide the disabled to appropriate entrances. Signs need to be placed before the user leaves the sidewalk to make the approach to the building. An updated map of accessible routes and entrances should be available digitally (e.g., Temple ROUTE updated) and easily accessible from Temple's home page.

2) Observation

Accessible directions are not identified as such (Temple ROUTE description only mentions it is interactive) on the website. The link to accessibility off the home page is at the bottom amidst the boilerplate information. One must scroll to the bottom of the University home page and search amongst a variety of information for accessibility. Map/directions are not even mentioned on the Temple Accessibility page.

Recommendation

Most universities provide a link on the first screen of their home page linking to accessible maps and directions and the link goes directly to the information necessary to get to or navigate around campus. Temple should modify its website to follow suit, grouping it with other maps and directions but identifying accessible information as such. The accessibility page should also contain a link to these maps and directions.

PEDESTRIAN WAYFINDING - CLARIFYING PATHWAYS

At present, almost all streets and pathways on Temple’s campus have been assigned names and are identified with street signs. To support changes proposed by Visualize Temple, there are a couple streets that deserve special attention:

Polett Walk

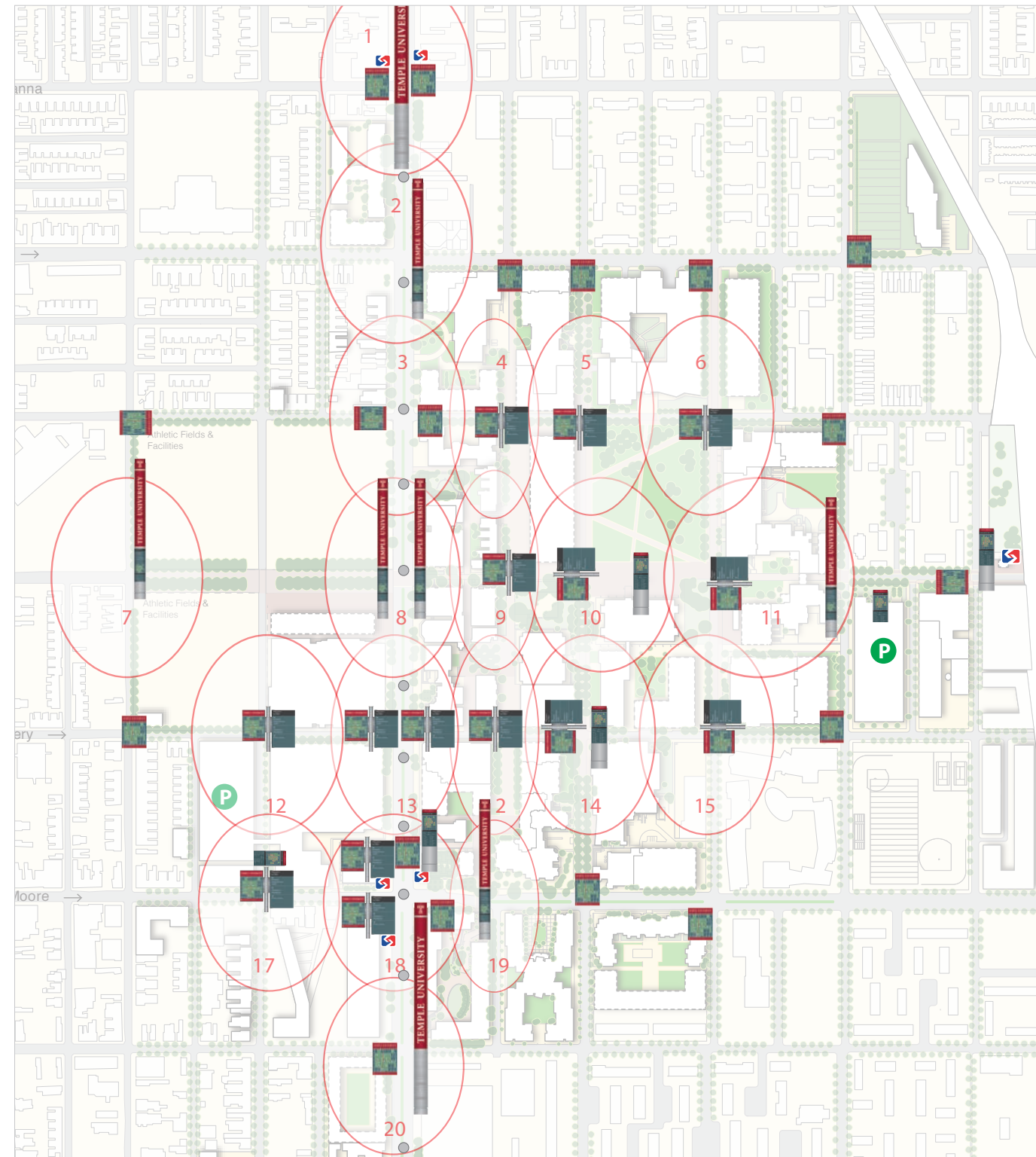
As Polett Walk is extended to the west side of Broad and becomes a more obvious walkway, the path should be identified as such until it runs into 16th Street.

Tech Center Path

There is only one path at present that remains unnamed; it runs from 11th to 12th Street on the north side of the Tech center. There are several factors to take into account before assigning a name to this path:

- It runs through an active parking lot and would need mitigation before it would be appropriate to name.
- Its utility depends upon the presence of the Welcome Center, which is likely to move. If the Welcome Center moves, this path will become even less important.
- Directing people to enter campus via Polett from the Montgomery garage is easier, due to the location of the pedestrian exit of the garage. It is very unlikely that people will enter the campus from this path, as it is a mid-block crossing. The most likely users are people leaving campus, cutting through to the vehicular entrance of the garage.

PEDESTRIAN WAYFINDING - SIGN PLACEMENT



Susquehanna	16th St	15th St	Broad St	Liacouras Walk	13th St	12th St
	16th St	15th St	Broad St	(Liacouras Walk)	(13th)	(12th)
Diamond Street	16th St	15th St	Broad St	(Liacouras Walk)	(13th)	(12th)
			Barrack Liacouras Center Mitten Pearson/McGonigle Performing Arts Student Center Tomlinson Theater Welcome Center			
Norris Street	16th St	15th St	Area 9	Area 10 (Liacouras Walk)	Area 11 (13th)	Area 12 (12th)
			Barrack Liacouras Center Mitten Pearson/McGonigle Performing Arts Student Center Tomlinson Theater Welcome Center	Annenberg Barton or Library Liacouras Center Student Center Tomlinson Theater Welcome Center	Architecture Barton or Library Beury Liacouras Center Paley Presser Student Center Tomlinson Theater Tuttleman Tyler Welcome Center	Anderson Biology Engineering Gladfelter Liacouras Center Paley SERC Student Center Tomlinson Theater Tyler Welcome Center
Polett Walk	16th St	15th St	Area 5 (Broad)	Area 6 (Liacouras Walk)	Area 7 (13th)	Area 8 (12th)
	Carnell Conwell Geasey Field Complex Liacouras Center Liacouras Garage Mitten Pearson/McGonigle Performing Arts Student Center Tomlinson Theater Welcome Center		Barrack Carnell Conwell Klein Liacouras Center Mitten Pearson/McGonigle Performing Arts Student Center Tomlinson Theater Welcome Center	Barton or Library Liacouras Center Performing Arts Shusterman Speakman Sullivan Tomlinson Theater Welcome Center	Alter Barton or Library Beury Liacouras Center Paley Speakman Student Center Tomlinson Theater Tuttleman Welcome Center	Anderson Biology Engineering Gladfelter Liacouras Center Paley SERC Student Center Tech Center Tomlinson Theater Welcome Center
Montgomery Ave	16th St	15th St	Area 1 (Broad)	Area 2 (Liacouras Walk)	Area 3 (13th)	Area 4 (12th)
		Barrack Carnell Conwell Geasey Field Complex Liacouras Center Liacouras Garage Pearson/McGonigle Performing Arts Student Center Tomlinson Theater Welcome Center	Barrack Carnell Conwell Klein Liacouras Center Liacouras Center Pearson/McGonigle Performing Arts Rock Student Center Tomlinson Theater Welcome Center	1810 Alter Klein Liacouras Center Ritter Ritter Annex Speakman Student Center Tomlinson Theater Tuttleman Welcome Center	Alter Liacouras Center Paley Ritter Ritter Annex Speakman Student Center Tomlinson Theater Tuttleman Weiss Welcome Center	Anderson Gladfelter Liacouras Center Paley Student Center Tech Center Tomlinson Theater Tuttleman Welcome Center
Cecil B. Moore	16th St	15th St	(Broad)	(Liacouras Walk)	(13th)	(12th)
		Barrack Carnell Conwell Geasey Field Complex Liacouras Center Liacouras Garage Pearson/McGonigle Performing Arts Rock Student Center Tomlinson Theater Welcome Center	Barrack Carnell Conwell Klein Liacouras Center Liacouras Center Pearson/McGonigle Performing Arts Rock Student Center Tomlinson Theater Welcome Center	1810 Alter Klein Liacouras Center Ritter Ritter Annex Speakman Student Center Tomlinson Theater Welcome Center		
Oxford	16th St	15th St	(Broad)	(Liacouras Walk)	(13th)	(12th)
			Carnell Conwell Klein Liacouras Center Pearson/McGonigle Performing Arts Rock Student Center Tomlinson Theater Welcome Center			

PEDESTRIAN WAYFINDING - MESSAGE LOGIC

The pedestrian sign system should be a seamless network of information on the campus.

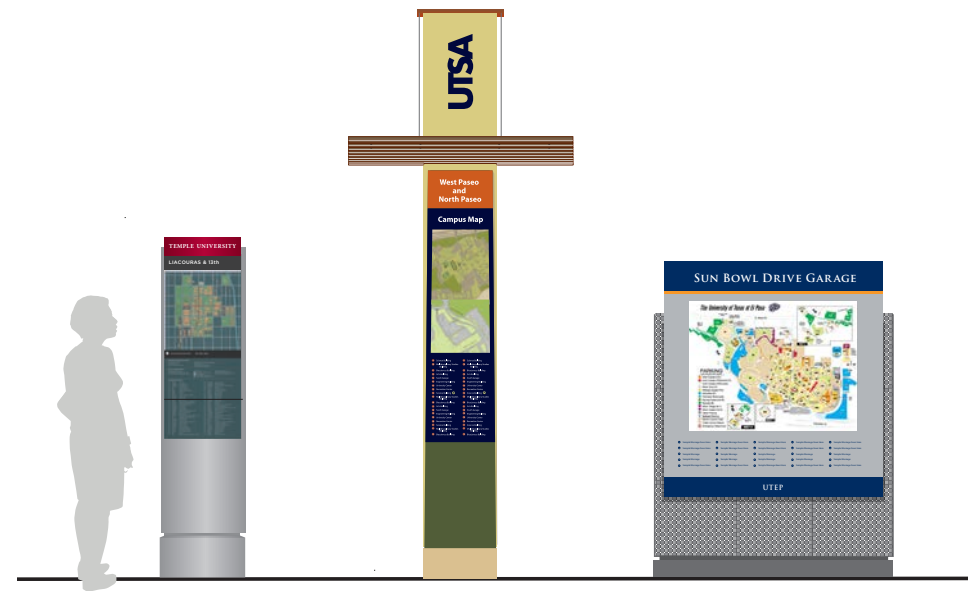
The chart to the right illustrates sample messages on pedestrian directional signage by location. The message sets include both local and global destinations. All signs within a particular area (as numbered on the adjacent chart and shown in ellipses on the map, to the left) share the same local destinations. Local destinations include buildings and venues close to or inside that area. The same building/facility may be a local destination in multiple (adjacent) areas.

Global destinations appear on all directional signs throughout the system. Global destinations serve two purposes: they are highly frequented venues, so will be useful to a large number of users, and also function as an orientation device. For example, knowing that you are walking towards the Liacouras Center also means that you are walking towards the Liacouras garage and Geasey field.

As shown in the message sets, pedestrian directional signs should have a selective, rather than exhaustive, listing. It is recommended that no greater than 11 destinations be shown on a directional sign.

SIGN RECOMMENDATION - BUILDING DIRECTORY

Sign Function	Text	Terminology	Subcomponents	Symbols	Locations	Legibility Requirements	Comments
Directory Maps	List of University facilities with building codes and grid locations.	Names as shown on building id signs. Building codes as shown on building id signs and university web sites	Gridded map of campus Phone number for further information.	Map of Campus & Map Symbols You-are-here arrowhead Other standard symbols in use elsewhere (SEPTA, accessible, parking, etc.)	At pedestrian exits to parking facilities, venues with high volumes of visitors (ie, Welcome Center)	Should be usable by older adults and some visually impaired. Will need illumination for use at night. Should be identifiable from 150 feet by pedestrians.	At each selected location Alternate means for information should be available for those with serious visual impairment. Oriented so that up on the map is ahead for the user.



SIGN RECOMMENDATION - ACCESSIBILITY TRAILBLAZER

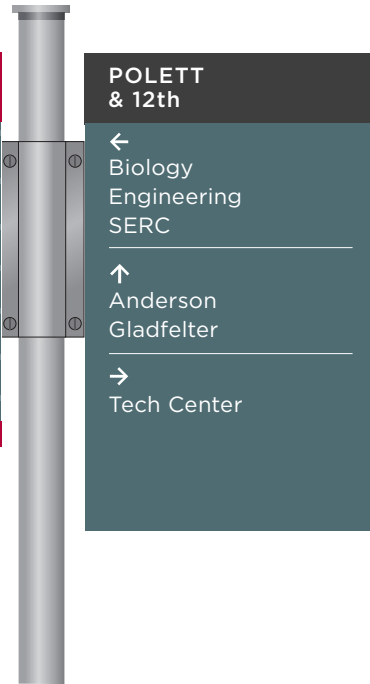
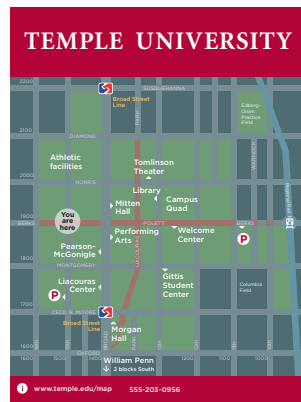
Sign Function	Text	Terminology	Subcomponents	Symbols	Locations	Legibility Requirements	Comments
Accessibility Trailblazer	Directions to accessible entrance	One destination per trailblazer with facility name or accessible entry text.	None.	Directional arrow and accessibility symbol as needed.	Decision points in the absence of pedestrian directional signs; along route from major parking locations to designated destinations. Or from building entrances to accessible entry.	100 foot visibility, 50-75 foot legibility	Located where it will not interfere with disabled movement



Temple's current accessibility trailblazers (above) should be updated to complement the pedestrian wayfinding system.

SIGN RECOMMENDATION - OVERHEAD PEDESTRIAN DIRECTIONAL AND MAP

Sign Function	Text	Terminology	Subcomponents	Symbols	Locations	Legibility Requirements	Comments
Pedestrian Directional	Sign location (if at named intersection or street name) Buildings within proximity Global destinations	Names limited to 2-3 words same as or subset of building identification sign name; Name to fit on one line. Buildings listed alphabetically	Grouped by direction of travel.	Parking	At street corners and gateways.	Minimum 5/8" cap height as per ADA.	Usually paired with a campus map



BUILDING IDENTIFICATION

GOAL

All buildings on the Temple campus should have visible, unambiguous identification at all building entrances so that visitors and university members can find their destinations. Buildings should provide adequate recognition of donors that does not conflict with the requirements for effective wayfinding information.

LOCATION AND SCALE

1) Observation

Building ID signs are currently limited, most frequently consisting of only building mounted donor names that do not necessarily reflect the common name of the building. The scale of some donor signs is so large that they do not read as information elements. Some buildings set back from the street have existing building identification signs that cannot be read from the sidewalk or path. Many entrances to buildings have no identification at all.

Recommendation

Individual buildings require more prominent identification where it can be seen by pedestrians. Signs for pedestrians approaching buildings are needed at all entry points.

2) Observation

For some buildings visible major entrances are locked and unusable, usually for security reasons. Functioning building entrances are not always the ones visible from the street which creates confusion and frustration for all trying to gain access.

Recommendation

Where visible entrances are not operable they should be treated as one would a non-accessible entrance with a sign visible from the circulation path and providing directions to the functional entrance to the building.

3) Observation

There is no standard for presenting building name and information on campus. Instead, random and inconsistent signage appear at various locations without any sense of order or overall purpose. Some buildings have major venues or functions within them that are public destinations by themselves but lack identification on the exterior to alert people to their presence within.

Recommendation

Building ID signs of pedestrian scale and within easy sightlines at building entrances with the following information: address, building name, building code, and limited sublistings of venues within, school/college front offices contained within, and select services. Sublistings cannot exceed three items.

BUILDING CODES

1) Observation

Building codes are used on student schedules to identify buildings in which classes are held. Existing codes are not easily mapped to building names, many do not use the full number of characters available and leave out critical letters that impair guessability by students and others. Building codes are not shown on building ID signs but rather are shown on taped paper signs at doorways, thus not visible at a distance.

Recommendation

All building ID signs should carry the building code along with the name. Use all six letters allowable for building codes to maximize the intelligibility of the acronym for each building. This lends to confusion and disorientation.

Recommendation

A single name should be used for a facility and staff should be trained and encouraged to use the same name. All print and web materials should use the selected name consistently.

ADDRESSES

1) Observation

All buildings have addresses but not all buildings note their addresses on their identification signs. Given the importance of the street grid for the city and campus this lack of address overlooks a key identifier for those new to campus who are not familiar with the building names or are confused by similar names.

Recommendation

Building ID signs should include the building address to provide a parallel means of identifying the building and allow visitors to use a location scheme they are familiar with from elsewhere.

NOMENCLATURE

1) Observation

There are a number of multi-part buildings that appear to be a single building, but for various sections of the building have different names. (e.g., Carnell and Conwell; Ritter and Ritter Annex; Student Activity Center north and south).

Recommendation

Conjoined buildings that appear to the public as one structure but are two should be given an overarching name (e.g., Center, Complex) to reduce confusion.

2) Observation

Many buildings have multiple names by which they are known causing confusion for visitors and members of the university community (e.g., Gittis Student Center, Student Activity Center, SAC; Performing Arts Center, Baptist Temple)

ILLUMINATION

1) Observation

Existing building identification is frequently unreadable or simple invisible at night due to lack of illumination of the sign or shadows created by strong nearby illumination.

Recommendation

Building identification needs illumination at night to be usable by those on campus.

Existing Name	Existing Code	Recommended Code Max=6	Ped Directional Sign Name	ID Sign Name	Address	Recommended Sublistings
1300 CECIL B. MOORE AVE (1300CB)	1300CB	1300CB	1300 CECIL B. MOORE	1300 CECIL B. MOORE	1300 Cecil B. Moore Ave	
1500 N BROAD STREET (NB)	NB	1500BR	1500 N BROAD	1500 N BROAD	1500 N Broad Street	
1700 N. BROAD STREET (1700NB)	1700NB	1700BR	1700 N BROAD	1700 N BROAD	1700 N Broad Street	Office of International Student and Scholar Services Temple Law Book Store
1810 LIACOURAS WALK (1810LW)	1810LW	1810LW	1810 LIACOURAS WALK	1810 LIACOURAS WALK	1810 Liacouras Walk	Student Health Services
1900 LIACOURAS WALK			1900 LIACOURAS WALK	1900 LIACOURAS WALK	1900 Liacouras Walk	
1912 NORTH PARK MALL (PK)	PK	1912LM	1912 LIACOURAS WALK	1912 LIACOURAS WALK	1912 Liacouras Walk	
1930 NORTH PARK MALL (PM)	PM	1930LM	1930 LIACOURAS WALK	1930 LIACOURAS WALK	1930 Liacouras Walk	
1938 NORTH PARK MALL (1938LW)	1938PM	1938LM	1938 LIACOURAS WALK	1938 LIACOURAS WALK	1938 Liacouras Walk	
1940 LIACOURAS WALK (1940NR)	1940NR	1940LW	1940 LIACOURAS WALK	1940 LIACOURAS WALK	1940 Liacouras Walk	
ALTER HALL			ALTER	ALTER HALL	1810 N. 13th Street	Fox School of Business
ANDERSON HALL (ANDRSN)	ANDRSN	ANDRSN	ANDERSON	ANDERSON HALL	1114 W Polett Walk	College of Liberal Arts
ANDERSON HALL OFFICES (ANDRSN)	ANDRSN	ANDRSN				
ANNENBERG HALL (ANNBRG)	ANNBRG	ANNENB	ANNENBERG	ANNENBERG HALL	2020 N 13TH	School of Communications and Theater
ARCHITECTURE BUILDING		ARCH	ARCHITECTURE	ARCHITECTURE BUILDING	2001 North 13th Street	
BAPTIST TEMPLE PAC		BAPTST	TU PERFORMING ARTS	TEMPLE PERFORMING ARTS CENTER	1823 N. Broad Street	
BARRACK HALL (BARRKH)	BARRKH	BARACK	BARRACK	MORRIS AND SYLVIA BARRACK HALL	1819 N. Broad Street	
BARTON HALL CLASSROOMS (BARTNB)	BARTNB	BARTNB	BARTON	BARTON HALL	1900 N. 13th Street	
BELL BUILDING			TECH CENTER WELCOME CENTER	TEMPLE UNIVERSITY TECH CENTER & WELCOME CENTER		
BEURY HALL (BEURY)	BEURY	BEURY	BEURY	BEURY HALL	1901 N. 13th Street	
BIOLOGY LIFE SCIENCES (BIOSCI)	BIOSCI	BIOSCI	BIOLOGY	BIOLOGY LIFE SCIENCES (BIOSCI) BUILDING	1900 N. 12th Street	
BOOK STORE			BOOK STORE			
BROAD ST SUBWAY						
CARNELL HALL (CN)	CARNELL	CARNELL	CARNELL	CARNELL HALL	1803 N. Broad Street	Bursar's Office Temple University Graduate School Student Financial Services
CONWELL HALL (CNWELL)	CNWELL	CONWEL	CONWELL	CONWELL HALL	1801 N. Broad Street	Department of Academic Records Office of Multicultural Affairs
CONWELL INN			CONWELL INN	CONWELL INN	1331 Polett Walk	
EDBERG-OLSON HALL			FOOTBALL PRACTICE FIELDS	EDBERG-OLSON HALL FOOTBALL COMPLEX	1001 Diamond Street	
ELMIRA JEFFRIES			ELMIRA JEFFRIES APTS	N/A (PRIVATE)	1500 N 15th Street	
ENGINEERING (ENGR)	ENGR	ENGR	ENGINEERING	ENGINEERING BUILDING	1947 N. 12th Street	College of Engineering
ENTERTAINMENT AND COMMUNITY EDUCATION CENTER (EC)	EC	ENTRTN	ENTERTAINMT & COMMUN CENTR	ENTERTAINMENT & COMMUNITY CENTER	1509 Cecil B. Moore Avenue	
FACILITIES MANAGEMENT				FACILITIES MANAGEMENT	1009 W. Montgomery Ave	
GLADFELTER HALL (GLFLTR)	GLFLTR	GLADFL	GLADFELTER	GLADFELTER HALL	1115 W Polett Walk	
HARDWICK HALL (HW)	HW	HARDWK	HARDWICK	HARDWICK HALL	2029 N. Broad Street	
HILLEL FOUNDATION			HILLEL FOUNDATION	HILLEL FOUNDATION	1441 W Norris Street	
HOWARD GITTIS STUDENT CENTER (HGSC)	HGSC	STUCTR	STUDENT CENTER	HOWARD GITTIS STUDENT CENTER	1755 N. 13th Street	Book Store Parking Services
IBC STUDENT RECREATION CENTER			IBC REC CENTER		1500 Cecile B. Moore Ave	Sublisting on Liacouras
JOHNSON HALL (JN)	JN	JOHNSN	JOHNSON	JOHNSON HALL	2029 N. Broad Street	
KARDON/ATLANTIC TERMINAL BUILDING			KARDON APTS	N/A (PRIVATE)	1801 N 10th St	
KLEIN LAW LIBRARY (KLEIN)	KLEIN	KLEIN	KLEIN LAW	KLEIN LAW BUILDING	1719 N. Broad Street	Beasley School of Law
LIACOURAS CENTER (AO)	AO	LIACOR	LIACOURAS CENTER	LIACOURAS CENTER	1776 N. Broad Street	Arena The Esther Boyer Theater IBC Studet Rec Center
LIACOURAS GARAGE			LIACOURAS GARAGE	LIACOURAS GARAGE	TBD	
LIBRARY (future)		LIB	LIBRARY		TBD	
MCGONIGLE HALL (MCGONH)	MCGONH	MCGONI	MCGONIGLE	MCGONIGLE HALL	1800 N. Broad Street	
MITTEN HALL (MITTEN)	MITTEN	MITTEN	MITTEN	MITTEN HALL	1913 N. Broad Street	
MITTEN HALL ANNEX (MTTENX)	MTTENX	MITENX	MITTEN ANNEX	MITTEN HALL ANNEX		Diamond club
MONTGOMERY GARAGE			MONTGOMERY GARAGE	MONTGOMERY GARAGE	TBD	
MORGAN HALL		MORGAN	MORGAN	MITCHELL & HILLARIE MORGAN HALL	1601 N. Broad Street	
NEWMAN CENTER			NEWMAN CENTER	NEWMAN CENTER	2129 N Broad Street	
PALEY LIBRARY (PL)	PL	PALEY	PALEY LIBRARY	PALEY LIBRARY	1210 Pollet Walk	
PEABODY HALL (PA)	PA	PEABDY	PEABODY	PEABODY HALL	2029 N. Broad Street	
PEARSON HALL (PEARSH)	PEARSH	PEARSN	PEARSON	PEARSON HALL	1800 N. Broad Street	
PRESSER HALL (PRESSR)	PRESSR	PRESSR	PRESSER	PRESSER HALL	2001 N. 13th Street	
SEPTA REGIONAL RAIL						
RITTER HALL (RITTER)	RITTER	RITTER	RITTER	RITTER HALL	1301 Cecil B. Moore Ave	Walk Auditorium
RITTER HALL ANNEX (RTTERX)	RTTERX	RITTRX	RITTER ANNEX	RITTER ANNEX	1301 Cecil B. Moore Ave	College of Education Disability Resources and Services Kiva Auditorium
ROCK HALL (ROCKHL)	ROCKHL	ROCK	ROCK	ROCK HALL		Boyer College of Music and Dance Rock Hall Auditorium
SCIENCE EDUCATION AND RESEARCH CENTER		SCIENC	SCIENCE ED & RSCH	SCIENCE EDUCATION & RESEARCH CENTER	TBD N. 12th Street	College of Science and Technology
SHUSTERMAN HALL (SHUSTR)	SHUSTR	SHUSTR	SHUSTERMAN	SHUSTERMAN HALL	1834 N. Park Mall	Law School Conference Center
SPEAKMAN HALL (SPKMAN)	SPKMAN	SPKMAN	SPEAKMAN	SPEAKMAN HALL	1810 N. 13th Street	School of Tourism and Hospitality Management
STUDENT LIFE CENTER			STUDENT PAVILION	STUDENT LIFE CENTER	1901 N. 15th Street	
SULLIVAN HALL (SULLVN)	SULLVN	SULLVN	SULLIVAN	SULLIVAN HALL	2123 North Broad Street	
TECH CENTER		TECH	TECH CENTER	TEMPLE UNIVERSITY TECH CENTER & WELCOME CENTER	1101 W. Montgomery Ave.	Office of the President Computer Services Walk In Help Desk Instructional Support Center Welcome Center
TEMPLE TOWERS			TEMPLE TOWERS	TEMPLE TOWERS	1200 Cecil B. Moore Avenue	
TOMLINSON THEATER (TMLSON)	TMLSON	TOMLIN	TOMLINSON THEATER	TOMLINSON THEATER	1301 W. Norris Street	Randall Theater
TRIANGLE APARTMENTS			TRIANGLE APARTMENTS	TRIANGLE APARTMENTS	1100 W Montgomery Avenue	
TUTTLEMAN LEARNING CENTER (TTLMAN)	TTLMAN	TUTTLE	TUTTLEMAN	TUTTLEMAN LEARNING CENTER	1809 N. 13th Street	
TYLER HALL		TYLER	TYLER	TYLER SCHOOL OF ART	2001 N. 13th Street	Tyler School of Art
WACHMAN HALL (WCHMAN)	WCHMAN	WACHMN	WACHMAN	WACHMAN HALL	1805 N. Broad Street	
WELCOME CENTER			WELCOME CENTER	N/A	N/A	
WEISS HALL (WEISS)	WEISS	WEISS	WEISS	WEISS HALL	1701 N. 13th Street	
WHITE RESIDENCE HALL (WL)	WL	WHITE	WHITE	WHITE HALL	2108 N. Broad Street	

Recommended Nomenclature for Building Identification

EXISTING



Alter Hall



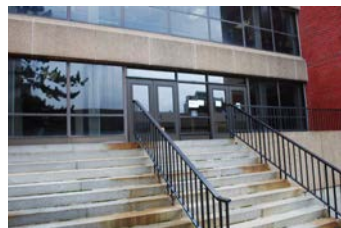
Annenberg Hall



1940 Residence Hall



Beury Hall



Bio Science



Education & Social Administration



Barton Hall



Howard Gittis Student Center



Peabody Hall

Nomenclature

Building names can be easily confused with other similar names.

Building Address

Building address is not always visible.

Building Coding

Building codes do not take advantage of field length available to more closely relate to the building name.

Illumination

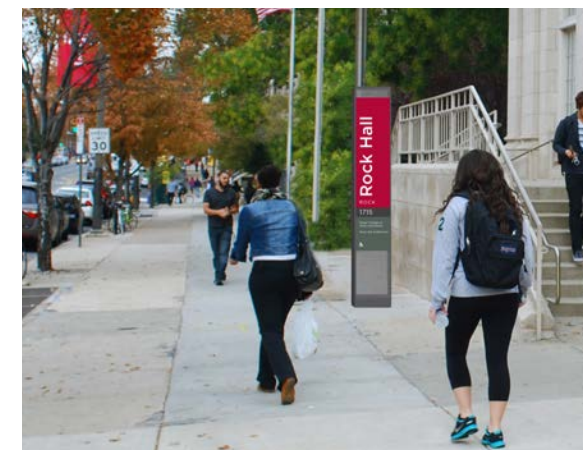
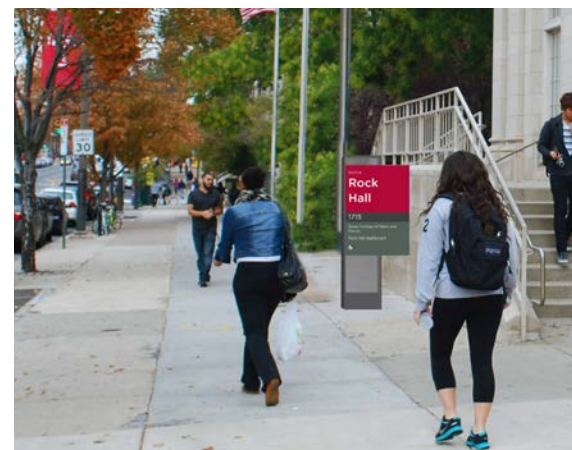
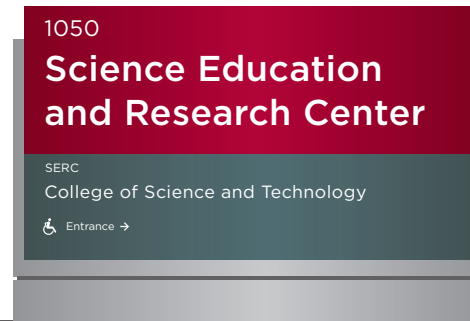
Many signs are left in shadow during the evening hours.

Location

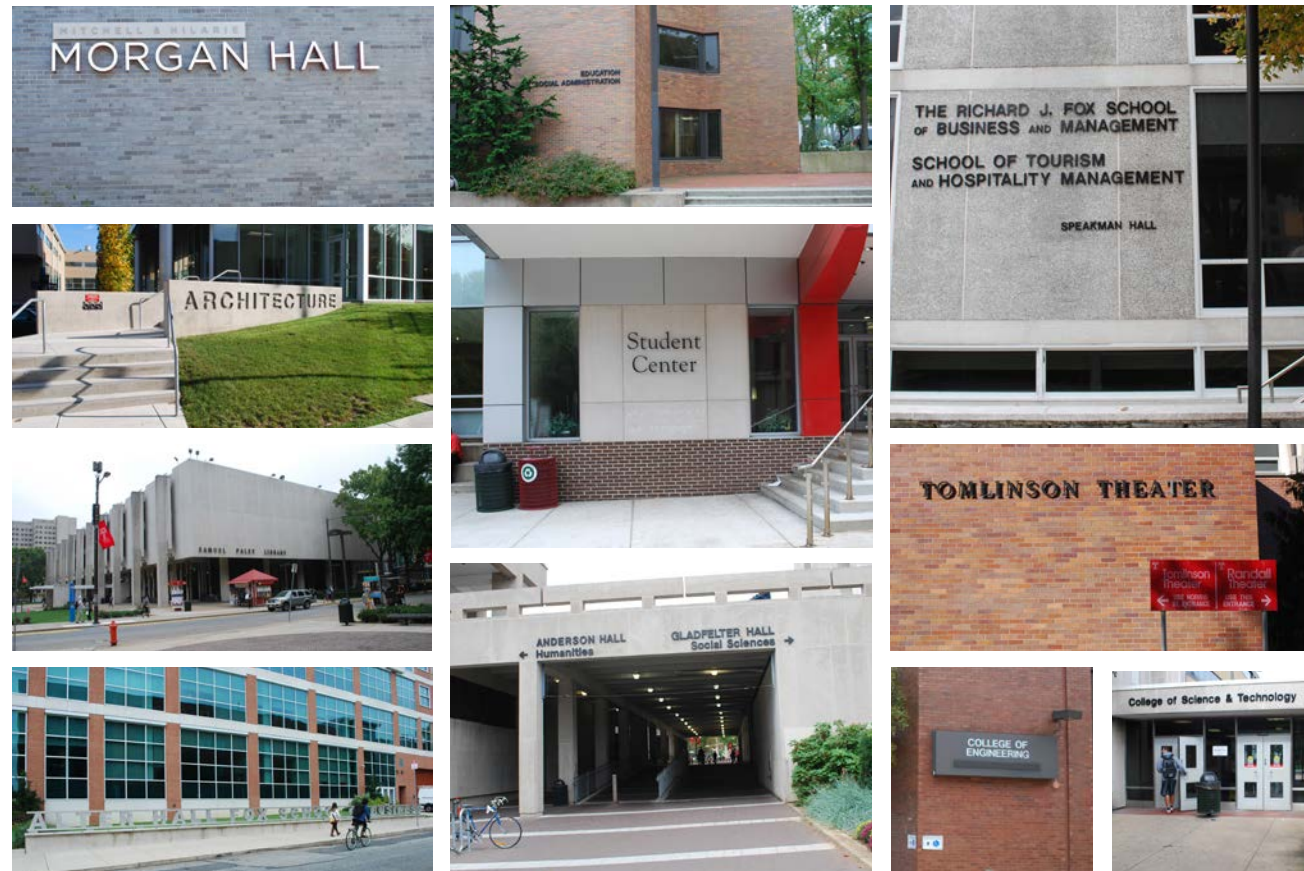
Building ID signs are not placed at all usable entrances nor are they always readable from pedestrian circulation.

FREE-STANDING - PROPOSED

Sign Function	Text	Terminology	Subcomponents	Symbols	Locations	Legibility Requirements	Comments
Building Identification	Formal building name, acronym and address	none	Departments within building up to a maximum of 3. Plaques mounted by doors or vinyl on glass should include floor level being entered.	Accessibility symbol, if applicable	At building entrance; free-standing or wall-mounted	Varies	



BUILDING-MOUNTED LETTERS - EXISTING



INSPIRATIONAL EXAMPLES - PROPOSED



For large facilities and those set back from the street or walkway, consider dimensional letters on the building at the first floor level. Building-mounted letters high up on the building can be difficult for pedestrians to see; it is imperative to check sightlines and surrounding trees before determining an appropriate height and scale.

Building-mounted identification should have a consistent font, layout and heirarchy.

The system should allow typography to vary in placement, scale, material and finish, in response to building architecture.

WALL-MOUNTED AND VINYL ON GLASS - EXISTING



WALL-MOUNTED AND VINYL ON GLASS - PROPOSED

Many buildings on Temple’s campus are identified with an ad-hoc system of paper prints taped to doorways and surrounds, demonstrating a need for formalized building identification at the point of entry.

Wall-mounted building ID signs should be similar to freestanding building ID signs but can be scaled smaller, as such signs will be viewed at shorter distances.

Glass doors may be identified with vinyl letters, which should carry the same information and organization structure as the other building identification signs.

For buildings with multi-level entrances or limited access entrances the building ID sign at a particular entrance should distinguish which level the entrance is on and what can be accessed from the entrance.



ENVIRONMENTAL ENHANCEMENTS

GOAL

Create a place that enriches people’s experience of campus through a distinctive identity and integration into the community fabric.

KEY POINTS

Placemaking is about making something memorable out of daily arrivals and departures. It’s about giving purpose, cohesion and rhythm to a space.

Enhance pedestrian walkways with good lighting, well designed street furniture and interpretive elements.

PLACEMAKING PRINCIPLES

Environmental enhancements encompass design elements beyond signage: they weave messages and create a sense of place without delivering directional information. They should be beautiful and engaging without being overpowering and self-important. There are four principles that guide environmental enhancements:

Orientation - Creating a landmark, or designed space that looks different from other areas, and gives visitors a navigation tool.

Connection - Individual elements can bind together with a matrix of related messages and engage each other in a visual relationship that helps define spatial ties. Environmental enhancements should speak the same language as the sign system to create a cohesive sense of place.

Direction - Create visual clarity so visitors can navigate the space. They should be clear where they are going and what they can expect when they leave the area.

Animation - Environmental enhancements should consider how people are currently using the space, the desired use, and enhance that experience accordingly.

HISTORIC AND SUSTAINABILITY INTERPRETIVE PANEL SYSTEMS

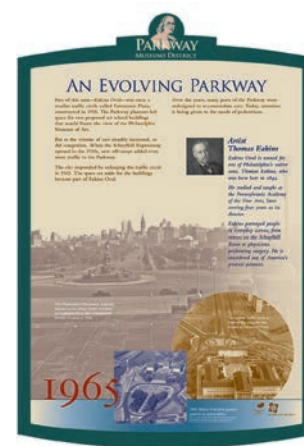
Historic and sustainability campus-related themes may be featured using freestanding pole-mounted signs, panels attached to gateway pylons, or panels complementing other wire mesh elements. These site-specific signs would be deployed in locations that are relevant to the topics they cover.

A “historic corridor” that includes some of Temple’s oldest and most historically significant buildings is proposed to highlight Temple’s history, leaders and prominent buildings with topics that could include:

- Conwell’s vision and how Temple College was founded
- The transition from college to university, with the addition of new schools and departments as enrollment grew
- History of buildings: Baptist Temple, Sullivan Hall, Mitten Hall
- Important contributions and innovations made by Temple’s presidents, faculty and alumni.

Sustainability panels could be installed to:

- Highlight Temple University’s stormwater interventions and LEED-certified buildings.
- Signs should include diagrams that explain how the feature works and its impact on the campus, city and region



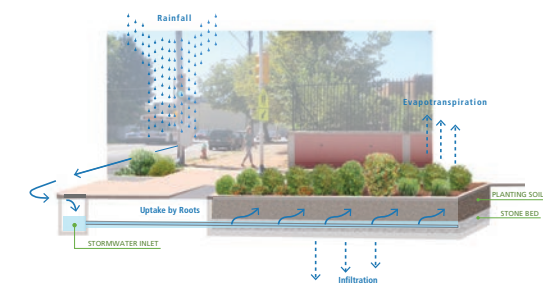
Examples



Example - proposed locations



Historic campus core



Examples

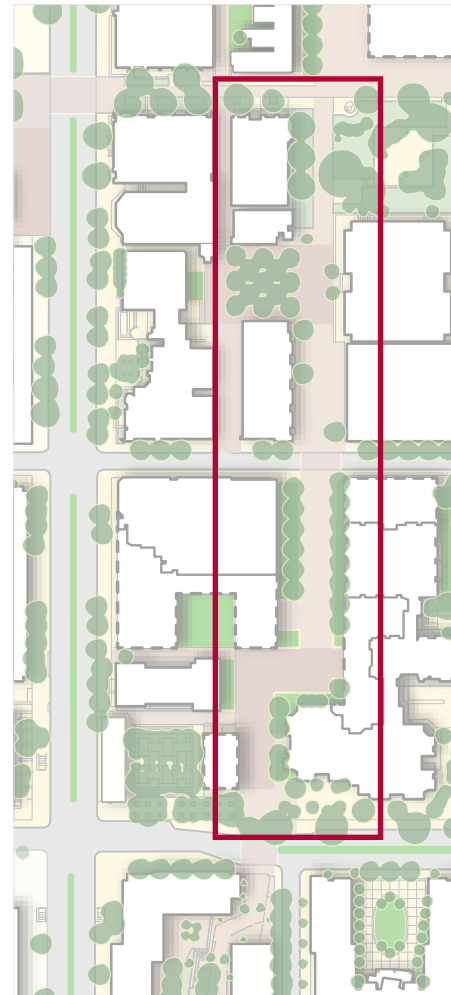
INTERPRETIVE WALKWAY

Walkways on campus can be designed to create unique experiences that tell the story of Temple's history. As Temple's campus becomes increasingly pedestrian-oriented, the sidewalk becomes an even more powerful place where people experience the campus and its history through well designed interpretive signage.

Imagine quotes from Conwell's famed Acres of Diamonds speech dancing along a campus walk:

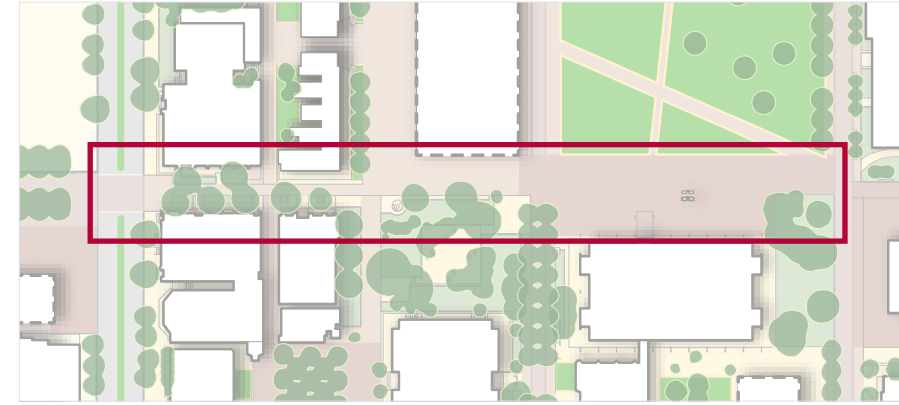
- Greatness consists not in holding some office; greatness really consists in doing some great deed with little means, in the accomplishment of vast purposes from the private ranks of life, that is true greatness.
- Well does the man know, who has suffered, that there are some things sweeter and holier and more sacred than gold.
- The great inventors are simply great men; the greater the man the more simple the man; and the more simple a machine, the more valuable it is.
- How simple the mind—majestic like the simplicity of a mountain in its greatness.
- We live in deeds, not years, in feeling, not in figures on a dial; in thoughts, not breaths; we should count time by heart throbs, in the cause of right.
- We must know what the world needs first and then invest ourselves to supply that need, and success is almost certain.

LIACOURAS WALK



Proposed locations

POLETT WALK



Greatness

consists not in holding some office;
greatness really consists in doing some
great deed with little means,

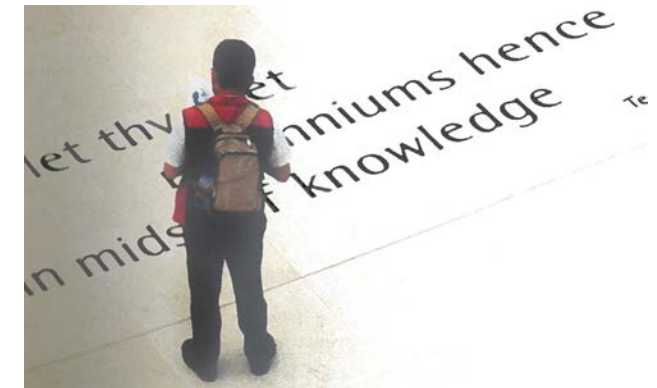
in the accomplishment of vast purposes
from the private ranks of life,

that is true greatness.

We live
in deeds,
not years,
in feeling,

We must know what
the world needs first
and then invest ourselves
to supply that need
**and success is almost
certain.**

Sample quotes and alternative fonts



Inspirational images

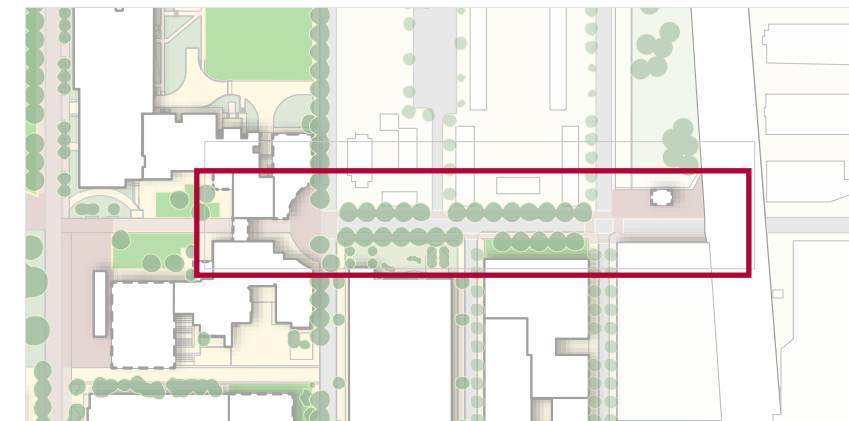
PANEL SYSTEM

Inspirational text or historic storytelling can be used as an interpretive element in the landscape to create special places and experiences. These elements can educate and inspire those who walk through them, enriching their experience beyond what exists today—and connecting them to the values and “place” of campus.



Inspirational images

BERKS EAST



Proposed location

MAPPING

GOAL

Provide consistent, accurate, understandable and accessible information that supports and empowers those navigating to, within and around Temple’s campus.

OVERVIEW

Maps are a diagrammatic form of location and directional information that work in parallel to text-based signs. Some people find one type easier to use than the other, which is why it is important to offer both forms of information on a campus. Maps must work in harmony with wayfinding by emphasizing the same things (e.g., key routes, points of entry, parking, landmarks).

Two Types of Maps

Visitors usually encounter two different types of maps, each with advantages and disadvantages. The first are custom-designed maps employed by the University and its departments. Ideally all versions of such maps use the same “base” artwork, but the design team has found that a few different versions of the campus “base” map are used. Temple has two campus maps that are used more than others: one is an axonometric illustrative with buildings and landscape features, rendered in color; the other is two-dimensional, rendered in gray and red.

The second type of map is a web-based map (from Google, MapQuest, etc). These third-party maps are flat plans that use their own trademark graphic language. They are drawn from a geographic database and have many interactive features and tags. A large percentage of visitors now access such maps before visiting campus.

HOW VISITORS ACCESS MAPS

Visitors and the university community can access map information three ways. The two traditional ways, map signs and takeaway maps, have now been joined by a host of digital map products, including smartphones, GPS devices and information from websites.

Map Signs

Located at or near parking facilities, transit stations or serving as a stand-alone sign, the map sign is a powerful tool in orienting visitors and other users. Directional signs have limited space and only list key destinations; a map can list all buildings and can include additional wayfinding information.

Map Locations

Placement of maps is critical to successful use. Locate maps:

- At pedestrian exits from parking structures and lots.
- At pedestrian entrances to campus, visitor center, transit stops, major drop-off locations and important venues.
- In major activity areas.
- In all cases where the concentration of visitors and pedestrians is heaviest.

Map Orientation

Users have significant difficulty rotating maps and spatial relationships in their head. Ideally, map orientation should change depending on how the sign is oriented.

- Placing maps so that the top of the map aligns with what is ahead of the user makes it easier to relate the flat image to the three-dimensional world.
- Placing the map in an asymmetric relationship to a nearby feature will also aid the viewer.

Takeaway Maps

Offering printed maps is extremely helpful. Takeaway maps or map brochures allow viewers to turn the map, take the information wherever they go and write notes. Printed maps can include additional wayfinding information, directions and helpful phone numbers. They can be different formats: simple (8-1/2" x 11"/black and white) or more elaborate (full-color fold-out brochures).

- Printed maps should be available on campus at major visitor destinations (visitor center, parking garage, etc).
- Downloadable PDFs of the campus map(s) should be available on the website for easy printing by those planning a visit.

Digital Maps

Digital maps are available on many devices: smartphones, iPads, GPS devices and somewhat less conveniently, laptop computers. GPS devices are incorporated into smartphones, making them especially helpful for wayfinding. If accessing maps on home computers, visitors have other conveniences -- larger screens and printers.

- Maps available online should carefully consider these different formats in which the maps may be accessed.
- Temple’s mobile website should feature a mobile-optimized version of the map.
- The map on the standard website should be at a high enough resolution that features/text can be greatly magnified without pixelating and sacrificing legibility. The map should also be available on the web page itself without the user having to download a PDF (however, having the option to download the map as a PDF is a desirable feature).

Map Databases

When map content is controlled by the University, the information must be consistent across all types of maps whether on signs (managed by the Facilities Department) or in brochures (produced by Admissions, Athletics, Student Affairs, etc.). All departments using maps must work from the same base map and follow the same content and graphic guidelines. This ensures a consistent Temple brand and is helpful for visitors. It also means that updates are made regularly to the base (master) map; it is the responsibility of each department to use the most up-to-date master every time they reprint or create a new map. With the advent of digital and interactive maps (Google, MapQuest, GPS units, etc.) many people will see and use non-university maps and directions.

- To the extent possible, Temple should work directly with the database companies (such as Tele Atlas) affiliated with these websites to give them accurate

information. Emory University, for example, worked with MapQuest to correct directions so they would lead visitors to the desired campus entrance.

Web Maps

Web-based maps have a wealth of helpful and interesting features. In addition to the standard map view, Google offers satellite, terrain and traffic views; the street view even allows viewers to walk area streets. Google also allows for insertion of photos, video clips and Wikipedia entries, creating a truly interactive map. MapQuest allows the user to download information to a cell phone or a vehicle’s OnStar. Both sites can link to nearby hotels, restaurants, movie theaters, etc. It is possible for Temple to add its own interface to Google maps and at a minimum consider “tagging” amenities and features (e.g., visitor parking, wireless hotspots, post office, dining) so people can locate them.

- OSU has created an interactive Google map that can display a long list of campus features. (<http://www.osu.edu/map/google.php>)
- Cornell University improves on the OSU model by adding building footprints to the map. There is also a complete list of destinations that can be “clicked” to locate. Views can be filtered according to the viewer’s criteria. Driving directions can be accessed and the satellite, terrain and hybrid views are also available. Parking and information icons are present at all times. Printing the screen yields a small take-along map. (<http://www.cornell.edu/maps/interactive.cfm>).
- Temple ROUTE has the beginnings of an interactive map, but needs significant revision. The base map is outdated and many entries of data are inaccurate or incomplete. The map does not emphasize pedestrian travel; it demphasizes and even omits several campus pathways. The campus map needs more graphic attention (e.g., removal of the gradients, which are distracting and make the campus appear cold and artificial instead of warm and verdant) and more content (pedestrian features, landmarks, landscape, etc.). It is recommended that everyone involved in a redesign of this application study the Cornell and OSU interactive maps as best practice examples.

MAP CONTENT

Map content needs to be carefully considered so that features that are most useful to viewers are included and superfluous detail is omitted. Key content includes:

University Name And Logo/Logotype

You Are Here Marker

- Marker should be directional (e.g., an arrow), unambiguous and show the viewer's position relative to the setting.
- Marker should be legible enough to be clearly visible without obscuring other important features.

Major Vehicular And Pedestrian Circulation

- Decide if and how to show University boundaries
- Differentiate pedestrian-only interior pathways with a color shift.

Major Landmarks

- Visual landmarks (due to height or size) sentimental landmarks (due to historic value or fame).

Parking

- Lots/garages should be identified with "P" symbol
- Show entrance(s) for each.

Building Footprints

- Simplify shapes to reduce complexity.
- Non-university or minor buildings should be differentiated visually.
- Render significant buildings differently (optional).

Site Amenities

- Passenger drop-offs for major destinations.
- Transit stops.
- Use universal symbols where possible.

Context

- Enough to be useful but not confusing.
- Landscape features or other elements that could help orient a visitor.
- Trees, foliage, public art or other features to make the campus appear attractive and friendly (if appropriate).

Off-site Facilities

- Satellite or nearby facilities belonging to the university.
- Either indicate their direction with arrows or with an inset map.

Additional Wayfinding Content Might Include:

- Helpful phone numbers (primary): general university number, Admissions office, parking department, security.
- Helpful phone numbers (secondary): most-visited venues (such as athletics, performing arts, etc.), graduate Admission office.
- University web address (for use with smartphones)
- Transit information plus phone number and/or web address.
- Accessibility information plus phone number for assistance.
- Athletic event information plus phone number for pre-recorded event information.

Legend

- List of buildings each with an abbreviation code and alpha-numeric grid coordinate.
- Do not alphabetize by codes; most visitors are looking for a location and don't know the codes.
- Names, codes and grid coordinates should use a tabular format to speed searches for information.
- List of "top 10" destinations.
- Titles of buildings and street names go on map or in key if no space.
- Border letters and numbers to help viewer locate buildings.

Alpha-Numeric Border And Grid Overlay

- Provide a map grid so viewers can more easily locate their destination.
- The granularity of the grid should provide an unambiguous intersection for destinations.
- The appropriate number of grid lines will vary depending on the size and density of the campus.

SPECIALTY MAPS

There is a need for specialty maps; at the very least a parking map Temple needs. As with the basic campus map these can be handed out or made available as PDF downloads. Examples of specialty maps include:

- Parking map for staff, faculty and students.
- Bike map showing bike racks, paths, dismount zones.
- Map for disabled visitors showing accessible buildings, entrances, routes and features such as power doors, accessible non-powered doors, accessible paths, tactile ramp and elevators.
- Map for the visually impaired and older users with increased text and object sizings.

MAP DESIGN

The design of the map and careful attention to small details make a very big difference in the effectiveness of the map. If these factors are followed Temple personnel will have more flexibility in how they can use the map -- it will be effective large or small, color or black and white.

Design Factors

- Clarity through line weight, font choice/size, style of rendering.
- Sufficient contrast through color and value.
- Use of selective distortion to improve legibility (size of features, proportion of map, etc.).
- Reveal hidden features if necessary.
- Size: maximize size of map within the sign frame.

Human Factors And Cognition

- Viewer: eyesight, age, ability to use electronic devices.
- Surface, material, reproduction technology: should be non-glare with maximum sharpness.
- Interface: quality of human factors, logic, sequence.
- Appearance: clarity, contrast, color, type legibility.
- Appropriate amount of complexity for the situation.
- Orientation: instead of north-up, make heads-up to match the viewer experience.

ELECTRONIC KIOSKS

An extremely useful and technologically up-to-date tool, electronic kiosks have the capability of offering the most information of any of the wayfinding and information system components, but their development, implementation and maintenance requires a significant investment.

Electronic signs need to be temperature controlled; it is most economical to install them in lobbies or otherwise attach them to buildings. Installing temperature controls is more expensive if they are freestanding. Location criteria remain generally the same as orientation maps; they should be located at major decision points and where visitors enter the campus.

A number of issues need to be addressed in deciding whether and how to implement an electronic system. What information is to be available and to whom is it directed? Visitors are an obvious audience for directional and event information, but prior experience has shown that other campus users may be a larger audience for event, transit schedule and other information. Some of this may already be available on Temple's website and could be moved to the kiosk software.

Maintenance of equipment and information has a number of facets that should be addressed:

- Who is responsible to develop information for the system?
- Is there staff experienced enough to develop, design, or at least knowledgeably review the information and computer interface that end users will be using?
- Who will be responsible to gather and update information for the system?
- From how many data bases or sources will information have to be gathered and how often?

RELATED WAYFINDING INFORMATION

This information should be communicated to visitors where possible (via web, print and map sign).

Directions

Visitors often seek directions on MapQuest, Google and similar sites, however it is desirable to create a base set of directions for the most common routes to the campus. Directions from third parties are not always accurate, may not account for local road conditions and do not necessarily "bring people in" the way Temple may want. In writing the directions, the University can choose which entrance roads are easiest to navigate and most attractive. The suggested routes to campus are delineated starting on page 2.95.

It is also desirable to offer the same directions, pre-recorded, over the phone.

Transit, Traffic

Bus schedules, road closures, etc.

Directories

- Staff available to help visitors and answer questions
- Departments, including graduate departments
- Sports facilities and practice fields

RECOMMENDATIONS

The design team recommends that a custom map be drawn specifically for the campus, with content as listed above. It is imperative, however, that terminology and names used for the campus map and Google interactive map are the same.

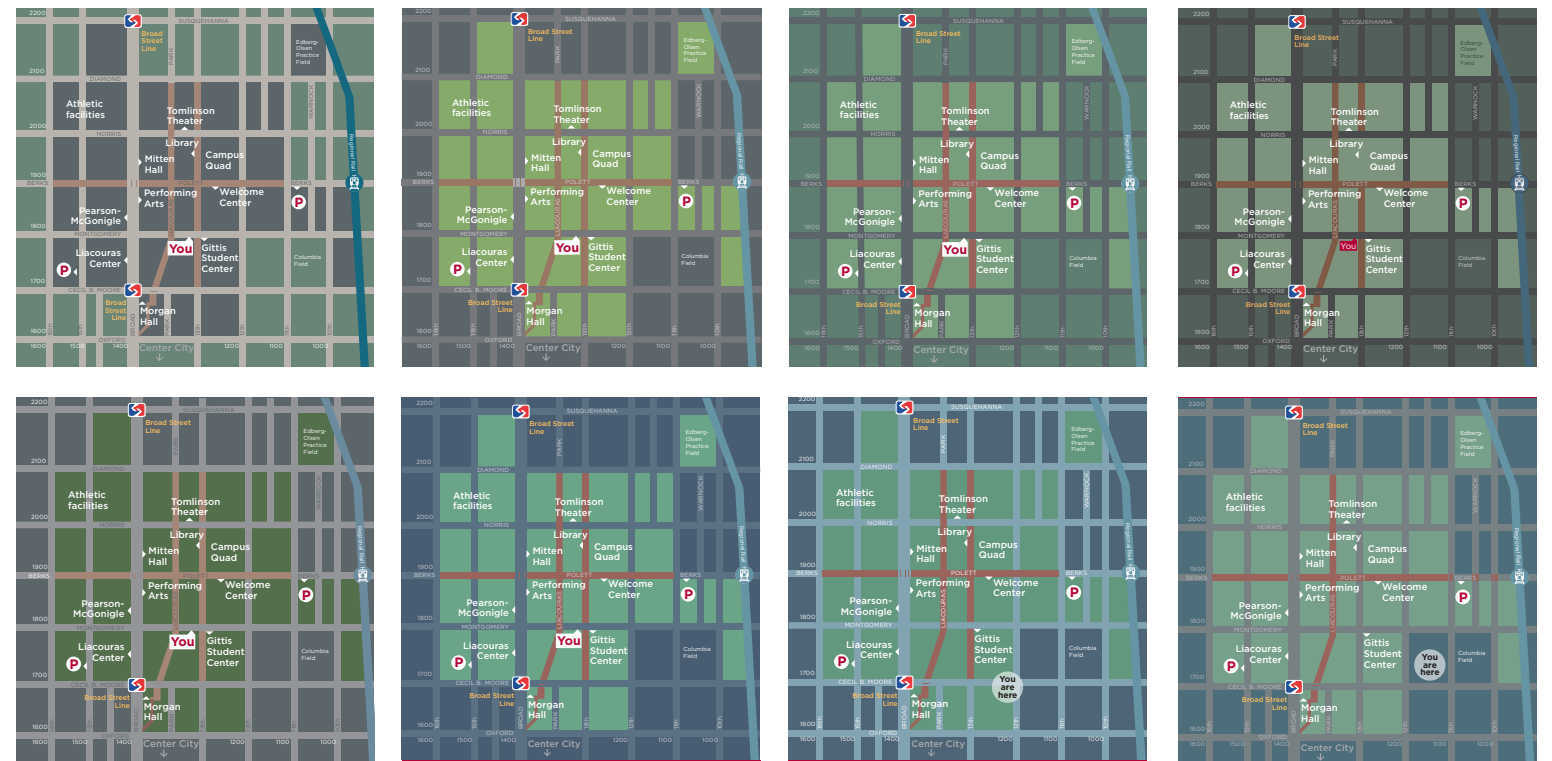
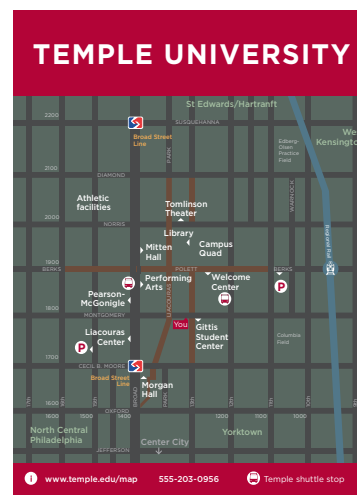
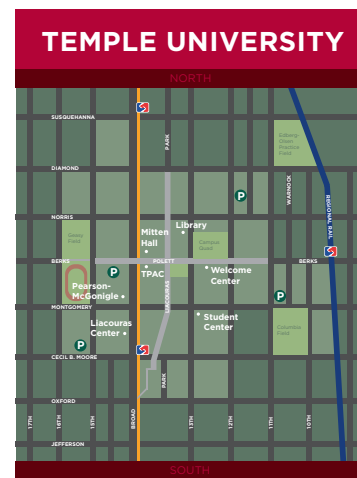
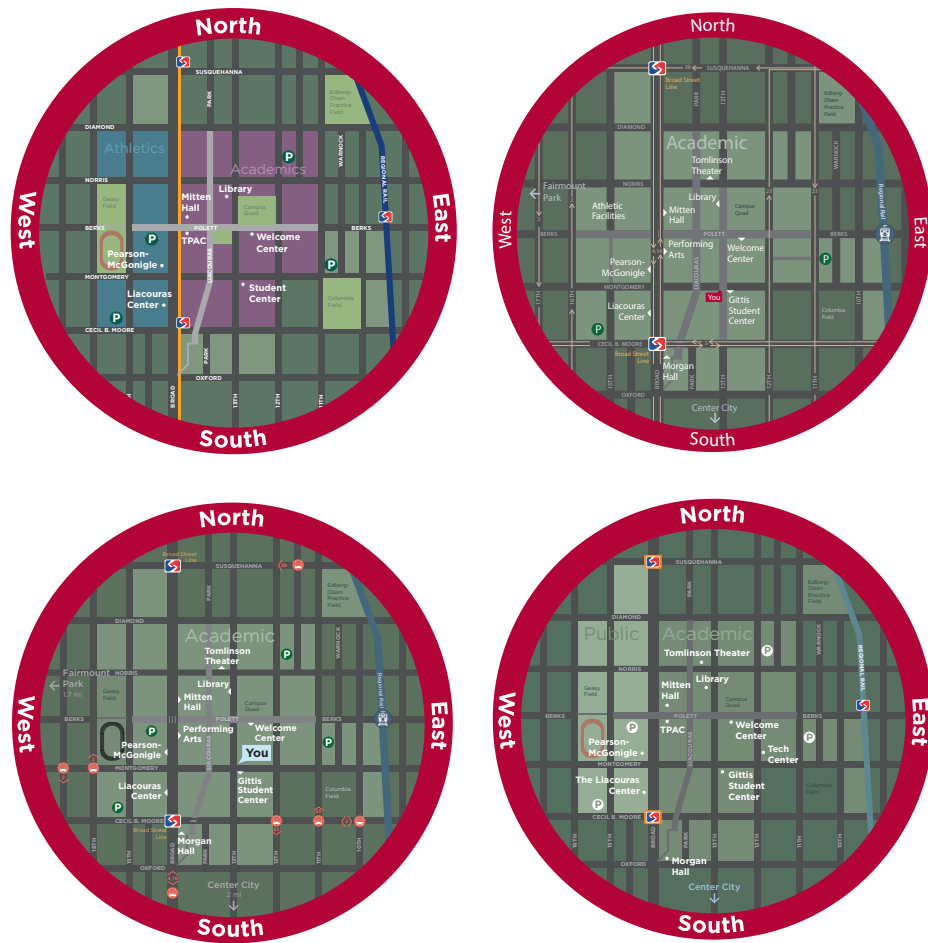
This campus base map should be made searchable on the website. The searchable map allows the viewer to enter a destination, which is then highlighted. Additional information, such as where to park, can be included. All maps on the website should also be offered as PDF downloads.

It is strongly recommended that the University work with Google to "tag" features and create an interactive Google map that is accessed from Temple's website. The university community can then benefit from the wealth of web-based features described above. Temple's IT department can perform this function or that service can be out-sourced.

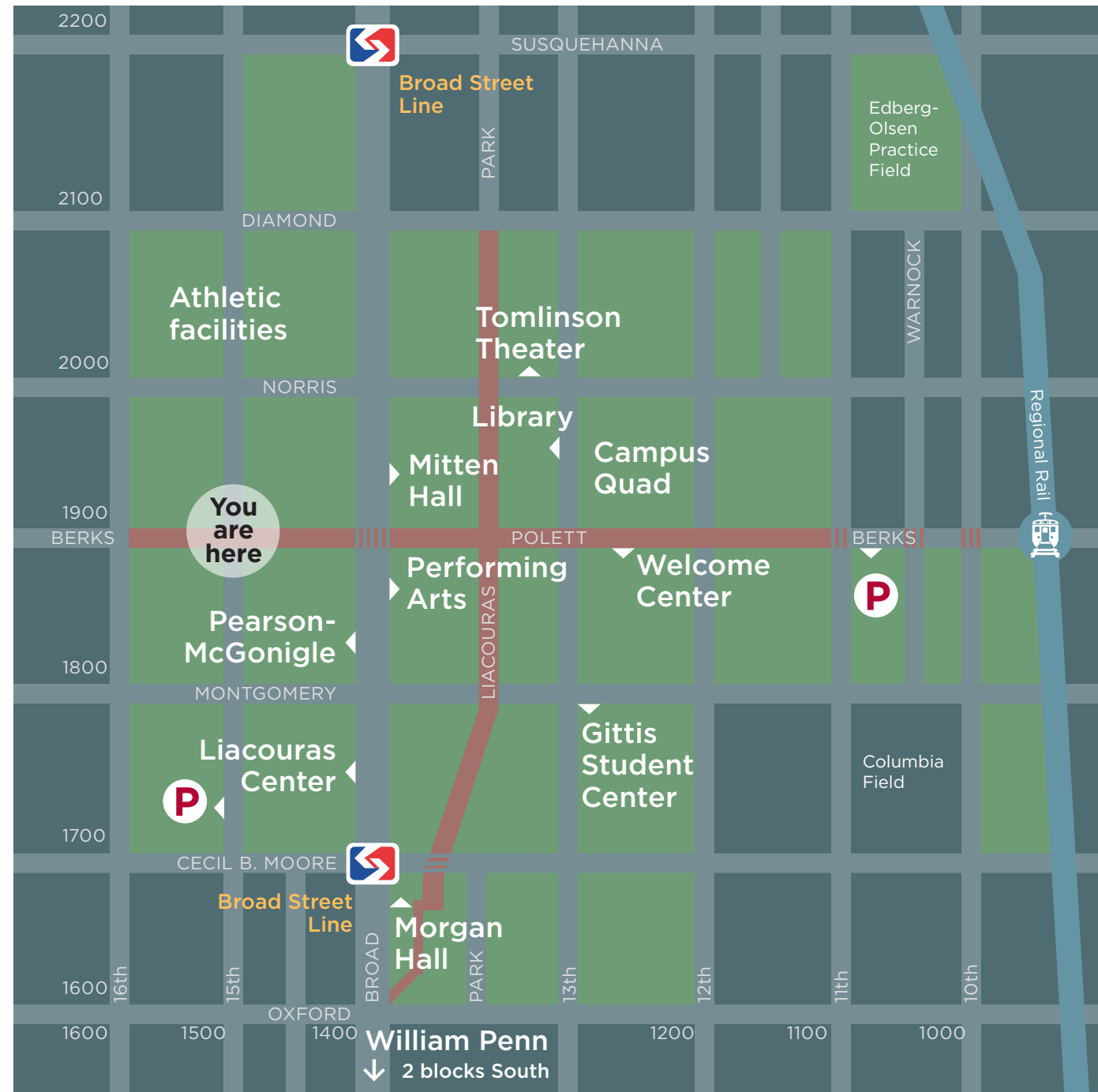
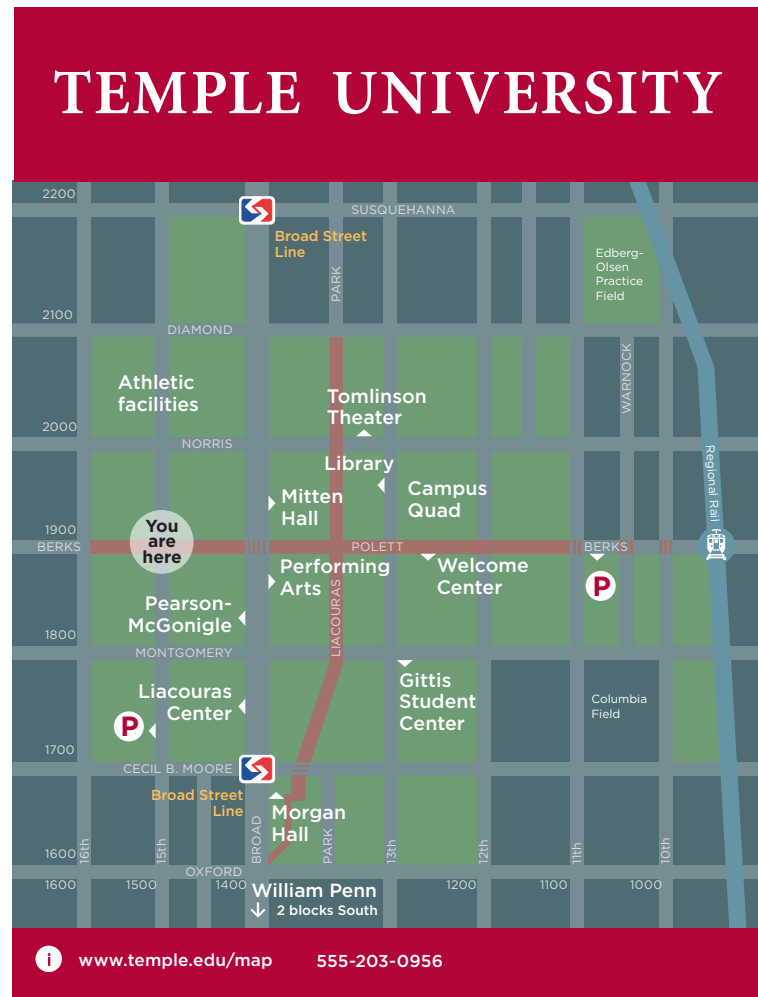
It is recommended that the University produce, at a minimum, two specialty maps -- a parking map and a map for the disabled. The parking map with permitting information should be designed for staff, students and faculty. The map for the disabled should be suitable for both visitors and the general university community. These should both be created as overlays to the master base map.

MAP PROCESS SKETCHES

The map process investigated numerous color schemes, layouts and design features to determine the most legible system of colors, symbols, size and contrast. The selected color scheme, shown on the next page, achieves a cohesive design with appropriate message hierarchy that can be adapted to include various levels of detail depending on the intended application. The graphic standards determined in this process informed the development of both the overhead map and building directory map, ensuring that both maps retain the same look and feel.



PROPOSED CAMPUS MAP



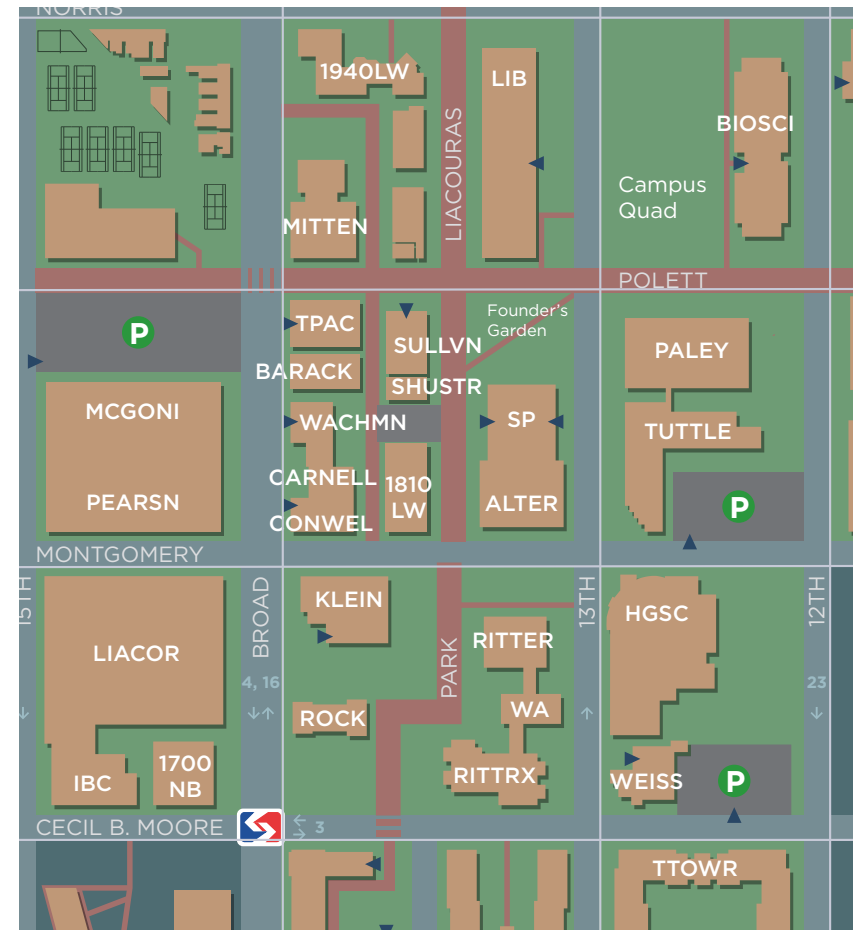
BUILDING DIRECTORY MAP

The building directory map is more detailed and inclusive of campus buildings and features. Unlike the simplified overhead campus map, this map shows individual buildings, building entrances, building codes and a more detailed path network. This map is the “first point of contact” for pedestrians—it is placed in areas like pedestrian gateways, garages and near train and subway stations so users can quickly orient themselves to the campus. The contact time is anticipated to be much longer with this map than the overhead campus map, so it should be placed where users feel comfortable interpreting the map for a few minutes (e.g., off to the side, in a well-lit and covered area).

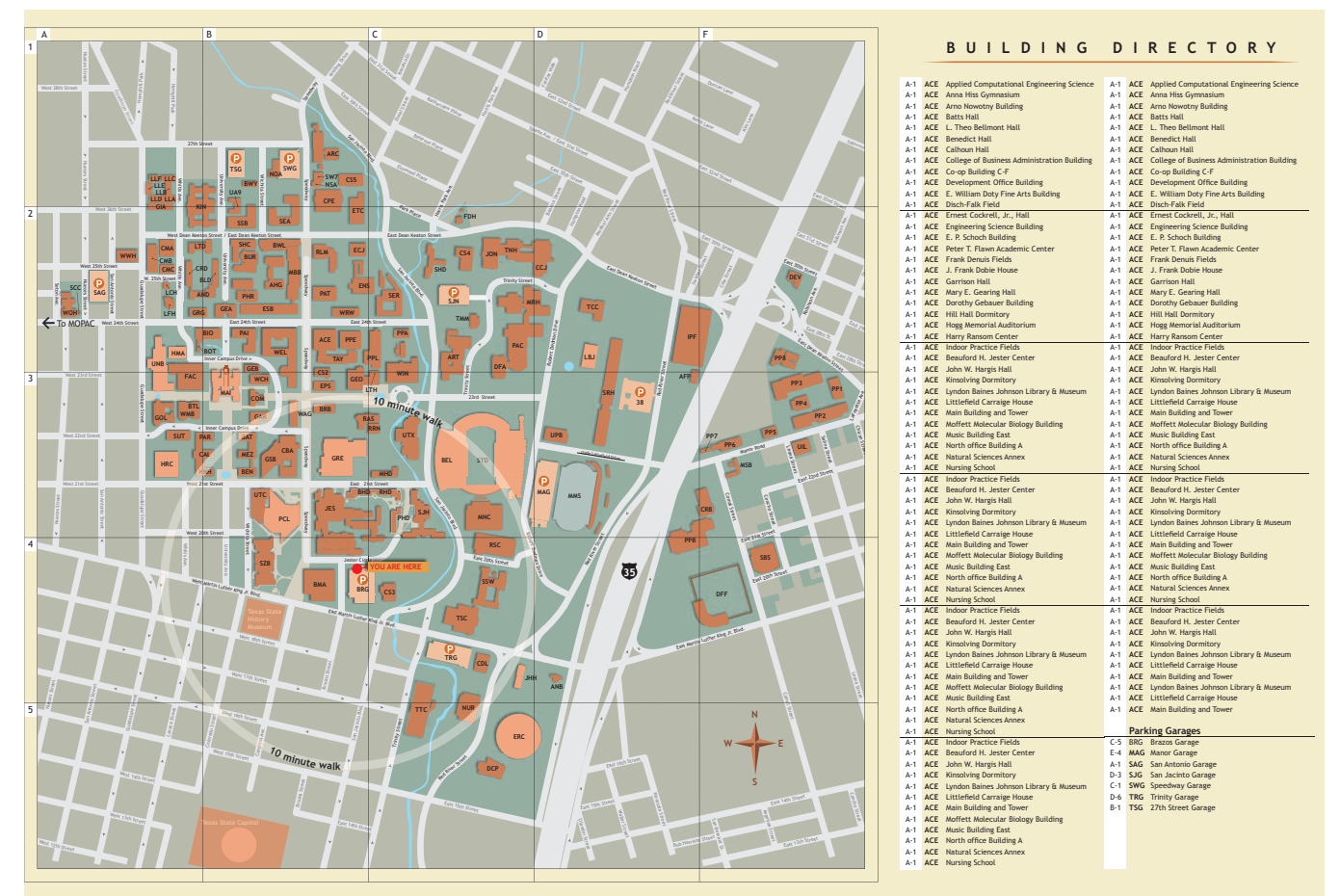
Buildings are identified; streets are shown and labeled but are not emphasized as much as buildings.

Guiding Principles

- Maps should utilize a grid. The axonometric view (currently used on campus maps) should be replaced by a two-dimensional map, which helps viewers understand the organization of the campus much more easily.
- Buildings are identified; streets are shown and labeled but minimized.
- Information that will pertain to some but not the majority of users, such as bus stops, are appropriate to show on this map.
- The map boundary may be extended to include surrounding neighborhoods and facilities not directly adjacent to the heart of campus.
- The style of the building directory map complements the color palette, typography and style of the overhead campus map.



Preliminary study: Temple building directory map

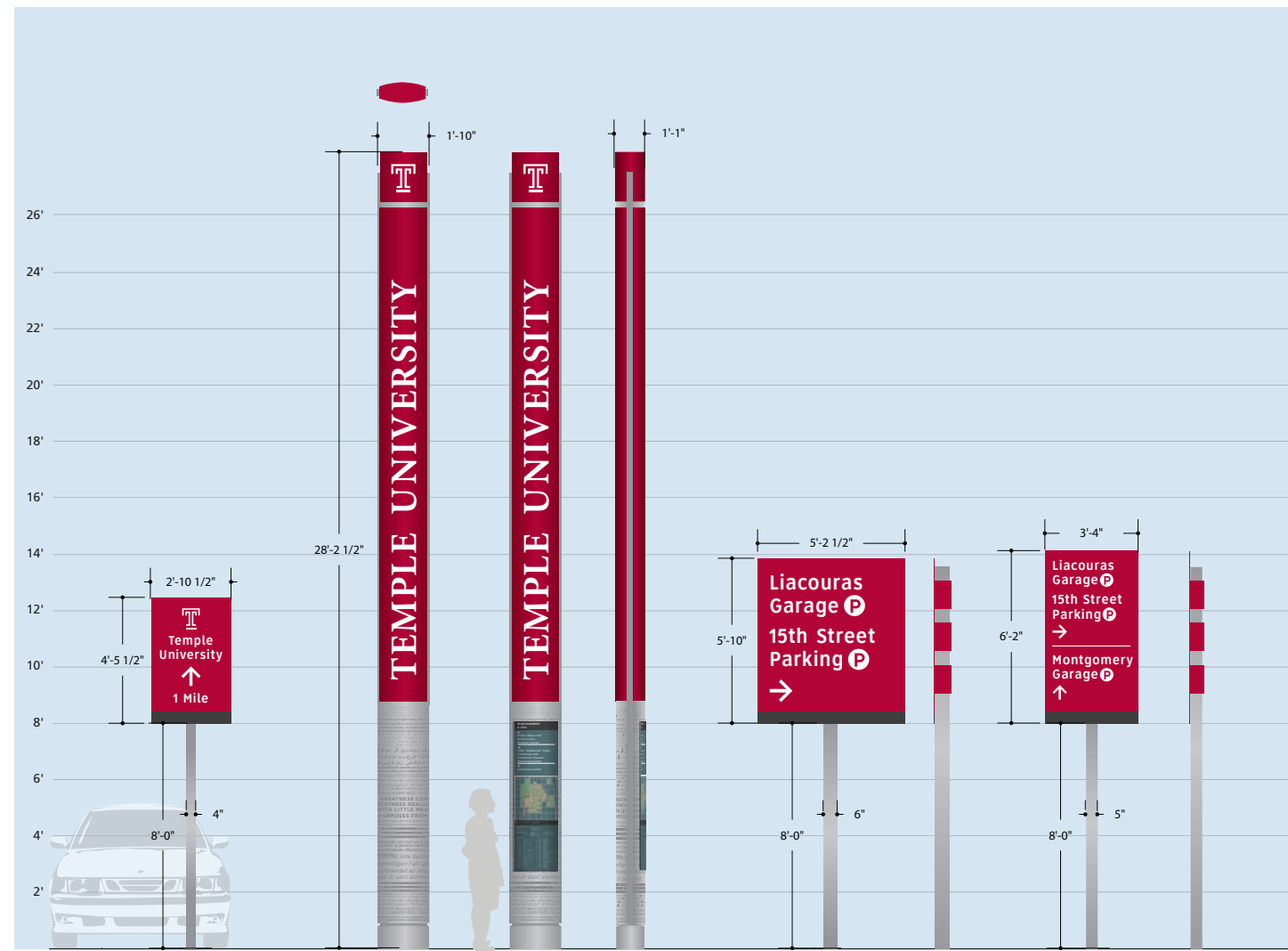


Best practice example: The University of Texas at Austin

SCHEMATIC DESIGN OVERVIEW

VEHICULAR SIGNAGE

The vehicular signage works together as a cohesive system to welcome visitors, direct them to the appropriate parking facilities or drop-off areas, and reassure them they have reached their destination. The vehicular signage system is the “first point of contact” for many visitors, making it clear when they’ve arrived on campus so they can be confident as they navigate the area.



ST 1
Vehicular Trailblazer
Ground Mounted

Temple Logo
Temple Wordmark
Distance to & (arrow)

ST 3
Gateway - Large
Ground Mounted
Illuminated

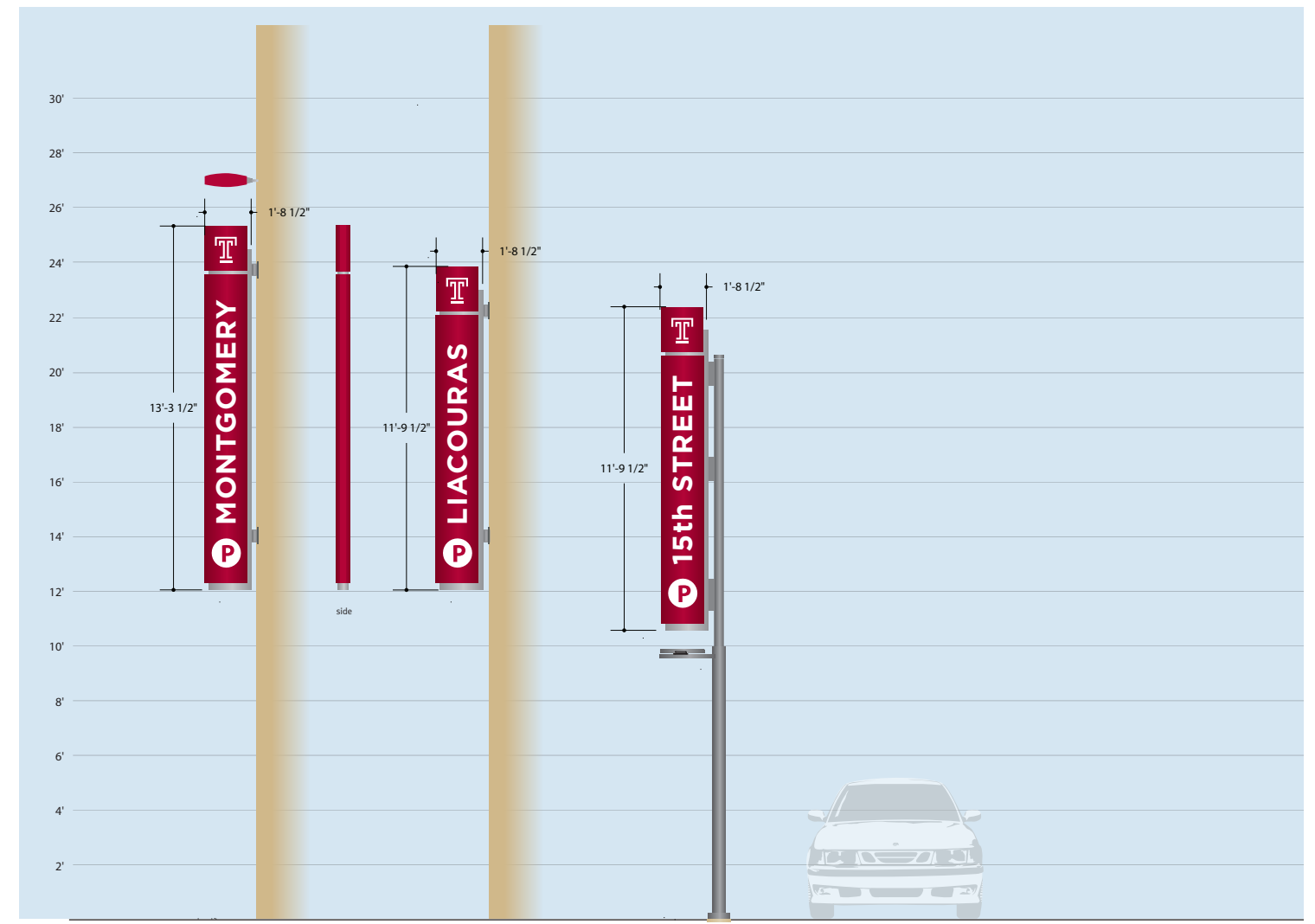
Temple Logo
Temple Wordmark
Temple Address

ST 8
Vehicular Directional - Lrg
Post & Panel Mounted
Non-Illuminated

Directional listings
6" type for 26mph or greater
MUTCD Code requires max of 3 listings

ST 10
Vehicular Directional - Lrg
Post & Panel Mounted
Non-Illuminated

Directional listings
4" type for 25mph or less
MUTCD Code requires max of 3 listings



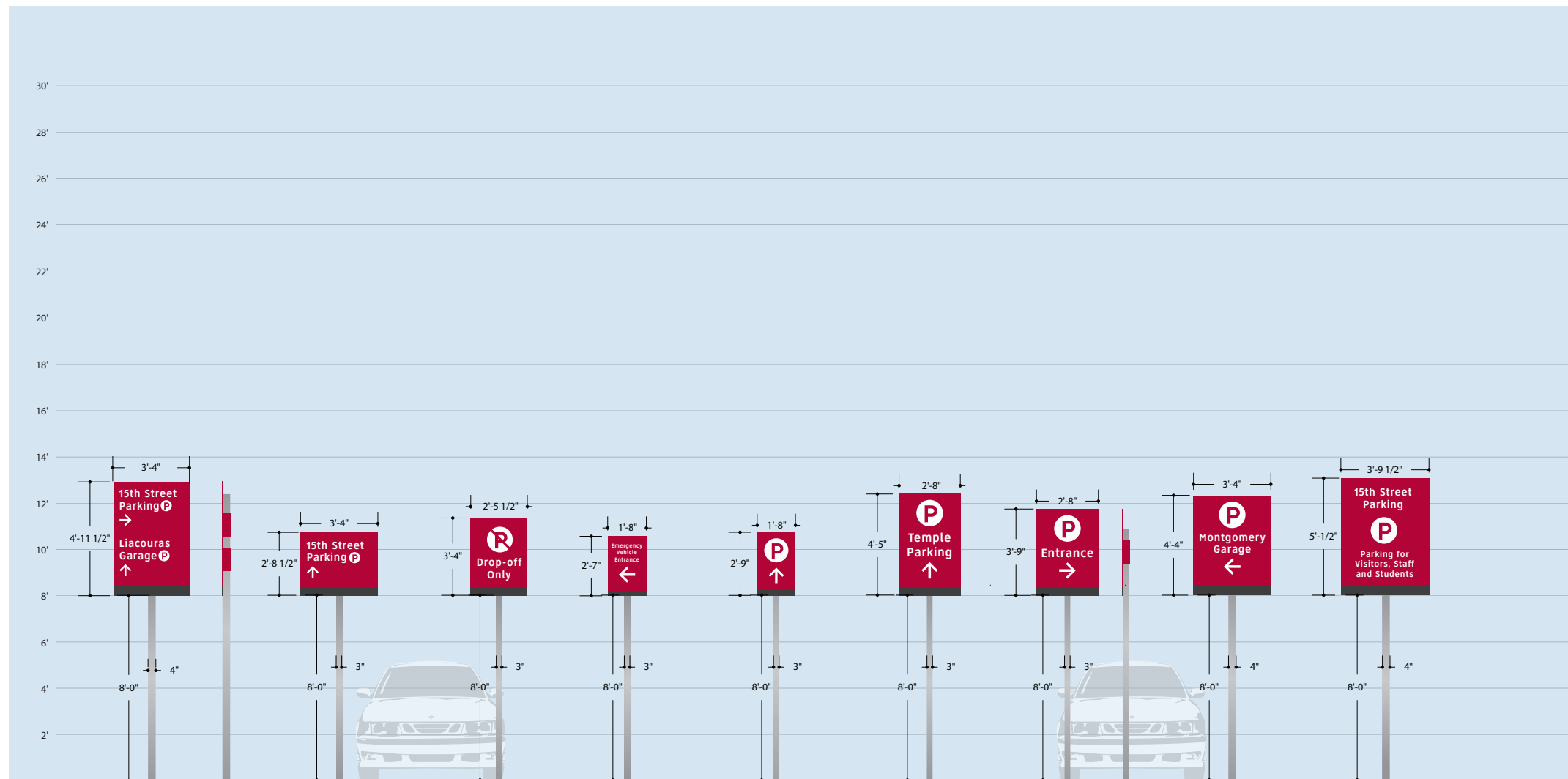
Montgomery garage
ST 34
Parking Garage w/out LED
Wall Mounted
Illuminated

Parking Garage
Parking symbol

Liacouras garage

ST 35
Parking lot ID
Post and panel
Illuminated

Parking Garage



ST 12
Vehicular Directional - Med
 Post & Panel Mounted
 Non-Illuminated
 Directional listings
 4" type for 25mph or less
 MUTCD Code requires
 max of 3 listings

ST 14
Vehicular Directional - X Sml
 Post & Panel Mounted
 Non-Illuminated
 Directional listings
 4" type for 25mph or less
 MUTCD Code requires
 max of 1 listing

ST 16
Drop-off
 Post & Panel Mounted
 Non-Illuminated

ST 17
Emergency Vehicle Blaze
 Post & Panel Mounted
 Non-Illuminated
 Emergency Vehicle Entrance (arrow)

ST 20
Parking Trailblazer
 Post & Panel Mounted
 Non-Illuminated
 Parking Symbol (arrow)

ST 21
Parking Trailblazer
 Post & Panel Mounted
 Non-Illuminated
 Parking Symbol
 Temple Parking (arrow)

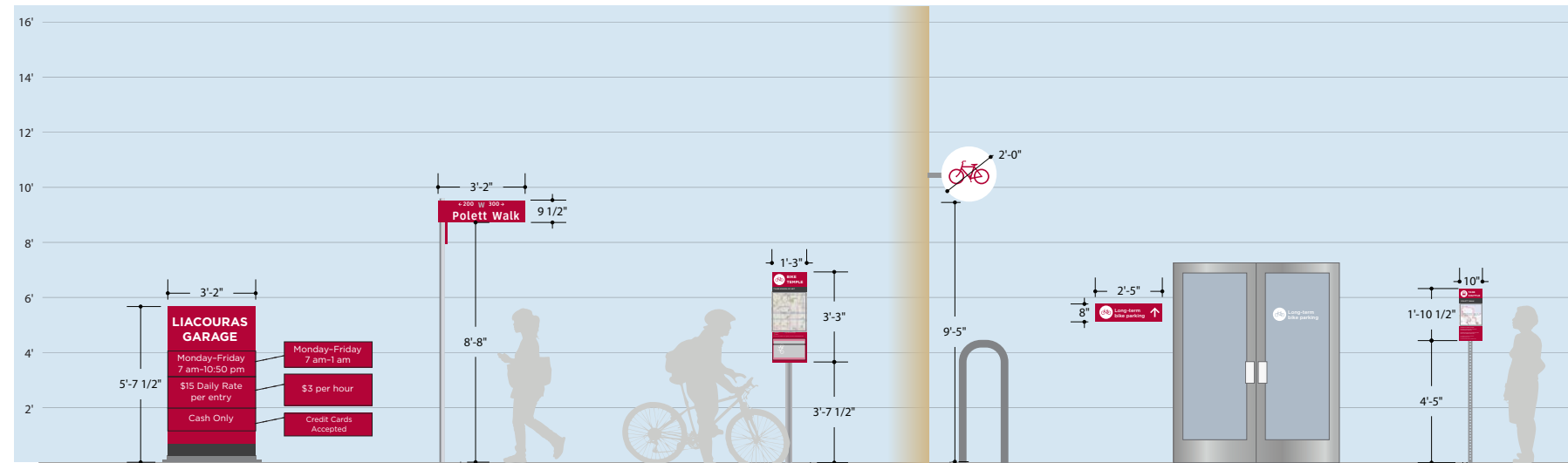
ST 22
Parking Trailblazer
 Post & Panel Mounted
 Non-Illuminated
 Parking Symbol
 Entrance (arrow)

ST 24
Garage Trailblazer
 Post & Panel Mounted
 Non-Illuminated
 Parking Symbol
 Garage name (arrow)

ST 26
Vehicular Parking Lot ID
 Post & Panel Mounted
 Non-Illuminated
 Parking Lot Identification

VEHICULAR, BICYCLE AND TRANSIT SIGNAGE

Parking facilities and roads need to be properly identified for both vehicular and bicycle travelers. These signs are consistent with the rest of the signage system in color, typography, messaging and material to reinforce the Temple brand. Parking signage should have a consistent information structure across all lots and garages to make it easier for users to compare lots and rates. Bicycle and transit signage assist users with area maps to help them better plan their trip. Identification signage helps users locate easy-to-miss bike corrals (such as those behind a wall or tucked away around a corner of a building) or indoor bicycle parking.

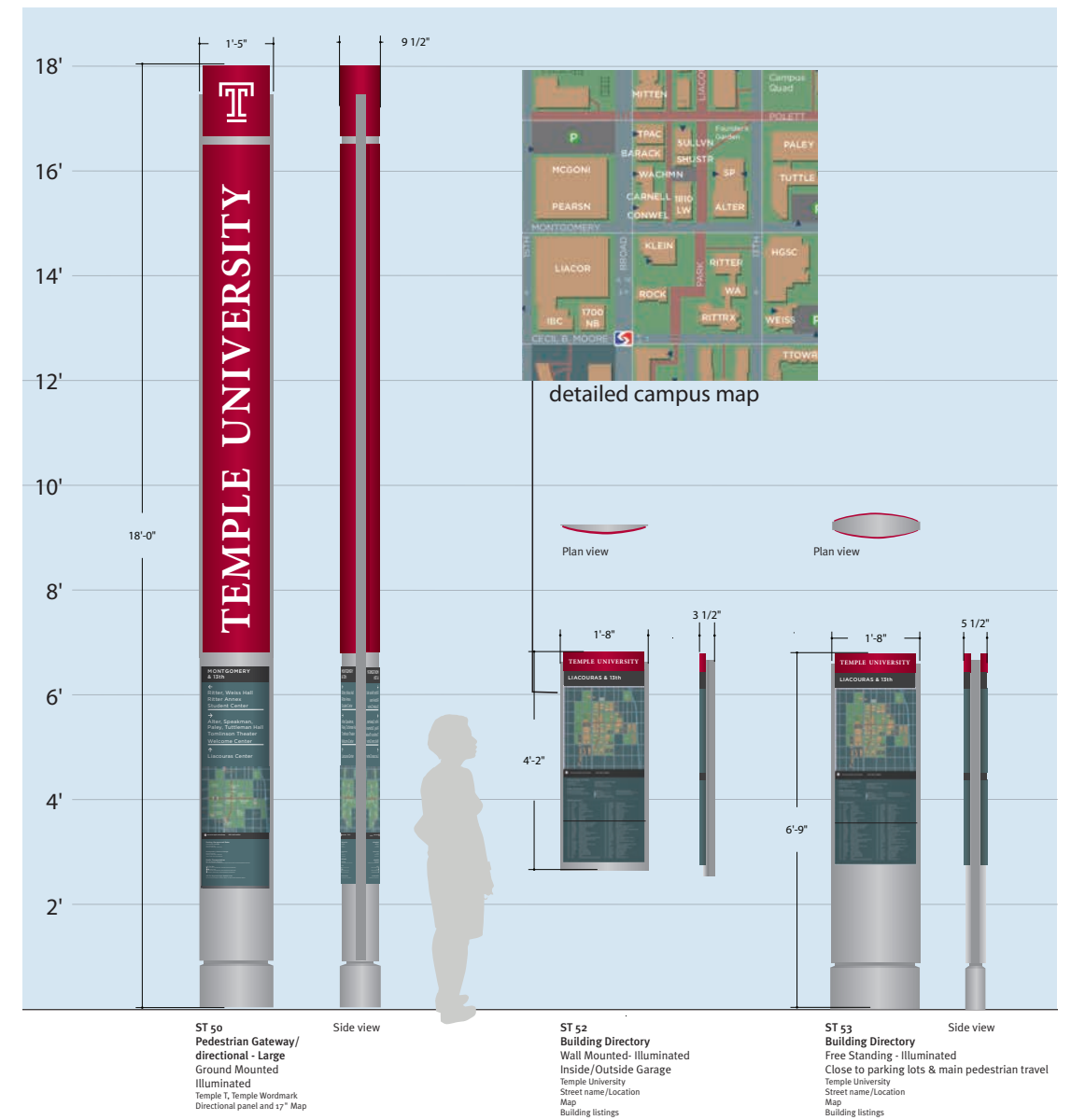


- ST 36**
Parking Regulatory
Changeable (magnetic)
Non-Illuminated
Parking Identification
Other Regulatory Information
- ST 38**
Street Identification
Post and Panel
Non-Illuminated
- ST 40**
Bike Parking information
Wall-Mounted or
Post & Panel Mounted
Non-Illuminated
- ST 41**
Bike Parking id
Wall-Mounted or
Post Mounted
Non-Illuminated
- ST 42**
Long-term
Bike Parking id
wall-mounted
- ST 43**
Long-term
Bike Parking id
Vinyl on glass
- ST 44**
Shuttle Route sign
Unistrut post-mounted
Non-Illuminated
Changeable panels

Shuttle Route Map
Route schedule
Shuttle website and app

LOCATION OF KEY PEDESTRIAN GATEWAYS TO CAMPUS

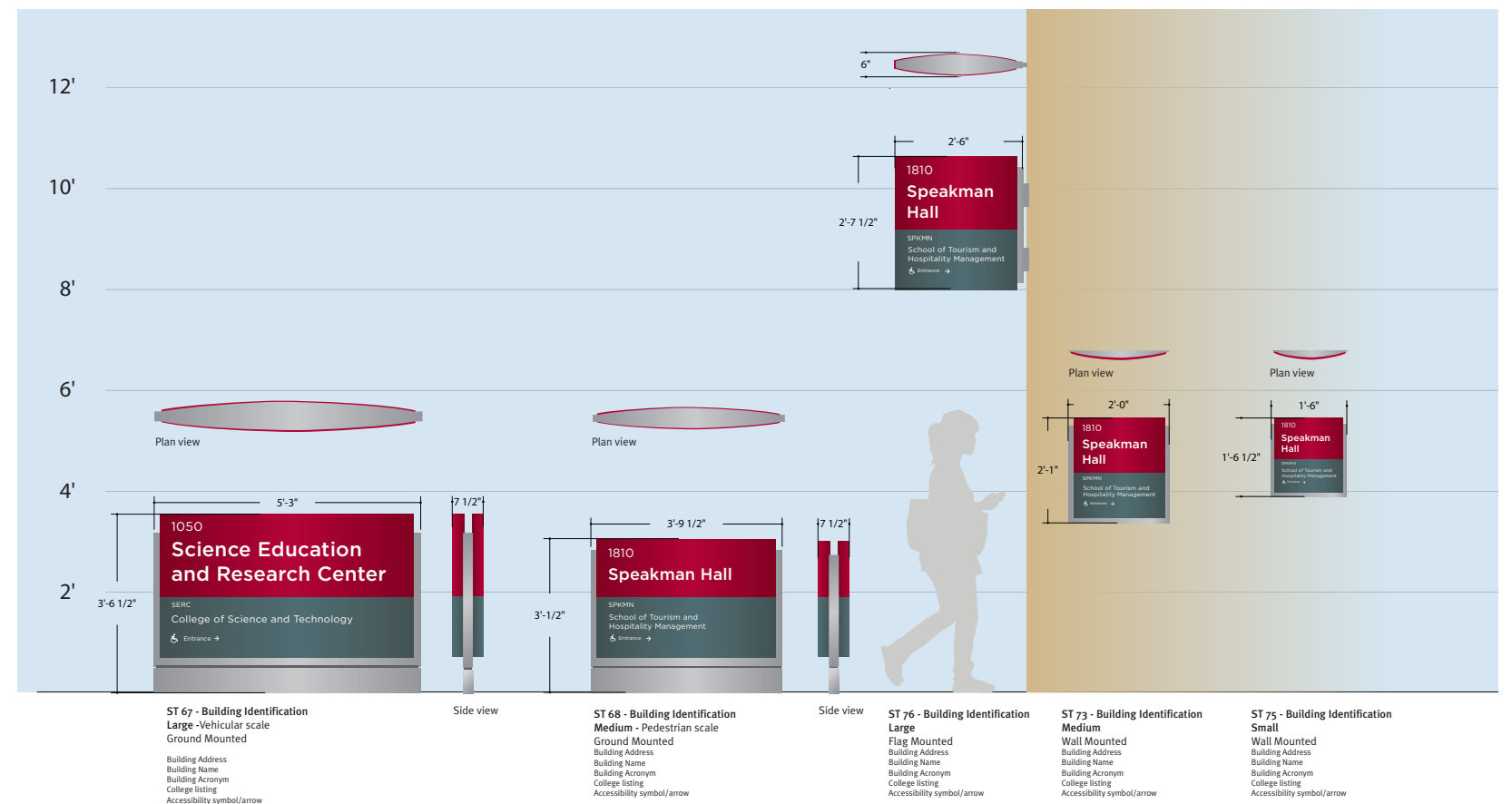
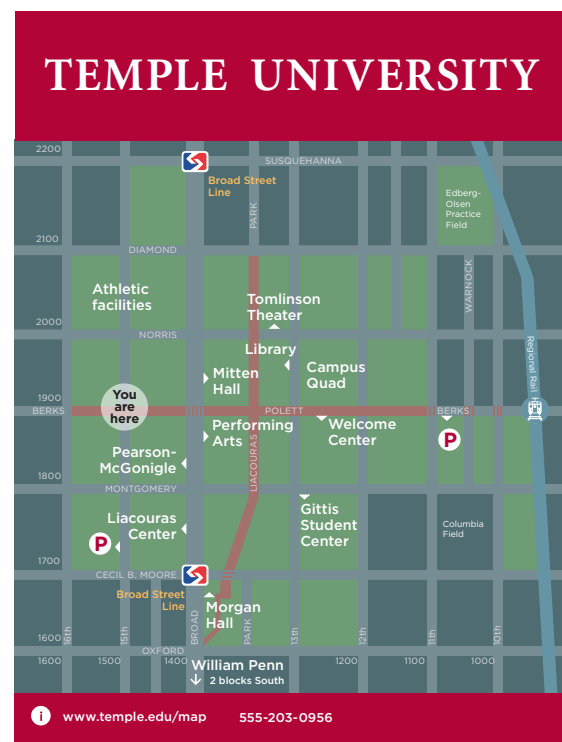
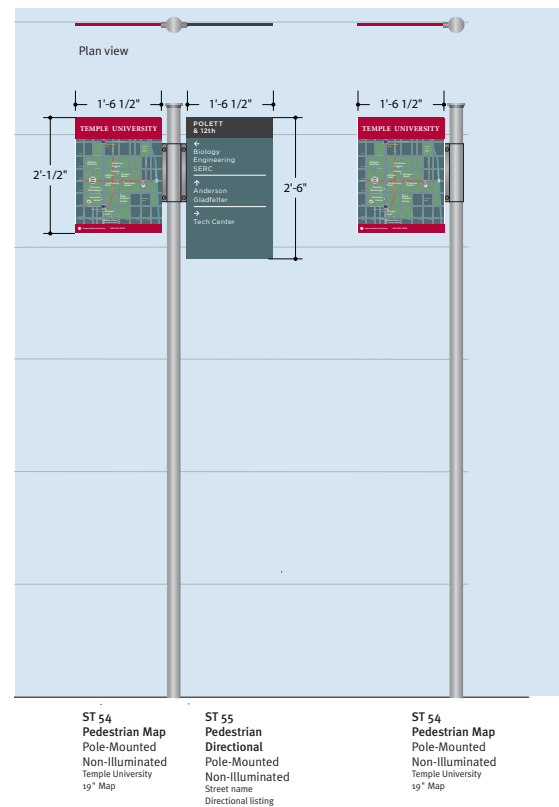
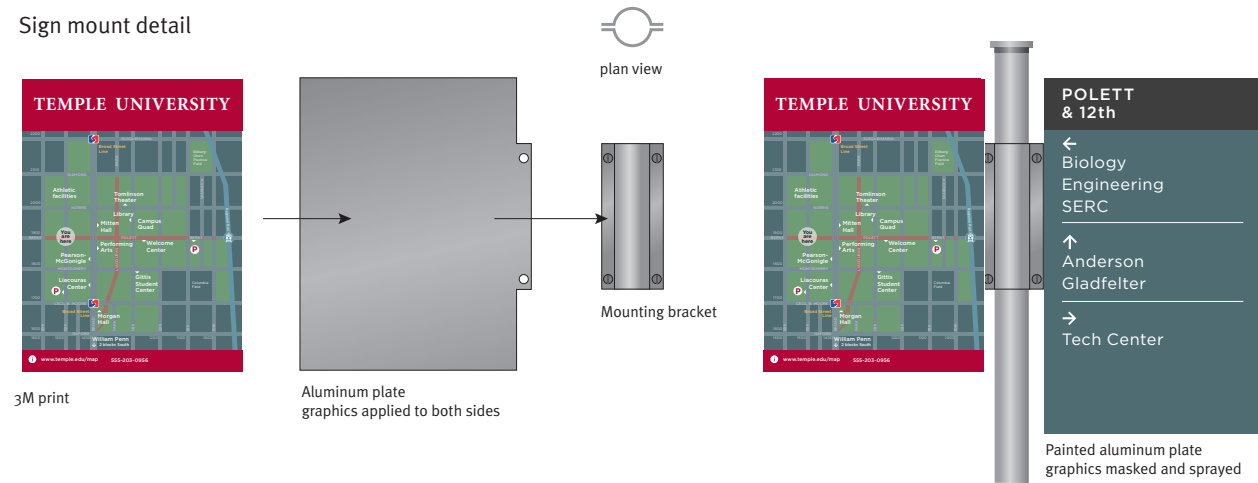
Located at key entrances to campus, pedestrian gateways welcome visitors to campus and help orient them as they navigate to their specific destination. The height of the gateways allow them to be seen from a distance and act as illuminated beacons in the nighttime landscape. The compact footprint is designed for the campus's urban setting; it allows the gateway to be placed on sidewalks and pathways without becoming obstructive.



PEDESTRIAN DIRECTIONAL AND MAP

Universal maps of campus identify key destinations and landmarks. Only the buildings most frequently visited by the public (such as the Liacouras Center and TPAC) and the most prominent buildings on campus (such as the Library) are featured on the map. The map emphasizes the campus grid and street network, making it easier for people to locate buildings from an address or intersection. The overhead map is paired with a directional sign, which directs to both “global” and “local” destinations. Local destinations are only listed on signs in the immediate area, whereas global destinations are featured on signs across campus. Global destinations include only the campus’ most prominent destinations. They can serve as an additional wayfinding tool for nearby buildings (e.g., if one knows that Klein Hall is across from the Liacouras Center, they can follow the directional signs to the Liacouras Center).

Sign mount detail



BUILDING IDENTIFICATION

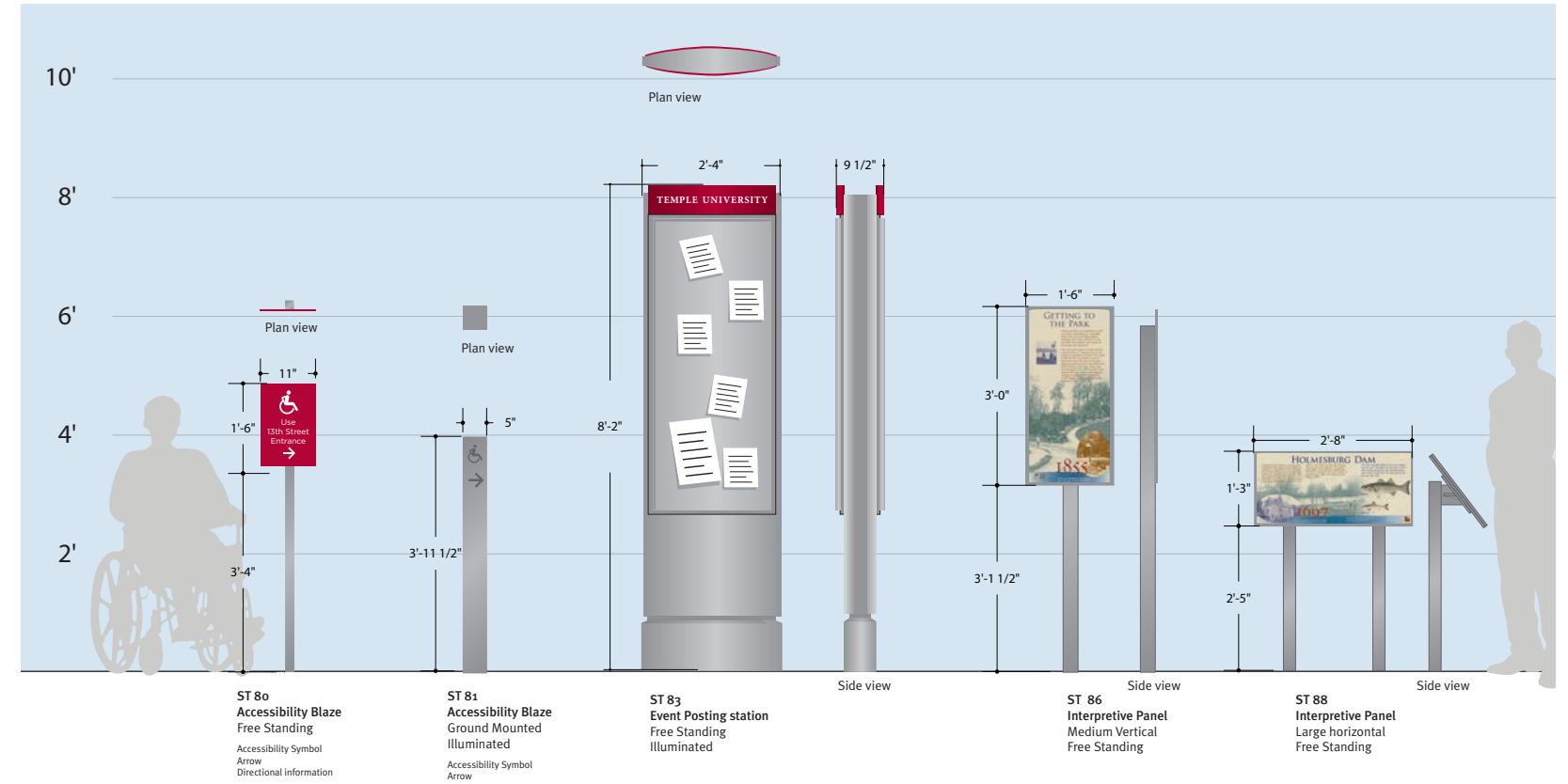
Building identification signs need to be created for all buildings on campus and located at primary entrances to assist wayfinding. Signs provide the building address, name, key departments and registrar code. Signs should be scaled appropriately for the building size and importance of the entrance (e.g., a secondary entrance sign is smaller than the main entrance sign). In cases where ground space for signage is not available, signs can be mounted to the face of the building, always at key entrances.



ST 78
Building Identification
Dimensional Letters
Building/Canopy Mounted
Illuminated/Non-Illuminated
Building Name

ST 79
Vinyl Building Identification
Glass Mounted
Illuminated/Non-Illuminated
Building Name

ACCESSIBLE AND INTERPRETIVE SIGNAGE



ST 80
Accessibility Blaze
Free Standing
Accessibility Symbol
Arrow
Directional Information

ST 81
Accessibility Blaze
Ground Mounted
Illuminated
Accessibility Symbol
Arrow

ST 83
Event Posting station
Free Standing
Illuminated

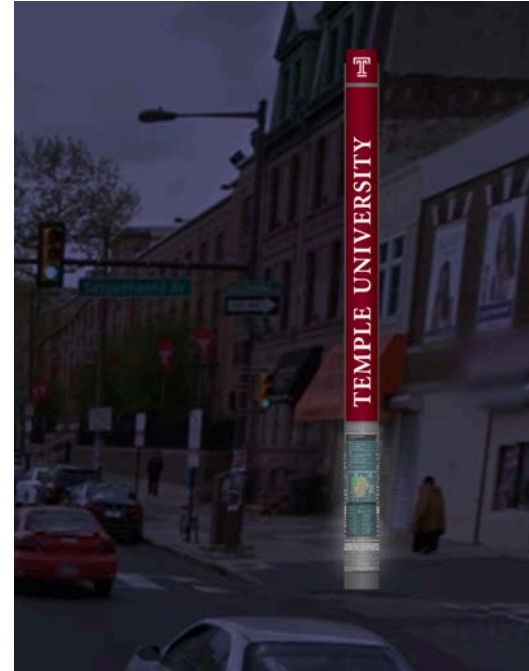
ST 86
Interpretive Panel
Medium Vertical
Free Standing

ST 88
Interpretive Panel
Large horizontal
Free Standing

VEHICULAR GATEWAY



Day



Night

RENDERED VIEW: PARKING GARAGE IDENTIFICATION



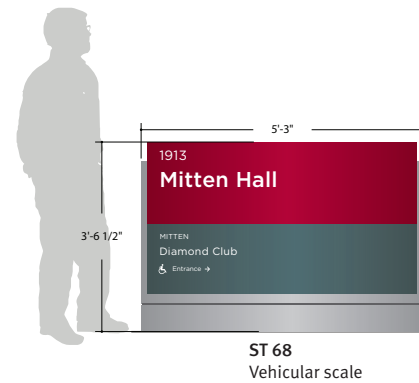
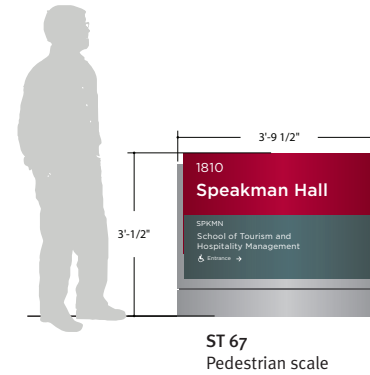
VEHICULAR SIGNAGE (INSTALLED)



RENDERED VIEW: PEDESTRIAN GATEWAY



RENDERED VIEW: BUILDING IDENTIFICATION



Design is not just what it looks like and feels like. Design is how it works.

- Steve Jobs

3.0

DESIGN GUIDELINES

CREATING AN ENDURING LANDSCAPE FOR TEMPLE

The preceding sections of VERDANT TEMPLE detail the rationale for developing and implementing comprehensive guidelines and standards for the components and systems that form Temple's landscape environment. This section examines campus-wide landscape elements (e.g., site furnishings and pavements) that are integral to each of the components and systems discussed previously and whose design will strongly influence the creation of a distinct and improved campus image and identity for Temple.

The design team, with input from administration, students and staff, selected the family of well-designed, versatile, sustainable, cost effective site elements depicted on the following pages. These comprehensively considered products, envisioned to be used in groups or individually throughout the campus, were chosen for quality of manufacture, durability, color, form, texture and value and any deviation, even with like items from the same manufacturer, is discouraged. The style, placement and function of all products was carefully evaluated to maximize the benefits of investment and holistic impact on Temple's campus landscape. Although the selected elements will require periodic review and updating due to changes in manufacturer product lines, it is recommended that the style and quality of future choices respect and adhere, as closely as possible, to the design intent outlined in VERDANT TEMPLE.

The Purpose of Guidelines

Establishing comprehensive design guidelines will be a reasonable means for Temple to assert control over factors that affect the visual perception and practical use of its campus landscape. Enacting standards for materials and products will elevate the campus experience, enhance the professional image of Temple University and meet desired institutional-wide design objectives for: uniformity, clarity, flexibility, sustainability, economy and appropriateness. Properly executed and enforced guidelines will improve the efficiency and appearance of the University, offer visual clarity and promote positive attitudes about the campus. The guidelines will be rigid enough to unify the campus yet flexible enough to accommodate future additions. The use of standard products that are appropriately installed and maintained will offer sustainability, economy in administrative and production costs and a coordinated campus-wide aesthetic.

To aid the reader in their understanding of the rationale and justification for proposed product guidelines and material standards, this section is organized with an inventory and brief review analysis of existing (2014) site furnishing and pavement conditions followed by illustrated and mapped recommendations.

Adoption and execution of the campus-wide problem solving approaches, along with the design standards, described and illustrated in VERDANT TEMPLE will allow the University to more favorably compete with other institutions targeting identical student populations. The landscape environment that results, through both incremental and momentous change, will be an enduring place for learning, enrichment, friendship, memories, wonder, respite, comfort and embrace: a re-envisioned verdant campus for Temple University.



EXISTING SITE FURNISHING INVENTORY (2014)

Site furnishings: benches, tables, trash receptacles, tree grates, bike racks, fencing, planters, bollards, etc., play a significant role in creating a functional and cohesive campus environment. As shown in the photographs on this page the existing collection of site furnishings on Temple's campus does not work together to form a consistent impression.

Observations

- Site furnishings are not standardized.
- Many site furnishings have reached the end of their useful life and require replacement.
- The campus lacks sufficient seating, trash receptacles and bike parking.

Recommendations

- Site furnishing consistency will improve the campus image.
- Uniform site furnishings will be cost effective to install and maintain.
- Locations for, and types of, seating should be increased.
- Standardized, well-designed site furnishings will improve aesthetics, be more durable and contribute to the overall enhancement of the campus.



Hudson Bench - Forms & Surfaces (or Palisade Bench by Landscapeforms)



Multi-Colored Plastic Adirondack Chair Adams Manufacturing Corp.



Adirondack Chair Loll



Wood Bench



Stone Bench



Wire Mesh Bench



Trio Table Ensemble Forms & Surfaces



Rectangular Green 6' Coated Wire Mesh Picnic Table



Circular Coated Wire Mesh Picnic Table



Cross Table and Vista Chairs Forms & Surfaces



Blue Coated Wire Mesh Trash Can with Fiberglass Top



Coated Wire Mesh Trash Can with Fiberglass Top



Wood Trash Can with Plastic Top



Chase Park Trash Can Landscape Forms



Bike Rack Cora



Ribbon Type Bike Rack



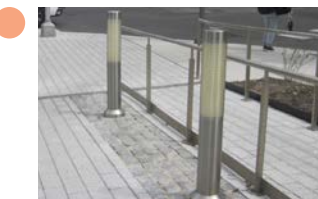
Grid Rack



U-Type Bike Rack



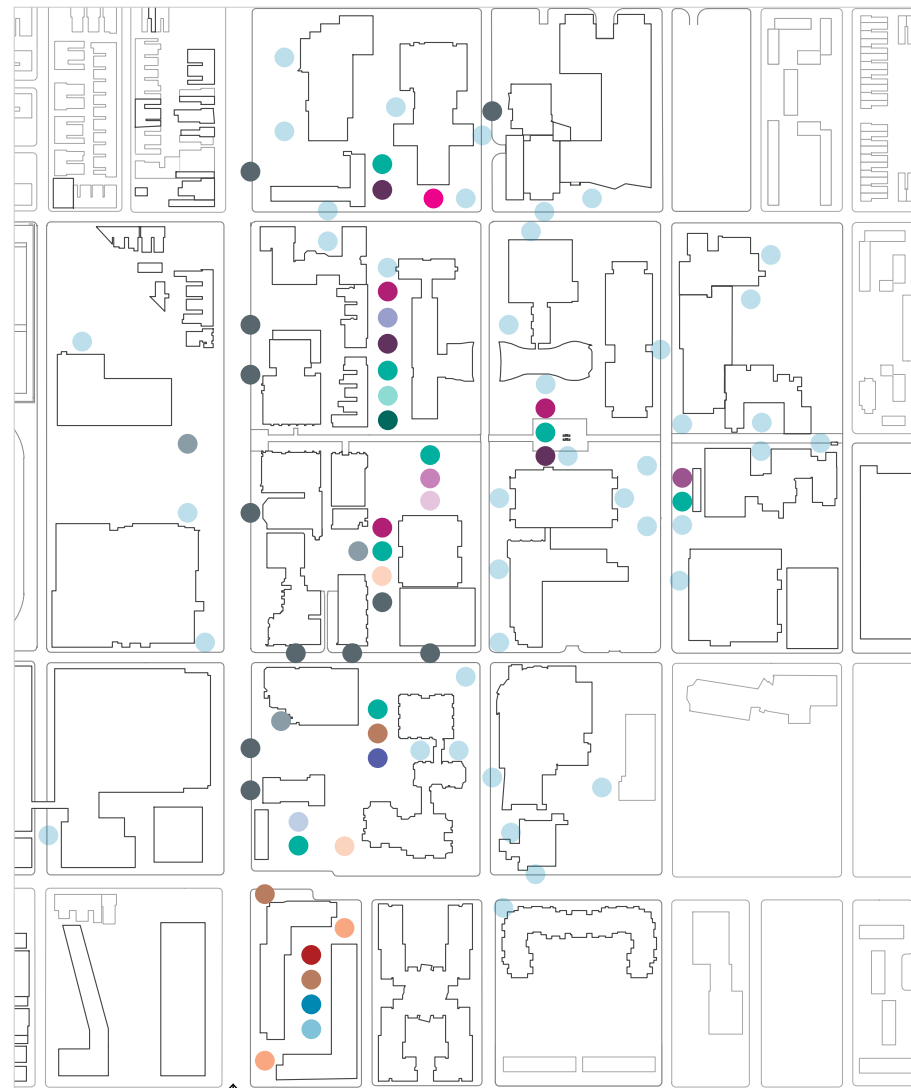
Stainless Steel Bollard



Light Column Bollard Forms & Surfaces



Light Column Forms & Surfaces



VERDANT TEMPLE SITE FURNISHING STANDARDS (2015)

Bench



Manufacturer: Forms + Surfaces
 Description: Hudson Bench
 FSC-certified Ipe,
 natural oiled finish
 Installation: Freestanding or surface mount
 Options: 6 or 8-foot lengths



Manufacturer: Forms + Surfaces
 Description: Trio Bench
 Model SBTRO-72BW, 6-ft FSC-
 certified Ipe slats
 Installation: Surface mount
 Finish: Aluminum Texture Powdercoat

Table And Chairs



Manufacturer: Forms + Surfaces
 Description: Column Table and Vista Chairs
 Finish: Bright Silver Gloss Powdercoat
 Installation: Freestanding or surface mount
 Options: Armrests



Manufacturer: Landscape Forms
 Description: Parc Centre Tables
 and chairs
 Finish: Powdercoat,
 multiple colors
 Installation: Freestanding
 Options: Armrests



Manufacturer: Fermob
 Description: Luxembourg Chair with Arms,
 Luxembourg Table 80 x 80 cm
 Finish: Powdercoat, multiple colors
 Installation: Freestanding



Manufacturer: Forms + Surfaces
 Description: Trio Table Ensemble with
 FSC certified Ipe hardwood slats
 Finish: Aluminum Texture Powdercoat
 Installation: Surface mount only
 Options: ADA bench



Manufacturer: Landscape Forms
 Description: Carousel
 Finish: Metallic Silver Powdercoat
 Installation: Freestanding or surface mount
 Options: Seat Panels: Perforated Metal,
 backed or backless,
 3-Seat ADA compliant available
 (surface mount only)
 Tabletop: Catena Stainless
 Steel, Umbrellas available

Lounge Seating



Manufacturer: Equiparc
 Description: EP 1974 Lounge Chair, Ipe Slats
 Finish: Metallic Silver Powdercoat
 Installation: Freestanding or surface mount



Manufacturer: Fermob
 Description: Luxembourg Collection
 Finish: Powdercoat, multiple colors
 Installation: Freestanding

VERDANT TEMPLE SITE FURNISHING STANDARDS (2015)

Trash Receptacles



Manufacturer: Landscape Forms
Description: Custom Chase Park
Trash and recycling receptacles
Finish: Consult manufacturer
Installation: Freestanding or surface mount

Ash Receptacle



Manufacturer: Commercial Zone Products
Description: Smoker's outpost
Finish: Silver powercoat
Installation: Freestanding

Bollards



Manufacturer: Creative Pipe
Description: Removable,
316 grade stainless steel,
Model ELBR-6-SS
Multiple diameters available
Finish: #6
Installation: Imbed mount



Manufacturer: Creative Pipe
Description: Fixed,
316 grade stainless steel,
Multiple diameters available
Finish: #6
Installation: Imbed mount

Handrail



Manufacturer: Custom fabrication
Description: 316 grade stainless steel,
with fully welded miter joints
Finish: #6
Installation: Imbed mount

Bike Rack



Manufacturer: Landscape Forms
Description: Bola
Finish: Hot-dipped galvanized
Installation: Imbed or surface mount

Fence



Manufacturer: Ameristar
Description: Ornamental fence. Echelon Plus Majestic Style (smooth top rail)
Finish: Black powercoat
Installation: Fence able to follow changes in grade. Hidden hardware (screws and rivets not visible)



Manufacturer: Barnett Bates
Description: Screen. Talia 80, hidden post
Finish: powercoat
Installation: Freestanding

Planter



Manufacturer: Landscape Forms
Description: Sorella
Twelve sizes available
Finish: Powercoat, multiple colors
Installation: Freestanding



Manufacturer: Landscape Forms
Description: Larkspur
Three sizes available
Finish: Precast concrete, multiple colors
Installation: Freestanding



Manufacturer: Situ Urban Elements
Description: Bevel planter
One size available
Finish: High performance concrete
Installation: Freestanding

Tree Grate

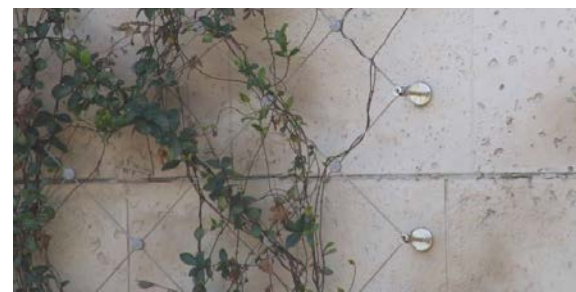


Manufacturer: Neenah Foundry
Description: Model 8716
Finish: Raw ductile iron
Installation: Frame surface or imbed mount

Vine Support



Manufacturer: Greenscreen
Description: 3-dimensional wire mesh panels. Multiple configurations available.
Finish: Powercoat
Installation: Freestanding or surface mount



Manufacturer: Jakobs
Description: Cable and fittings system. Multiple configurations available
Finish: Stainless steel
Installation: Surface mount

EXISTING PAVING INVENTORY (2014)

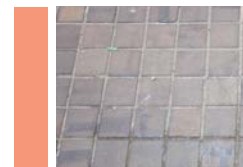
Paving materials and patterns have a tremendous impact (good and bad) on the visual impression a campus landscape makes on its users. Pavements, in various forms (streets, walkways, plazas), organize the campus and serve as the means to unite the buildings and enable movement. As shown in the photographs on this page Temple's campus is currently composed of many different pavement conditions that disrupt the legibility of key campus spaces, create a disjointed appearance and confuse the pedestrian experience.

Observations

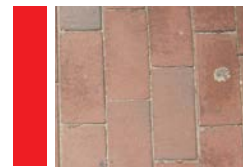
- Poorly patched pavements create unsafe hard to navigate surfaces, communicate a lack of aesthetic concern and contribute to visual confusion.
- Substandard pavement conditions are the result of deferred maintenance or because the material has reached the end of its useful life.
- Recently built projects (Morgan Hall, SERC) establish a precedent for the use of permeable unit paving.

Recommendations

- Select pavement materials that will support heavy foot traffic, vehicular traffic and plowing activities.
- Use of unit paver systems will allow for minor underground repair work to occur without scarring the surface or disrupting pavement continuity pattern and color.
- A comprehensive functional and flexible well-designed hierarchical pavement system will improve the image and identity of the campus landscape.



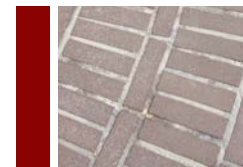
4"x 4" Brick



4" x 8" Red Brick



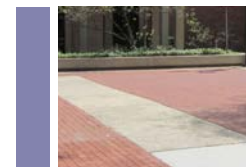
Interlocking Precast Concrete Unit Pavers



1.5" x 8" Brick



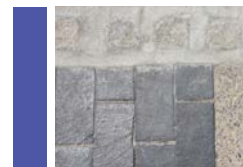
Red Brick with Asphalt Band



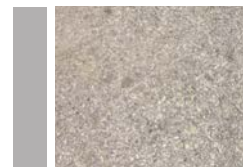
Red Brick with Concrete Band



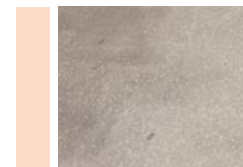
Brown Brick with Concrete Band



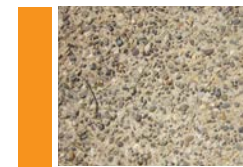
Brown Brick with Concrete and Granite Sett Bands



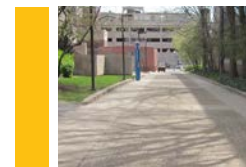
Asphalt



Plain Concrete



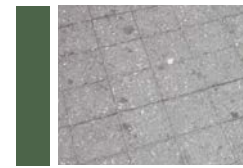
Exposed Aggregate Concrete



Exposed Aggregate Concrete with Plain Band



Exposed Aggregate Concrete with Granite Sett Band



6"x 6" Asphalt Unit Pavers



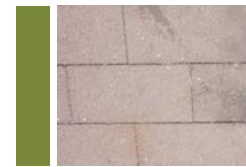
Black Hex Asphalt Paving with Brick Bands



Red Hex Asphalt Paving with Concrete Bands



Black Hex Asphalt Pavers with Concrete Pavers



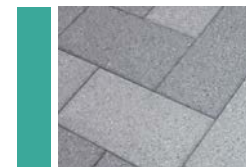
4"x 8" Red Asphalt Unit Pavers



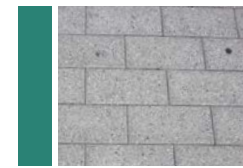
Brick and Granite



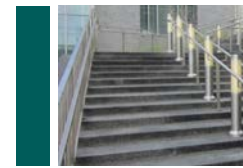
Granite Setts



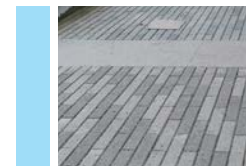
Concrete Paving Unit A 12" x 24"



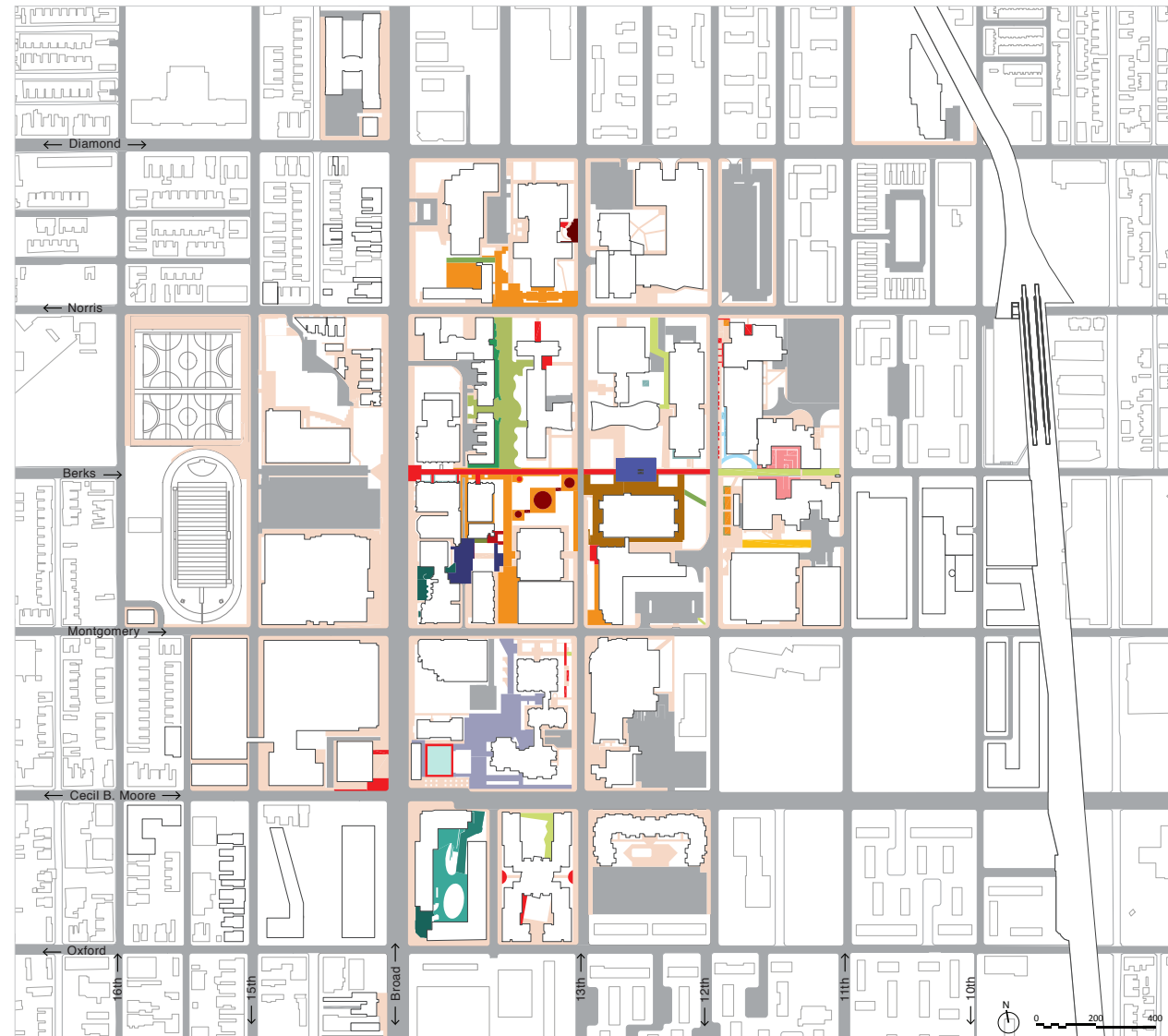
Concrete Pavers Unit B 6" x 12"



Solid Granite Stair Treads



Precast Concrete and Granite Unit Paving



PAVING IMPROVEMENTS DIAGRAM

Paved areas targeted for improvement on the campus include:

Broad Street

New pavements will enhance the perception of the campus both to daily users and passersby on this main campus artery.

Intersections

Installation of pavements and patterns unique to Temple will demarcate campus thresholds and create safer crossing zones.

Mid-block Crossings

The opportunity to link the campus with well-designed exuberant crossings at high demand locations will help to create a unified landscape environment.

Streetscapes

The inclusion of tree trenches in the redesign of established sidewalks will add value to the campus landscape without requiring extensive pavement replacement.

Liacouras and Polett Walks

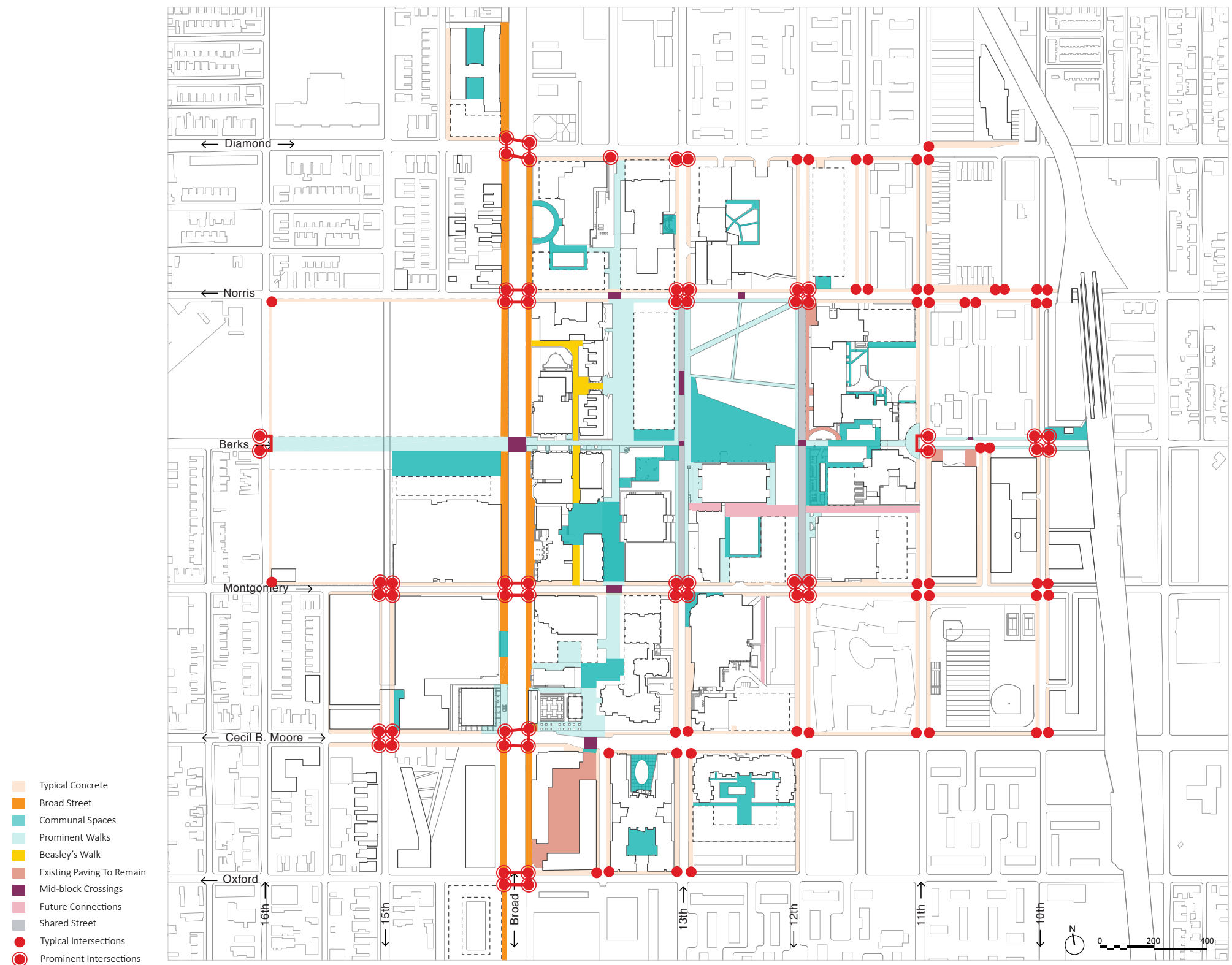
Designing creative yet functional paving patterns for these well-established walks will contribute to their significance to the campus landscape.

Beasley's Walk

Upgrading the pavements of this prominently located site will better help integrate it with its surroundings.

Recently completed projects

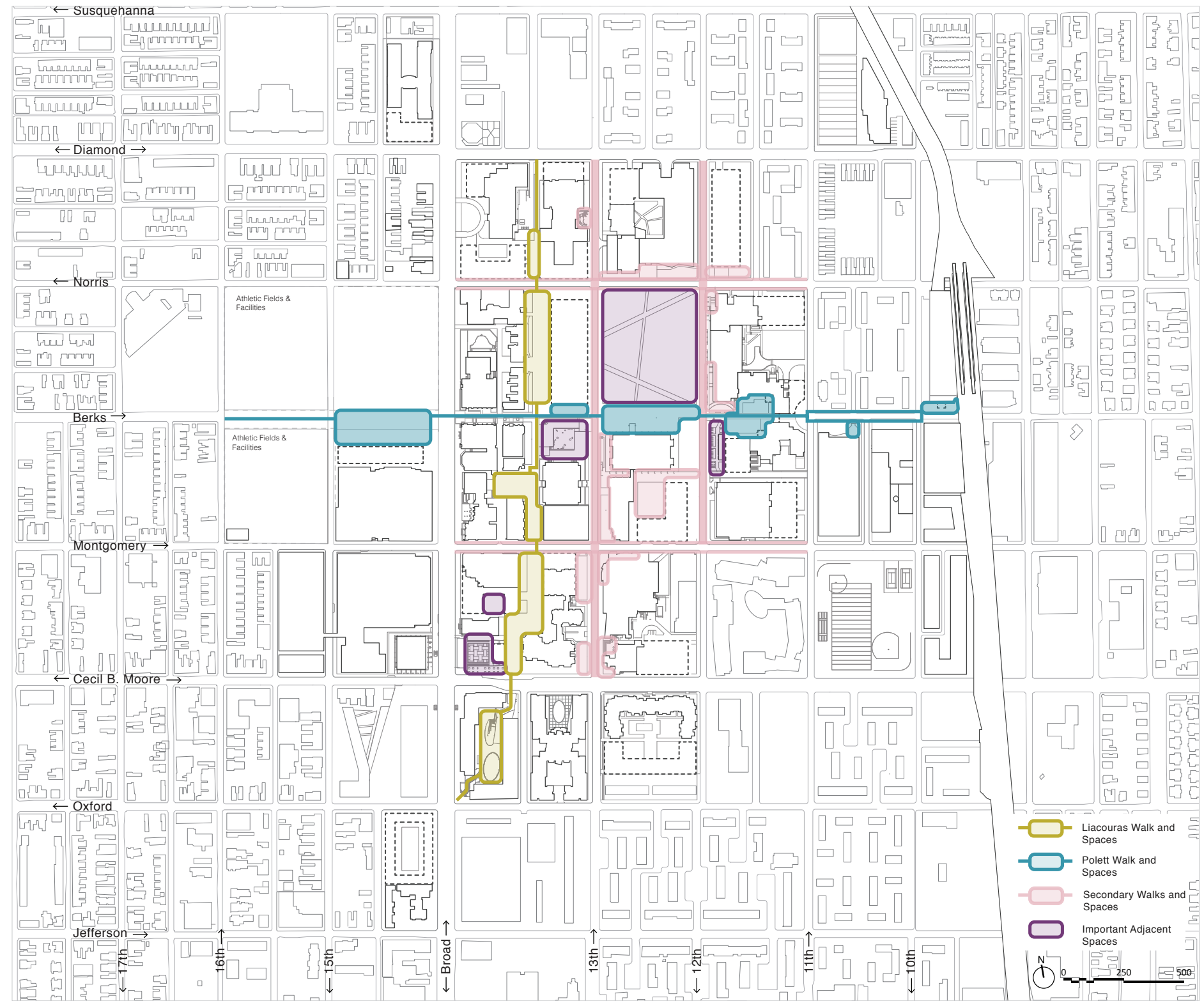
Morgan Hall and SERC establish a precedent for the use of permeable unit paving.



PAVING IMPLEMENTATION STRATEGY

The vision for a well-designed sustainable campus-wide paving system begins with the incremental implementation of three critical sites in the campus core: Liacouras and Polett Walks, 12th and 13th Streets, and Montgomery Avenue and Norris Street.

- Provide an identity for these important campus spaces through the creative use of paving patterns and materials.
- Develop designs and use materials that are flexible to accommodate multiple functions.
- Link interconnected spaces through paving pattern, material and color while acknowledging the diverse and rich character of each space.



CURB EXTENSIONS

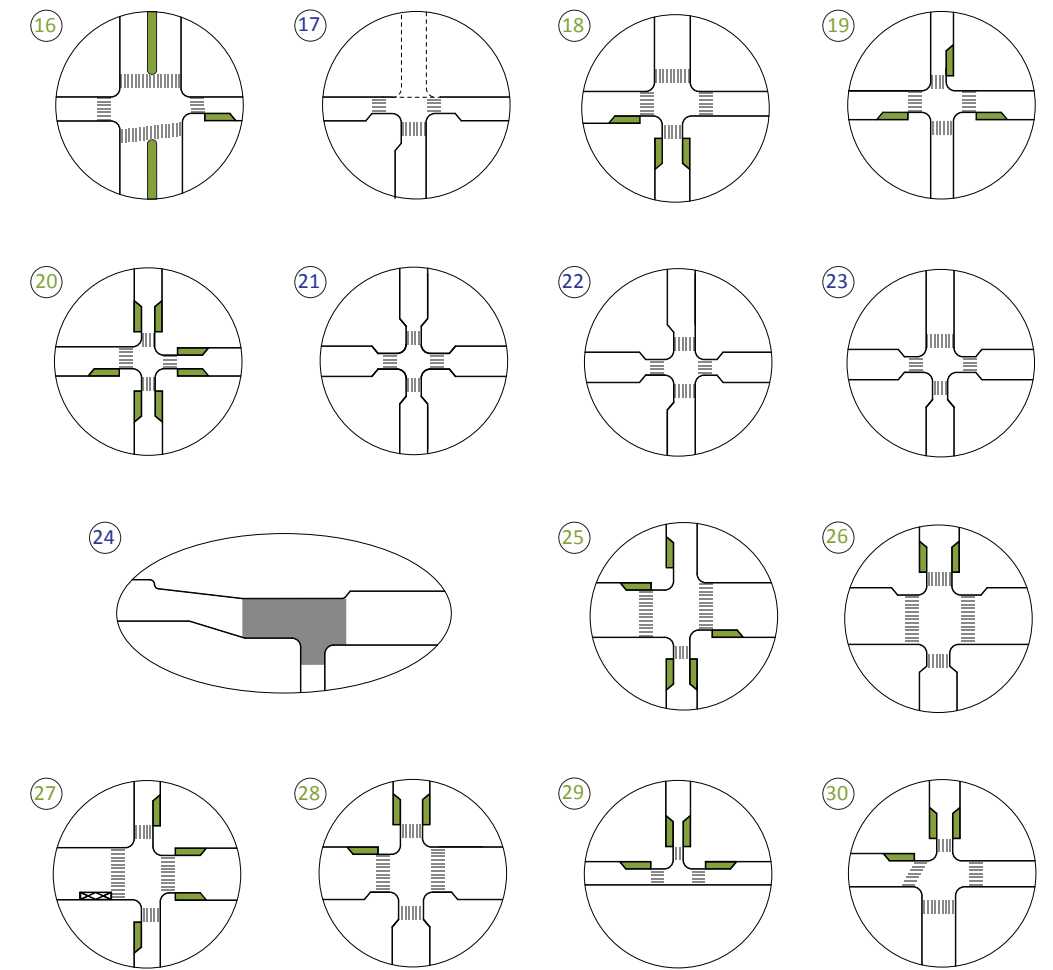
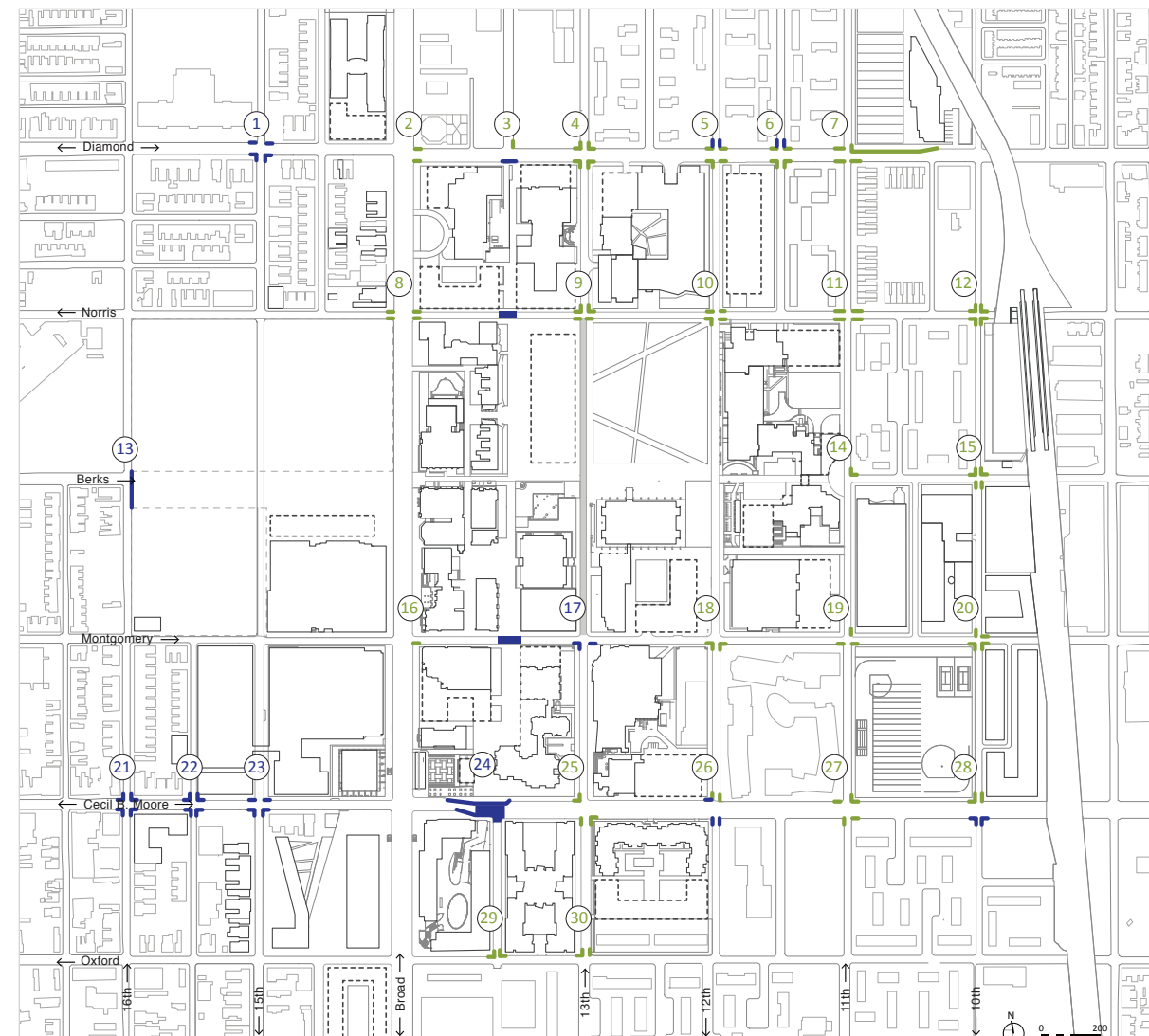
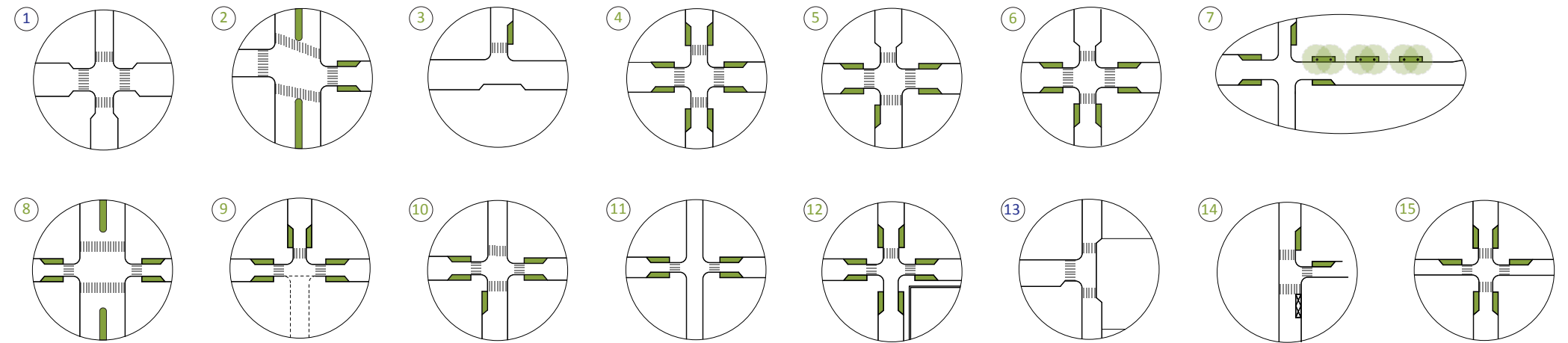
A curb extension is a method of traffic calming that extends the sidewalk thereby reducing crossing distances and restricting vehicles from parking too close to an intersection. Curb extensions enable pedestrians and motorists to more easily view each other under conditions where parked vehicles might otherwise block clear sightlines. Since they also typically interrupt the flow of stormwater along the curb to storm drains the installation of curb extensions is considered a sustainable design practice.

Recommendations

- Installation of curb extensions at designated intersections will increase perceived and actual safety on Temple's campus. (Refer to Mobility pp. 2.23-2.46 for additional information.)
- Renovating intersection pavements with consistent, high quality materials will contribute to creating a positive impression at these prominent visual and decision-making locations throughout the campus landscape.
- Intercepting stormwater and managing runoff using green infrastructure systems (e.g., bioretention) will contribute to the greening of Temple's landscape. (Refer to Stormwater pp. 2.47-2.64 for additional information.)



Curb extension with bioretention



VERDANT TEMPLE PAVING STANDARDS

PRECAST CONCRETE UNIT PAVERS

Hanover Architectural Products

Product: Prest Brick and Prest Pavers
 Standard Color: Matrix #B93217
 Matrix #B93218
 Utilization: Multiple sizes and finishes are available. Any combination of sizes and finishes may be used. Standard colors shall always be used to ensure campus-wide continuity. Paving Concept Diagram (p.3.7) designates areas for precast concrete unit pavers as "Communal Spaces".
 Installation: Bituminous set on concrete slab (except for permeable paver application).



Example: color blend

CURBING

North Carolina Granite

Product: Georgia Grey Granite
 Description: Dimensional curbing
 Split face, Sawn top and sides
 Utilization: Edge restraint for all unit pavers, to define plant beds and lawn areas.



Product	Actual Size	Thickness
Traditional® 4 x 4 Square Edge	3 7/8" x 3 7/8"	3"
Traditional® 4 x 8 Square Edge	3 7/8" x 7 7/8"	2 3/8"
Traditional® 4 x 8	3 7/8" x 7 7/8"	1 1/2" 2 3/8" 3"
Traditional® 4 1/2 x 9 with Cobble only	4 7/16" x 8 15/16"	3"
Traditional® 6 x 6	5 7/8" x 5 7/8"	2 3/8" 3"
Traditional® 6 x 12	5 7/8" x 11 3/4"	2 3/8" 3" 4"
Traditional® 8 x 8	7 7/8" x 7 7/8"	2 3/8" 3"
Traditional® 12 x 12	11 3/4" x 11 3/4"	2 3/8" 3"
PlankStone® Natural Finish only	2 7/8" x 8 13/16"	4"
PlankStone® Natural Finish only	2 7/8" x 17 5/8"	4"
PlankStone® Natural Finish only	2 7/8" x 23 1/2"	4"

Permeable 4 1/2" x 9"	4 5/8" x 9 1/4"	3"
Permeable 4" x 9" Scored	-	3"
Permeable 3 1/4" x 18" Natural Finish	3 1/4" x 18"	4"

Prest Brick

Dimensionally Compatible Prest® Paver Sizes

		1 1/4"	1 1/2"	1 3/4"	2"	2 1/4"	2 1/2"	3"	4"
150mm x 447mm	5 7/8" x 17 5/8"				X	X	X	X	X
150mm x 597mm	5 7/8" x 23 1/2"				X	X	X	X	X
150mm x 897mm	5 7/8" x 35 3/8"				X	X	X	X	X
297mm x 297mm	11 3/4" x 11 3/4"		X	X	X	X	X	X	
297mm x 447mm	11 3/4" x 17 5/8"		X	X	X	X	X	X	
297mm x 597mm	11 3/4" x 23 1/2"		X	X	X	X	X	X	
297mm x 899mm	11 3/4" x 35 3/8"		X		X	X	X	X	
447mm x 447mm	17 5/8" x 17 5/8"		X	X	X	X	X	X	X
447mm x 597mm	17 5/8" x 23 1/2"		X	X	X	X	X	X	
447mm x 899mm	17 5/8" x 35 3/8"		X		X	X	X	X	
597mm x 597mm	23 1/2" x 23 1/2"		X	X	X	X	X	X	X
597mm x 897mm	23 1/2" x 35 3/8"			X	X	X	X	X	
597mm x 1197mm	23 1/2" x 47 1/8"						X	X	
897mm x 897mm	35 3/8" x 35 3/8"						X	X	

Additional Prest® Paver Sizes

		1 1/4"	1 1/2"	1 3/4"	2"	2 1/4"	2 1/2"	3"	4"
302mm x 302mm	11 7/8" x 11 7/8"		X		X	X	X	X	
303mm x 303mm	11 15/16" x 11 15/16"		X		X	X	X	X	
378mm x 378mm	14 7/8" x 14 7/8"		X		X	X	X	X	
403mm x 403mm	15 7/8" x 15 7/8"		X		X	X	X	X	
454mm x 454mm	17 7/8" x 17 7/8"		X		X	X	X	X	
597mm x 747mm	23 1/2" x 29 1/2"				X	X	X	X	
606mm x 606mm	23 7/8" x 23 7/8"		X		X	X	X	X	
606mm x 911mm	23 7/8" x 35 7/8"		X		X	X	X	X	
756mm x 756mm	29 3/4" x 29 3/4"				X	X	X	X	
908mm x 908mm	35 3/4" x 35 3/4"						X	X	
911mm x 911mm	35 7/8" x 35 7/8"						X		
Hexagonal, 402mm across flats	Hexagonal, 15 7/8" across flats				X	X	X	X	
Hexagonal, 597mm across flats	Hexagonal, 23 1/2" across flats				X	X	X	X	
Octagonal, 402mm across flats	Octagonal, 15 7/8" across flats				X	X	X	X	

■ = Standard Thickness ■ = SlateFace® Paver Thickness (22 lbs/sf) Please Note: Paver weight at a 2" thickness is 25 lbs/sf.
 *Note increased thickness and weight for these paver sizes.

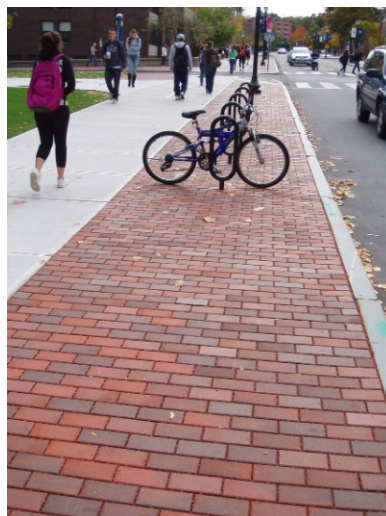
BRICK UNIT PAVERS

Whitacre Greer

Product: Full Range of Standard Products
 Standard Color: 32 Antique
 33 Dark Antique
 43 Tangerine
 Three Color Blend

Utilization: Tree Trench Permeable Boardwalk
 Crosswalk Bevel and Lug Smooth
 Intersection Bevel and Lug Smooth

Installation: Tree Trench Aggregate set
 Crosswalk and Intersection Bituminous set on concrete slab



Example: color blend

Size (W x L x H) Inches	Bevel & Lug Smooth	Rolled Edge Plate Texture w/Lugs	Straight Edge Smooth	Straight Edge Textured	Old World Cobbled	Bevel No Lug	Kerf With Lugs	ADA/Tactile	Boardwalk with Lugs	Boardwalk without Lugs	NEW Permeable Boardwalk	NEW 4x8 Permeable
4 x 8 x 1-1/2	N/A	N/A	Yes	N/A	Yes	Yes	N/A	N/A	N/A	N/A	N/A	N/A
4 x 8 x 2-1/4	Yes	Yes	Yes	N/A	Yes ¹	Yes	Yes	Yes	N/A	N/A	N/A	Yes
4 x 8 x 2-3/4	Yes	Yes	Yes	N/A	Yes	Yes	Yes	N/A	N/A	N/A	N/A	Yes
¹ Buckeye Blend Cobble 4 x 8 x 2-1/4												
8 x 8 x 2-1/4	Yes	Yes	Yes	N/A	Yes	N/A	N/A	N/A	N/A	N/A	N/A	N/A
8 x 8 x 2-3/4	Yes	Yes	Yes	N/A	Yes	N/A	N/A	N/A	N/A	N/A	N/A	N/A
² Also Available In Shade #37 Fireflashed Special Order												
3-5/8 x 7-5/8 x 1-1/4 ²	N/A	N/A	Yes	Yes	Yes	N/A	N/A	N/A	N/A	N/A	N/A	N/A
3-5/8 x 7-5/8 x 2-1/4 ²	N/A	N/A	Yes	Yes	Yes	N/A	N/A	N/A	N/A	N/A	N/A	N/A
6 x 3 x 2-1/4	N/A	N/A	N/A	N/A	Yes	N/A	N/A	N/A	N/A	N/A	N/A	N/A
6 x 3 x 2-3/4	N/A	N/A	N/A	N/A	Yes	N/A	N/A	N/A	N/A	N/A	N/A	N/A
6 x 6 x 2-1/4	N/A	N/A	N/A	N/A	Yes	N/A	N/A	N/A	N/A	N/A	N/A	N/A
6 x 6 x 2-3/4	N/A	N/A	N/A	N/A	Yes	N/A	N/A	N/A	N/A	N/A	N/A	N/A
6 x 9 x 2-1/4	N/A	N/A	N/A	N/A	Yes	N/A	N/A	N/A	N/A	N/A	N/A	N/A
6 x 9 x 2-3/4	N/A	N/A	N/A	N/A	Yes	N/A	N/A	N/A	N/A	N/A	N/A	N/A
³ Also Available In Shade #37 Fireflashed Special Order												
2-1/4 x 9 x 2-1/4 ³	N/A	N/A	N/A	N/A	Yes	N/A	N/A	N/A	Yes	N/A	N/A	N/A
2-1/4 x 9 x 3 ³	N/A	N/A	N/A	N/A	Yes	N/A	N/A	N/A	Yes	Yes	Yes ⁴	N/A
3 x 9 x 2-1/4 ³	N/A	N/A	N/A	N/A	Yes ⁵	N/A	N/A	N/A	N/A	N/A	N/A	N/A
3 x 9 x 3 ³	N/A	N/A	N/A	N/A	Yes	N/A	N/A	N/A		Yes	N/A	N/A
³ Also Available In Shade #37 Fireflashed Special Order ⁴ Permeable Boardwalk Paver Also Available In Shade #48 Wide Range Recycled Product ⁵ No Lug Only												

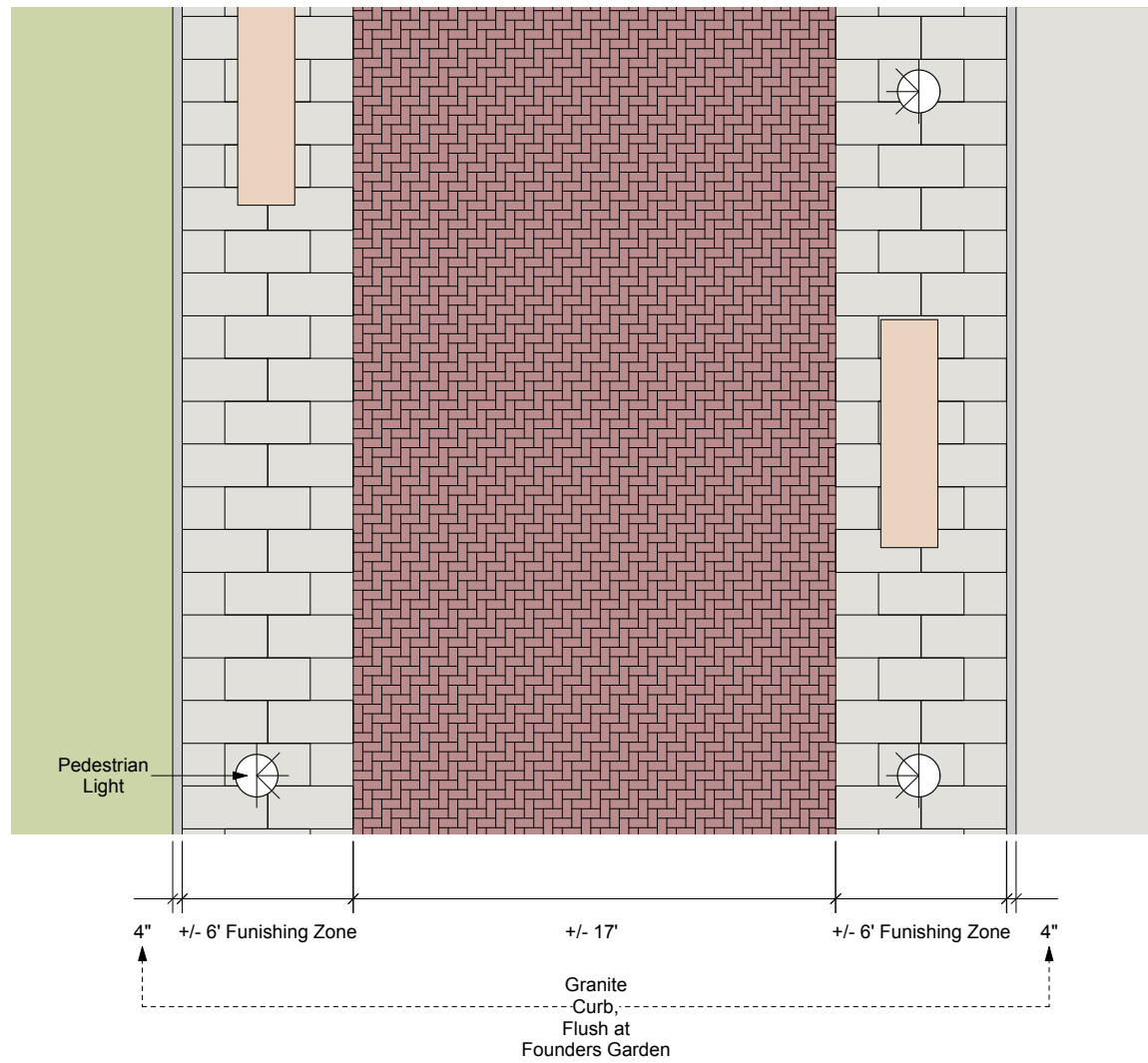
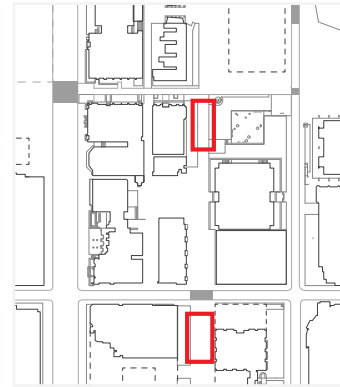
LIACOURAS WALK

Hanover Architectural Products

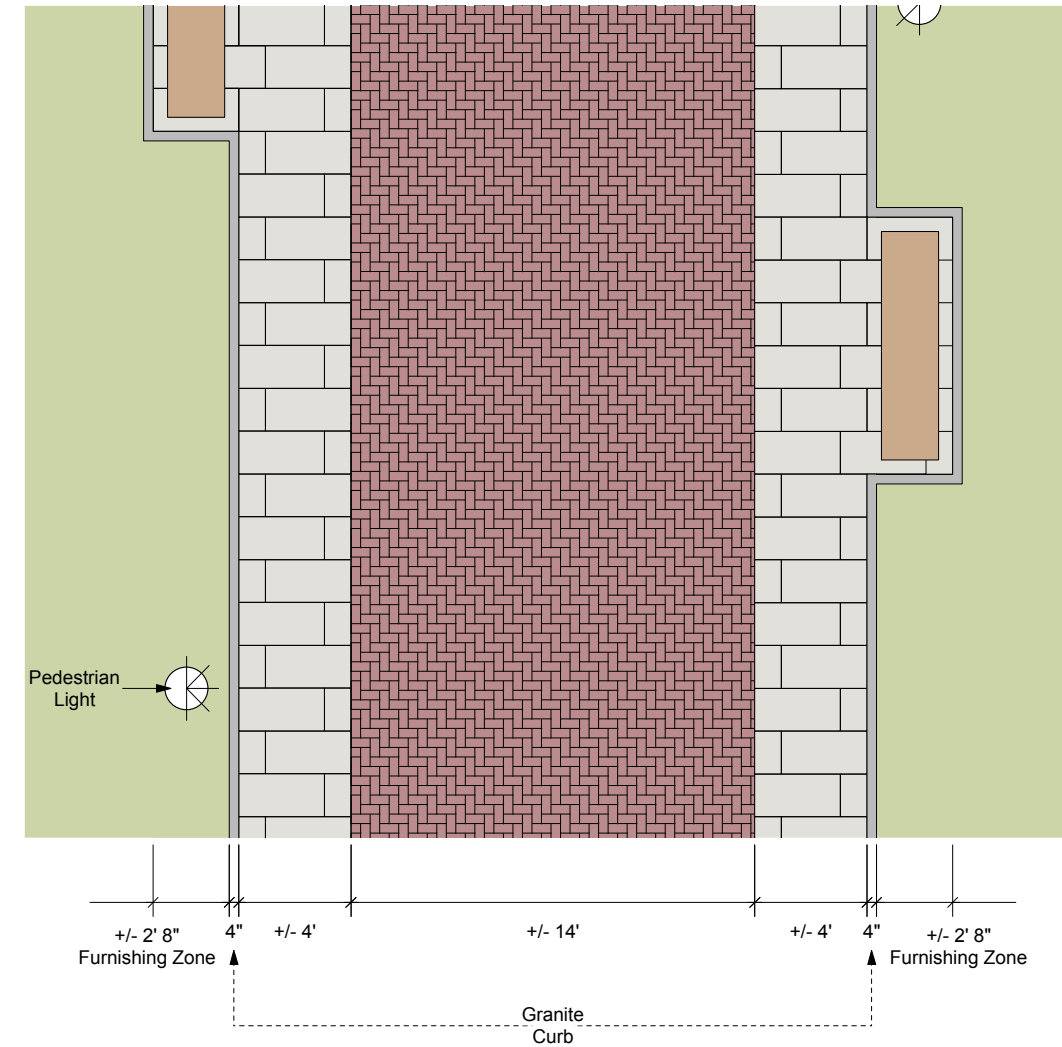
Product: Prest Paver
 Finish: Tudor
 Size: 18" x 36" x 3"
 18" x 18" x 3"
 18" x 12" x 3"
 Color Blend: Matrix #B93217
 Matrix #B93218

Whitacre Greer

Product: Permeable Brick
 Size: 4" x 8" x 2-3/4"
 Color Blend: 32 Antique
 33 Dark Antique
 43 Tangerine



Liacouras Walk at Founders Garden



Liacouras Walk between Ritter and Law School

MID-BLOCK CROSSING/ LIACOURAS WALK

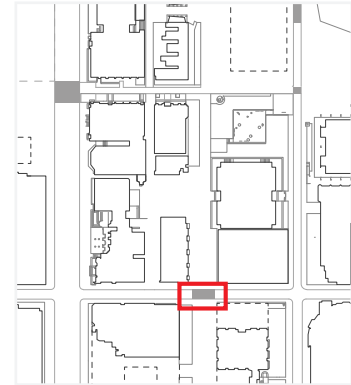
Hanover Architectural Products

Product: Prest Paver
 Finish: Tudor
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 18" x 18" x 3"
 18" x 12" x 3"
 Color Blend: Matrix #B93217
 Matrix #B93218

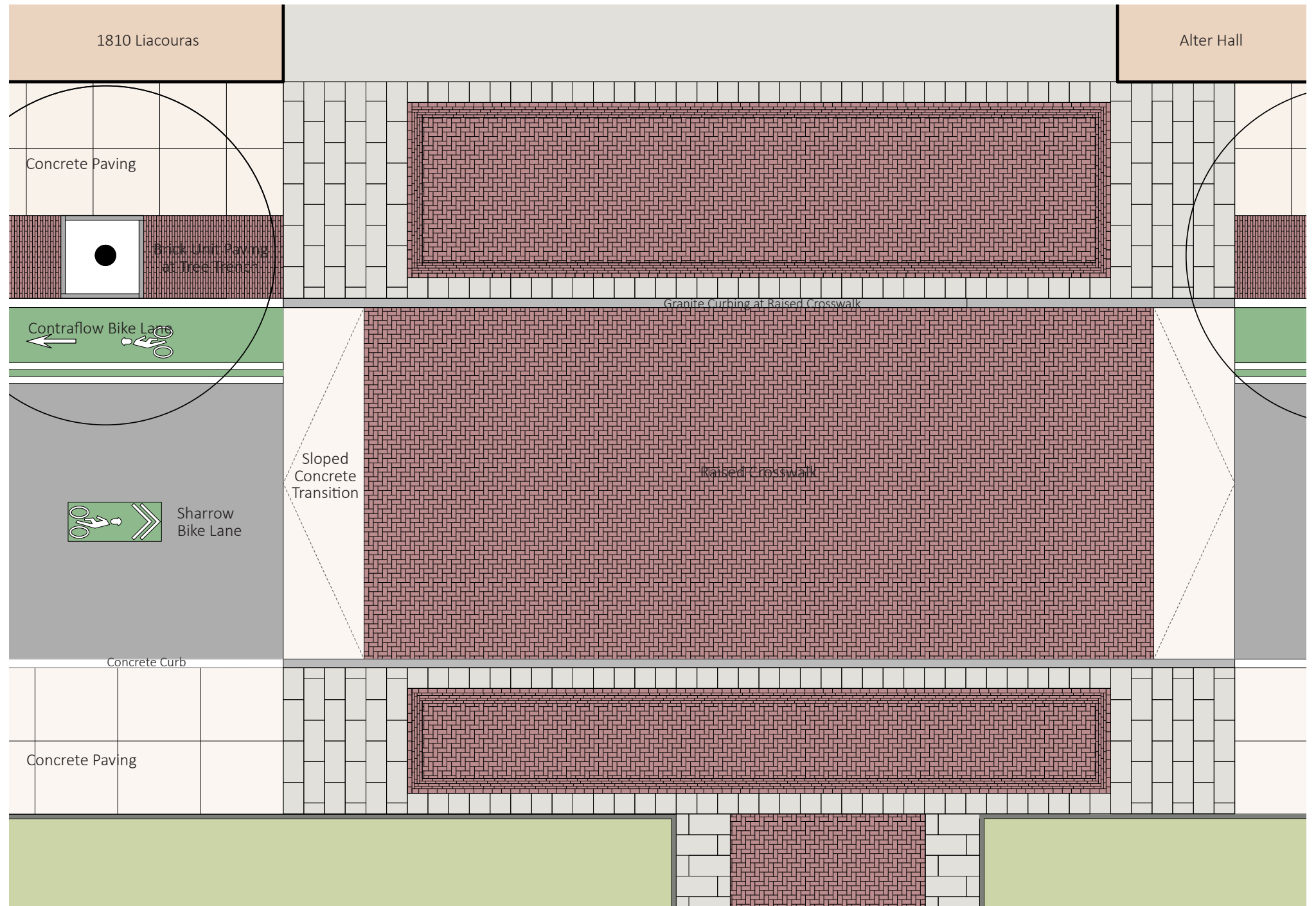
Whitacre Greer

Product: Bevel and Lug Smooth
 Size: 4" x 8" x 2-1/4"
 Color Blend: 32 Antique
 33 Dark Antique
 43 Tangerine

Product: Boardwalk with Lugs
 Size: 3" x 9" x 2-1/4"
 Color Blend: 32 Antique
 33 Dark Antique
 43 Tangerine



Example: Independence National Historical Park



Mid-block crossing at Liacouras Walk

RAISED MID-BLOCK CROSSING: CECIL B. MOORE/ LIACOURAS WALK

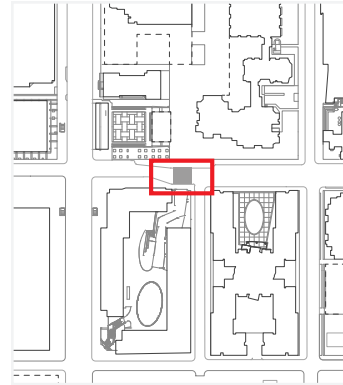
Hanover Architectural Products

Product: Prest Paver
 Finish: Tudor
 Size: 18" x 24" x 3"
 Color Blend: Matrix #B93217
 Matrix #B93218

Whitacre Greer

Product: Bevel & Lug Smooth
 Size: 4" x 8" x 2-1/4"
 Color Blend: 32 Antique
 33 Dark Antique
 43 Tangerine

Product: Boardwalk with Lugs
 Size: 3" x 9" x 2-1/4"
 Color Blend: 32 Antique
 33 Dark Antique
 43 Tangerine



BEASLEY'S WALK

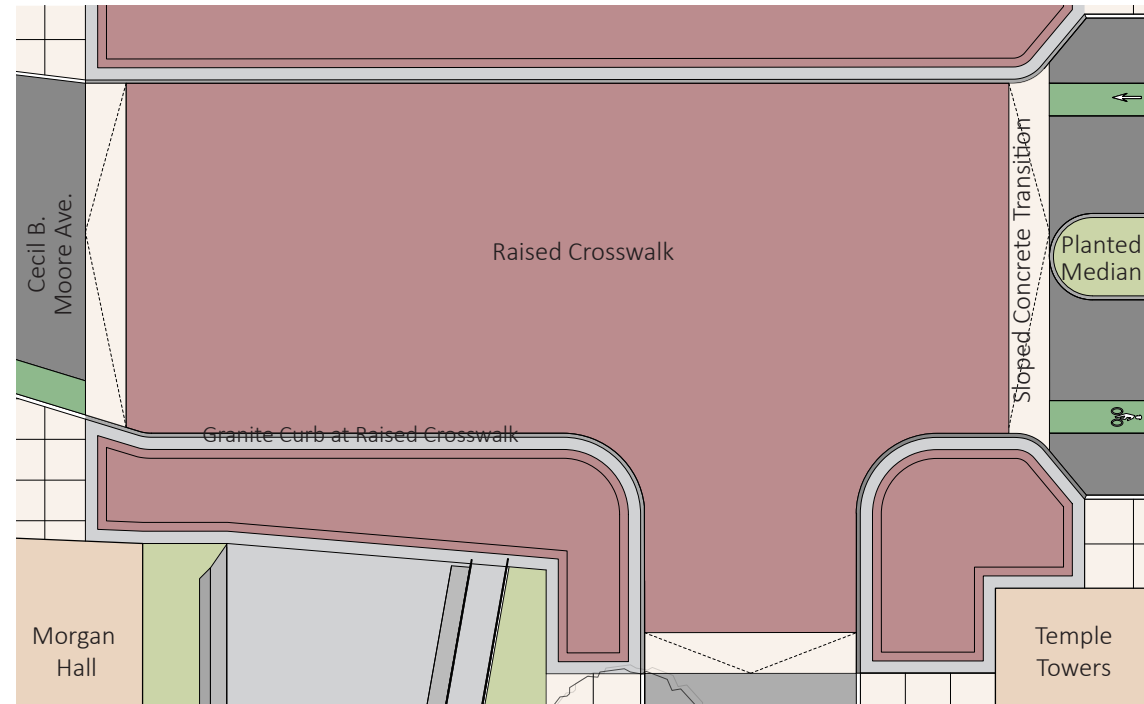
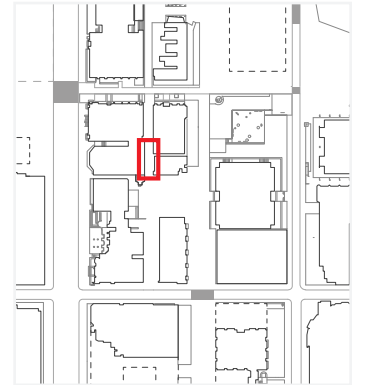
Hanover Architectural Products

Product: Prest Brick
 Traditional with
 Cobble Only
 Finish: Tudor
 Size: 4-1/2" x 9" x 3"
 Color Blend: Matrix #B93217
 Matrix #B93218

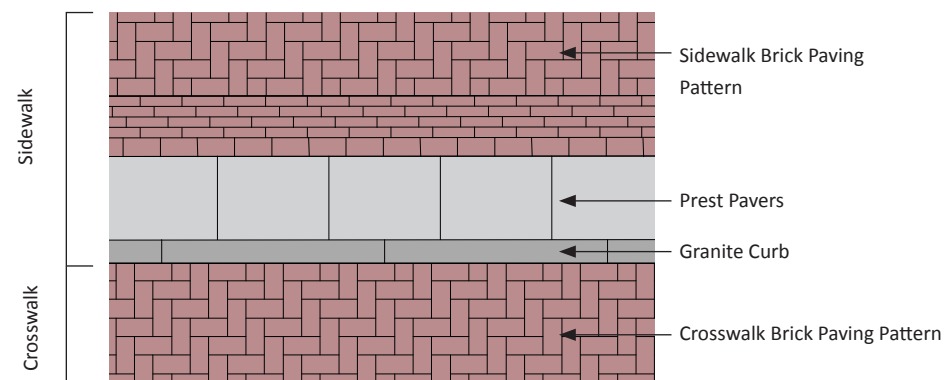
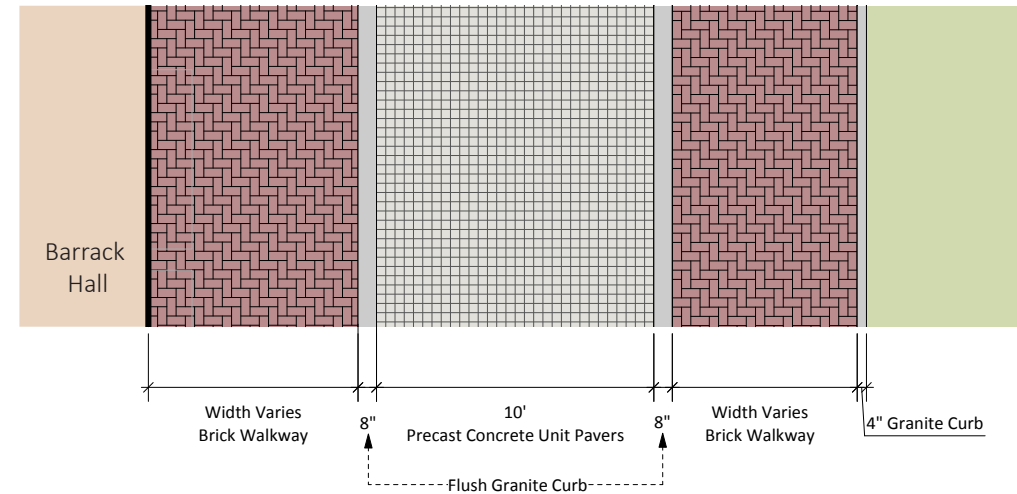
Whitacre Greer

Product: Bevel and Lug Smooth
 Size: 4" x 8" x 2-1/4"
 Color Blend: 32 Antique
 33 Dark Antique
 43 Tangerine

Product: Boardwalk with Lugs
 Size: 3" x 9" x 2-1/4"
 Color Blend: 32 Antique
 33 Dark Antique
 43 Tangerine



Raised mid-block crossing



Sidewalk and crosswalk paving detail

12th & 13th SHARED STREETS

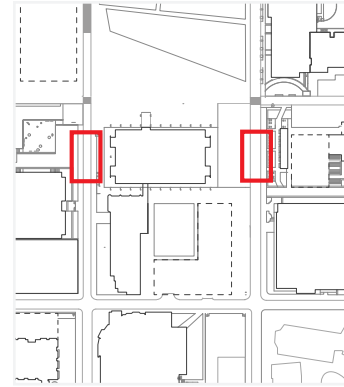
Hanover Architectural Products

Product: Prest Paver
 Finish: Tudor
 Size: 18" x 24" x 3"
 6" x 9" x 3"
 Color Blend: Matrix #B93217
 Matrix #B93218

Whitacre Greer

Product: Bevel and Lug Smooth
 Size: 4" x 8" x 2-1/4"
 Color Blend: 32 Antique
 33 Dark Antique
 43 Tangerine

Product: Boardwalk with Lugs
 Size: 3" x 9" x 2-1/4"
 Color Blend: 32 Antique
 33 Dark Antique
 43 Tangerine

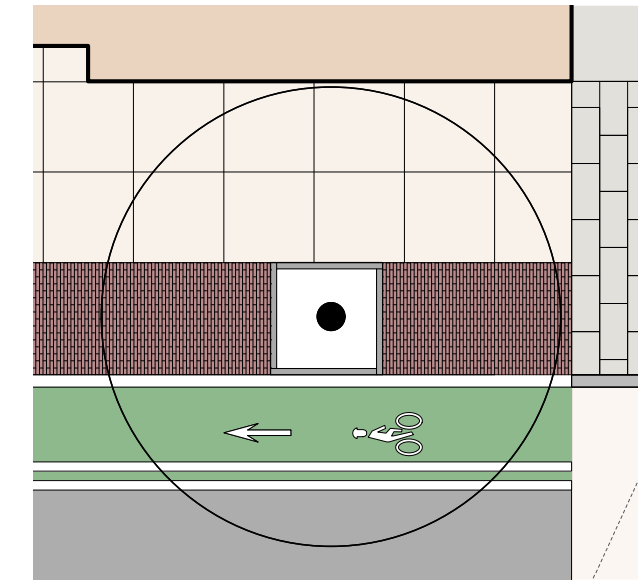
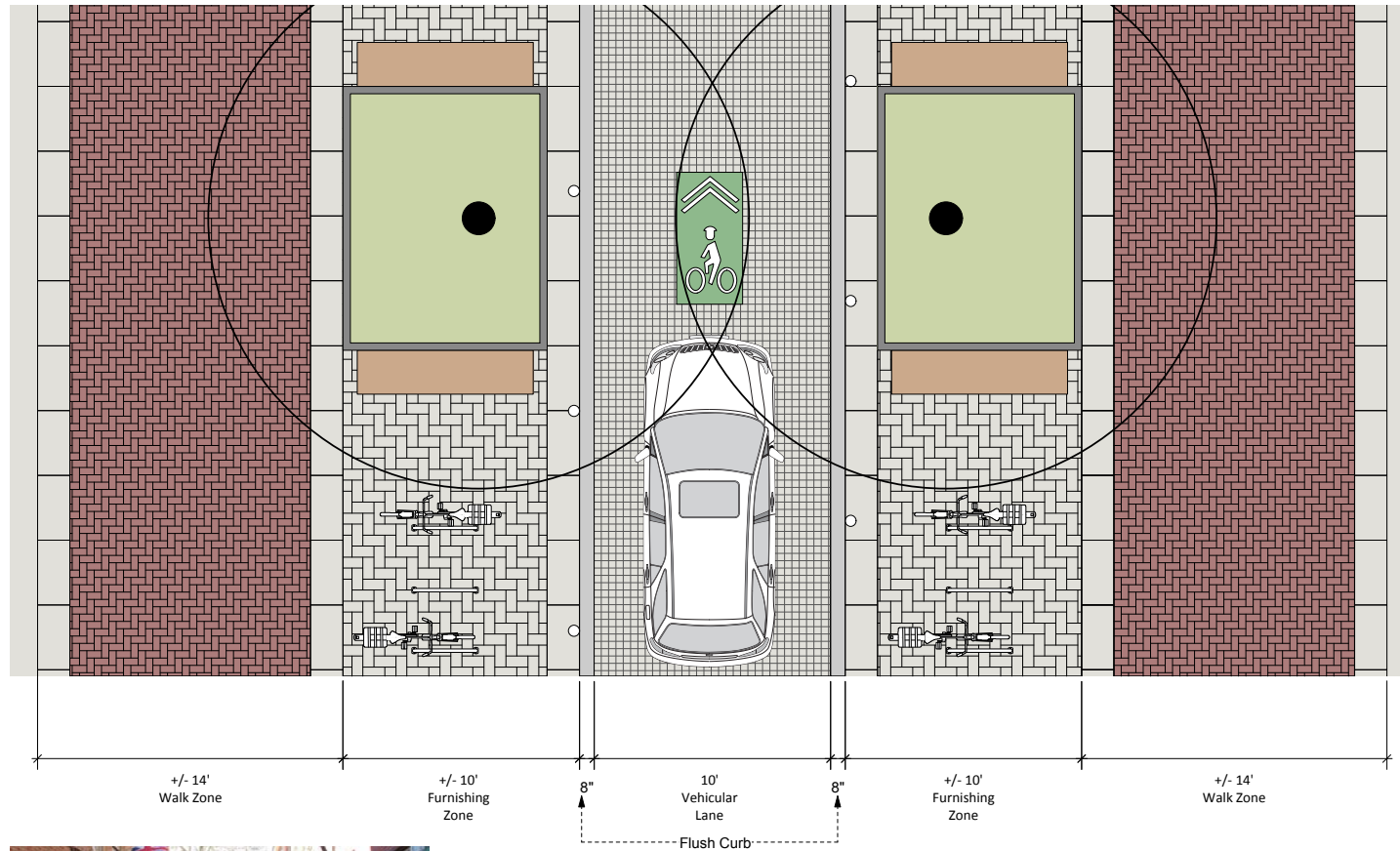


STREET TREE TRENCHES

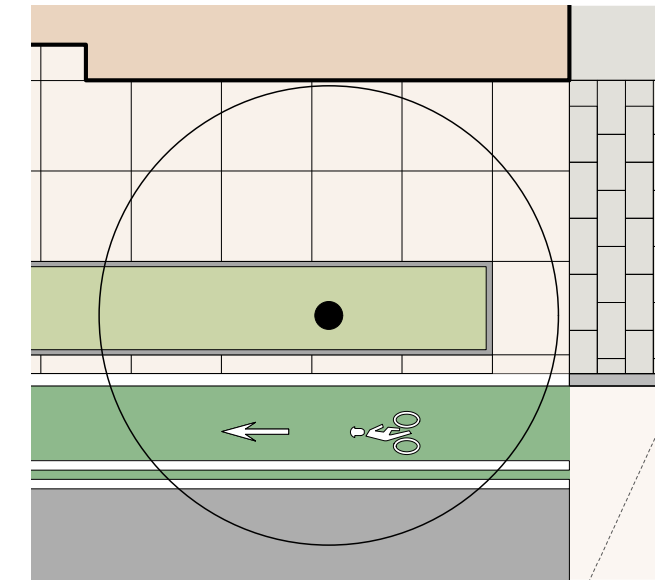
Whitacre Greer

Product: Permeable Boardwalk
 Size: 2-1/4" x 9" x 3"
 Color Blend: 32 Antique
 33 Dark Antique
 43 Tangerine

Product: Boardwalk with Lugs
 Size: 3" x 9" x 2-1/4"
 Color Blend: 32 Antique
 33 Dark Antique
 43 Tangerine



Paved trench



Planted trench



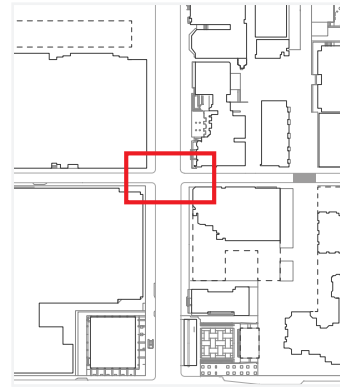
Example: Elfreth's Alley

BROAD STREET INTERSECTION

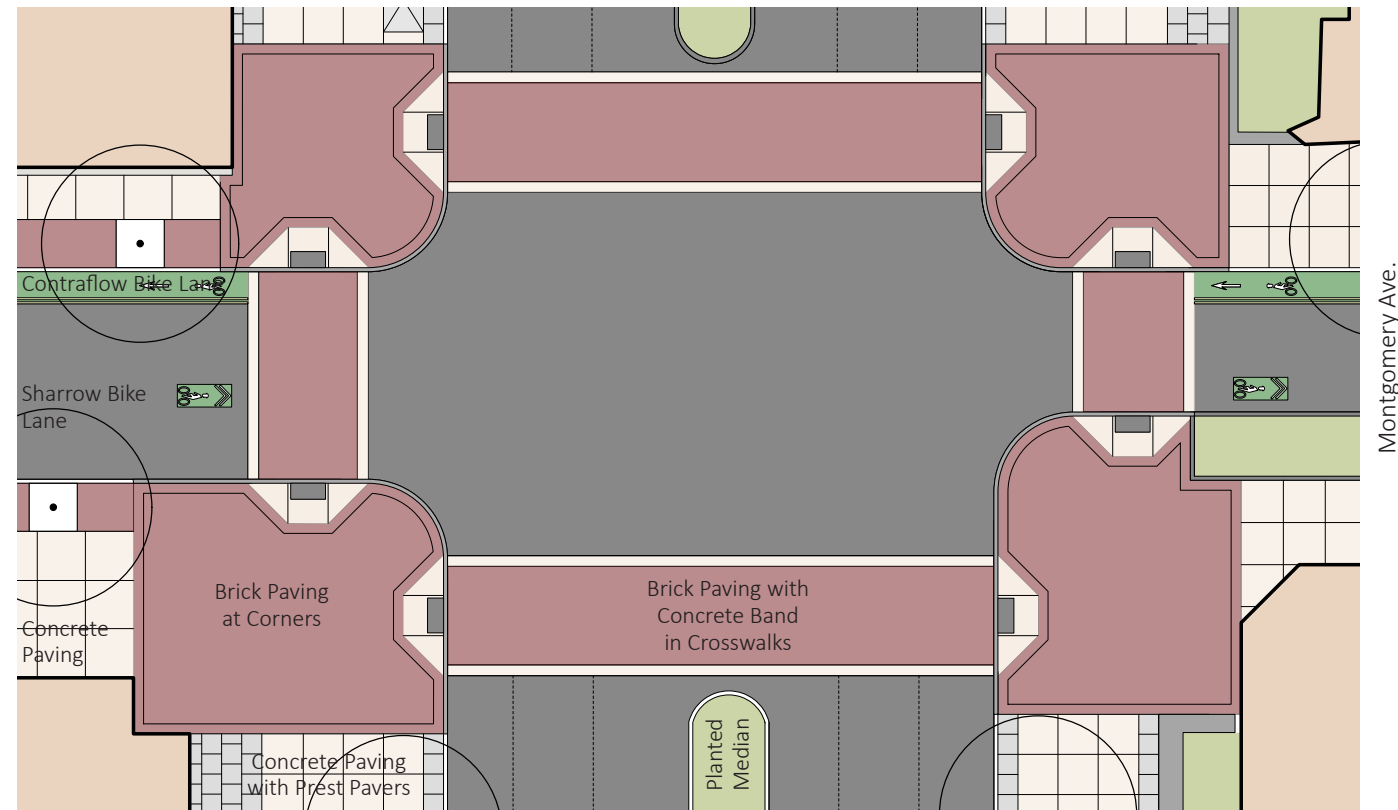
Whitacre Greer

Product: Bevel and Lug Smooth
 Size: 4" x 8" x 2-1/4"
 Color Blend: 32 Antique
 33 Dark Antique
 43 Tangerine

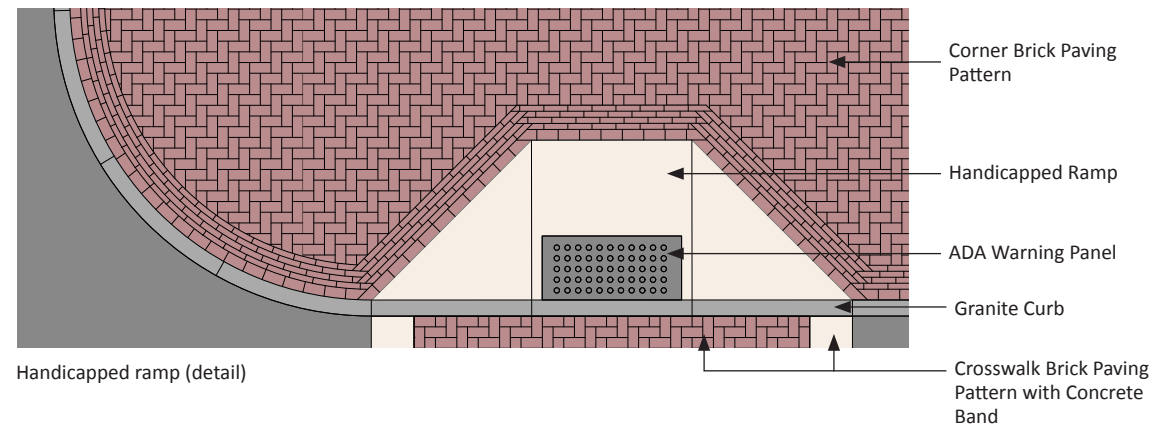
Product: Boardwalk with Lugs
 Size: 3" x 9" x 2-1/4"
 Color Blend: 32 Antique
 33 Dark Antique
 43 Tangerine



Broad Street



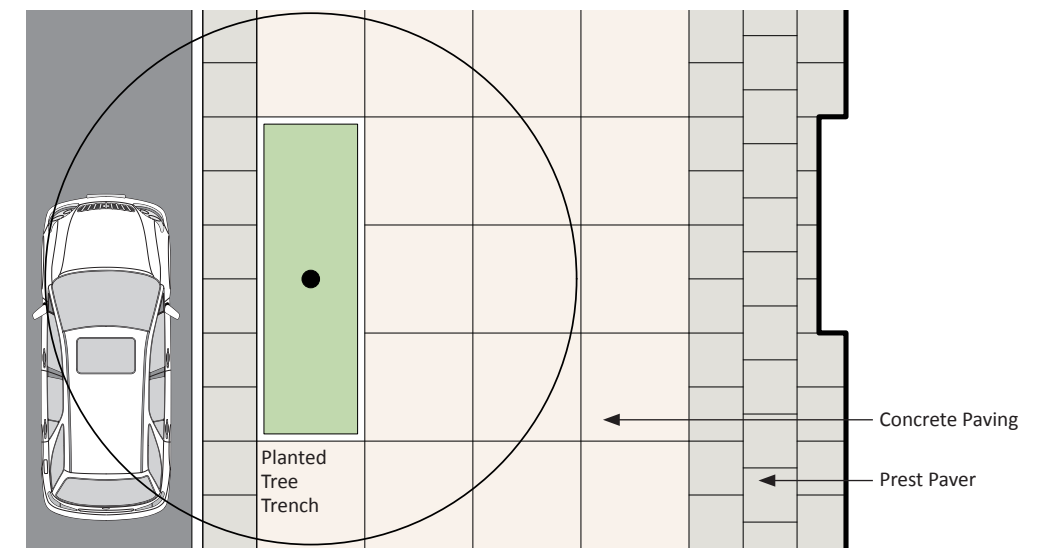
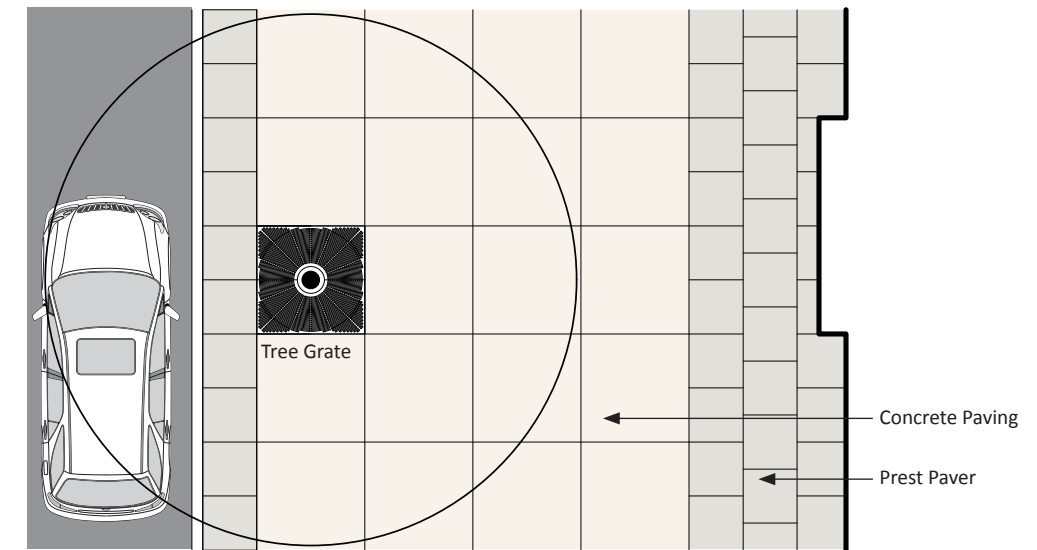
Broad Street Intersection



BROAD STREET TYPICAL SIDEWALK

Hanover Architectural Products

Product: Prest Paver
 Finish: Tudor
 Size: 30" x 30" x 3"
 Color Blend: Matrix #B93217
 Matrix #B93218

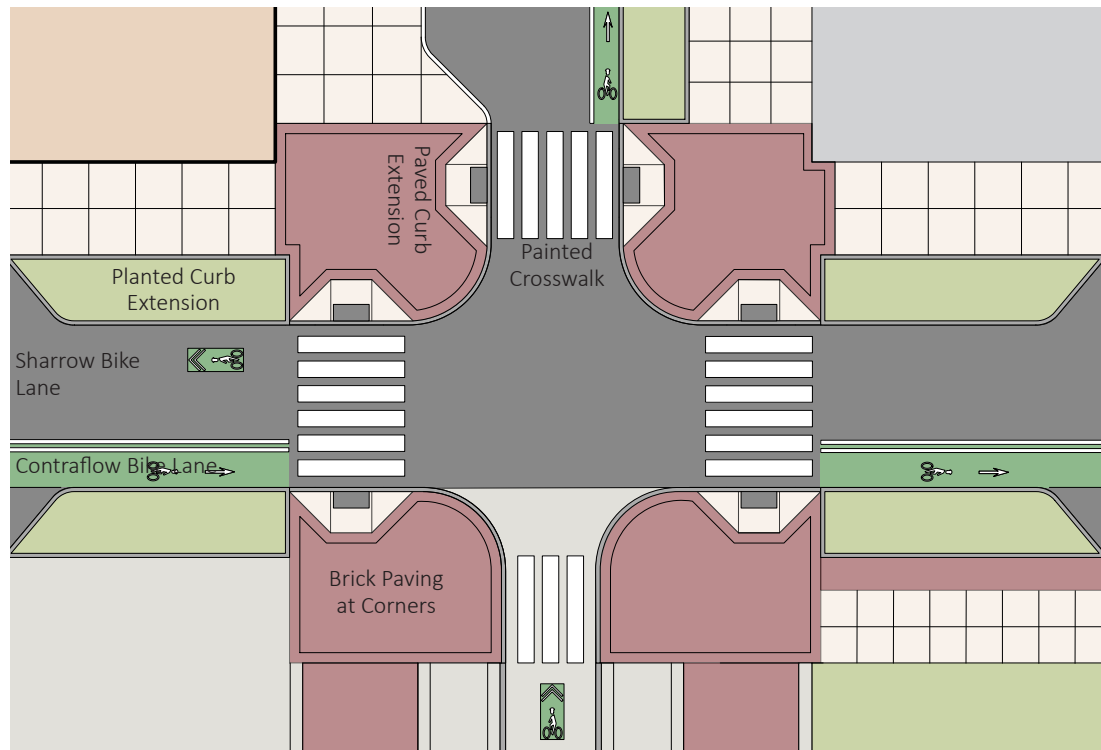


TYPICAL CAMPUS INTERSECTION

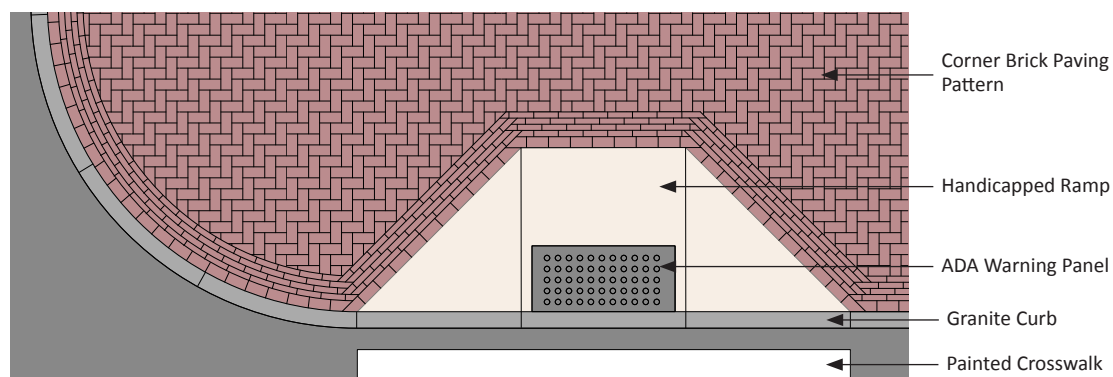
Whitacre Greer

Product: Bevel and Lug Smooth
 Size: 4" x 8" x 2-1/4"
 Color Blend: 32 Antique
 33 Dark Antique
 43 Tangerine

Product: Boardwalk with Lugs
 Size: 3" x 9" x 2-1/4"
 Color Blend: 32 Antique
 33 Dark Antique
 43 Tangerine



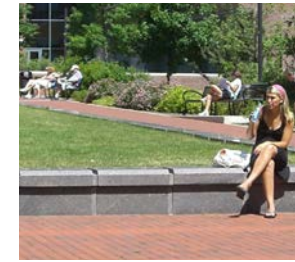
Typical intersection



Handicapped ramp (detail)

SKATE DETERRENENTS

Deterring skateboard abuse has become a necessary factor in the design of site landscape elements. The skate deterrents depicted illustrate methods and detailing acceptable for use on the Temple campus. As demonstrated in these precedent photographs, the deterrents should be as subtle as possible and well integrated into the design of the site element.



Notched edge



Notched edge



Notched edge



Edge with projections



Edge with projections



Crenulated edge



Textured edge



SkateStoppers® metal inserts at joints



SkateStoppers® metal inserts at joints



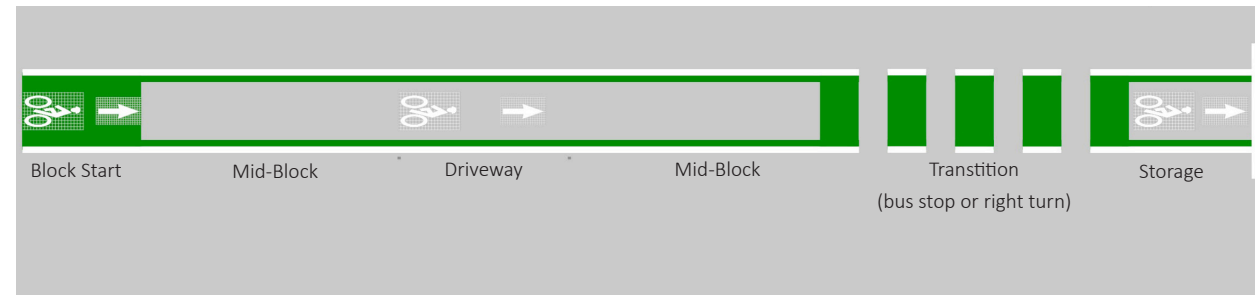
Example: Temple, Morgan Hall - Rough paving and SkateStoppers®

BIKE LANES

Bicycles are increasingly becoming an important means of transportation for many city-dwellers and ensuring safe journeys for the cycling community is critical to the success of VERDANT TEMPLE. The planned launch of a citywide bike-sharing program will only increase the demand for bike travel to/from and around Temple's campus.

Recommendations

- To address the growing needs of the cycling community an infrastructure of green painted bike and sharrow lanes, coordinated with that in use elsewhere in Philadelphia, is proposed for Temple's campus.



Bike lane layout



Example: Bike lane markings

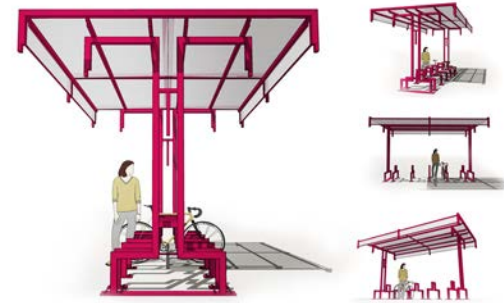


BIKE SHELTERS

The availability and convenient location of bike shelters are important concerns for people commuting by bicycle. As detailed in Mobility (pp. xx-xx) there is a general lack of sheltered bike parking on Temple's campus. Due to Temple's distinctive urban landscape environment an off the shelf "one size fits all" bike shelter was deemed infeasible. As a practical alternative, the opportunity for Temple to partner with a shelter manufacturer to develop site-specific solutions to fit individual campus conditions was researched.

Recommendations

- Partner with Duo-Gard Industries, Inc. to develop "Temple Made" shelter designs. Duo-Gard has over 30 years experience in the planning, design, manufacture and installation of bicycle related infrastructures.
- Install 50% of all new short-term bike parking as sheltered to achieve a proper parking balance on campus. Once completed, 25% of all short-term spaces will be sheltered.



Temple bike shelter concept



Bike shelter concept



Secured shelter at MIT



Parking garage retrofit (rendering)



Completed parking garage retrofit



CycleStation®

Manufacturer:

Duo-Gard, Industries, Inc.
 40442 Koppernick Rd.
 Canton MI 48187-4279
 734-207-9700
www.duo-gard.com/products/shelters/bike-shelters

- Products meet Association of Pedestrian and Bicycle Professionals best practices.
- Provides professional engineer stamped drawings and calculations necessary for permitting and to release end user (Temple) from structural liability.
- Products are high performance and rooted in a valued engineered approach to maximize return on investment.
- Uses best-in-class finishes to ensure longevity and endurance in highly abrasive environments.
- Designs can include: key card swipe access systems, closed circuit cameras, LED lighting with motion sensor activation, renewable energy sources (solar panels/wind turbines), etc.
- Currently working in Philadelphia providing shelters for SEPTA.

All images courtesy of Duo-Guard.

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